Volume 6, Issue 2 (XII)
April - June 2019

ISSN 2394 - 7780

International Journal of
Advance and Innovative Research
(Conference Special)

Indian Academicians and Researchers Association
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ON

BUILDING UNIQUENESS OF AGRICULTURE SECTOR FOR SUSTAINABLE DEVELOPMENT

ORGANIZED BY

DEPARTMENT OF ECONOMICS

KRISTU JAYANTI COLLEGE, BENGALURU

IN COLLABORATION WITH

INDIAN ECONOMIC ASSOCIATION

5TH FEBRUARY, 2019

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Indian Academicians and Researcher's Association

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International Journal of Advance and Innovative Research

Volume 6, Issue 2 (XII): April - June 2019

Journal - 63571

UGC Journal Details

Name of the Journal :	International Journal of Advance & Innovative Research
ISSN Number :	
e-ISSN Number :	23947780
Source:	UNIV
Subject:	Multidisciplinary
Publisher:	Indian Academicians and Researchers Association
Country of Publication:	India
Broad Subject Category:	Multidisciplinary

International Journal of Advance and Innovative Research

Volume 6, Issue 2 (XII): April - June 2019

CONTENTS

Research Papers

A COMPARATIVE STUDY OF LOAN WAIVERS AND DIRECT INCOME SUPPORT ON INCLUSIVE SCHEMES 1 – 4

Dr. Naseer Mohammed Jaffer, Dr. Chetan Chitre and Sindhu R. Menon

FINANCING OF AGRICULTURE BY COOPERATIVES - REPAYMENT BEHAVIOUR OF BENEFICIARIES WITH SPECIAL REFERENCE TO RURAL DAKSHINA KANNADA – AN EMPIRICAL STUDY 5 – 10

Thilakraj G

A STUDY ON COTTON CULTIVATION IN THENI DISTRICT, TAMILNADU 11 – 18

Dr. R. Veerachamy

A STUDY ON EXAMINING THE EFFECTIVENESS OF THE CROP INSURANCE SCHEMES IN INDIA AS WELL AS IN KRISHNA DISTRICT, ANDHRA PRADESH 19 – 21

Dr. C. H. Venu Babu

ECONOMIC IMPACT OF RURAL CROP INSURANCE ON AGRICULTURAL GROWERS – A STUDY AT RURAL VIRAJPET (KODAGU DISTRICT) 22 – 28

Gurudath Shenoy and Ashwitha

ASSESSING STAKEHOLDERS PERSPECTIVES ON GROUNDWATER MANAGEMENT INITIATIVES IN RAJASTHAN 29 – 34

Vijay Kumar and Pragati Jain

THE STATUS OF HOMESTEAD CULTIVATION IN KERALA: FINDINGS FROM A VILLAGE STUDY 35 – 48

Dr. Sr. Sheeba Andrews and Elumalai Kannan

A STUDY OF AGRI- FOOD SUPPLY CHAIN MANAGEMENT IN ANDHRA PRADESH: A CASE STUDY OF KRISHNA DISTRICT 49 – 52

Dr. K. Siva Prakasa Rao

AN ECONOMIC ANALYSIS ON SUGARCANE CULTIVATION IN MADURAI DISTRICT 53 – 60

Dr. R. Govindasamy and D. Iswarya

AGRICULTURAL INPUTS BY RURAL WOMEN IN SELF HELP GROUPS: A STUDY OF DULIAJAN AND JOYPUR PANCHAYAT IN DIBRUGARH DISTRICT OF ASSAM 61 – 65

Tejaswita Duarah

THE IMPACT OF LABOUR MARKET IN INDIAN SCENARIO 66 – 68

Dr. T. Suganya and Dr. M. Rampier

A STUDY ON THE OUTLINE OF AGRICULTURAL EFFICIENCY IN TAMILNADU 69 – 76

Dr. A. Kasirajan and Dr. K. Suresh

DOES ECONOMIC GROWTH HAVE ANYTHING TO DO WITH AGRICULTURE? AN ECONOMETRIC ANALYSIS OF RELATIONSHIP BETWEEN LIBERALIZATION, WELL-BEING, AGRICULTURE AND ECONOMIC GROWTH IN MAHARASHTRA STATE OF INDIA. 77 – 86

Dr. Nasir Khan B. M

FARMERS PREDILECTION FOR ORGANIC FERTILIZERS IN YETHAPPUR VILLAGE, ATTUR TALUK 87 – 92

Dr. J. Sathya and Dr. A. Royal Edward Williams

FINANCIAL MANAGEMENT IN AGRICULTURE 93 – 95

J. Malarvizhi

SELF-SUSTAINED RURAL ECONOMY- MODELLING PPCP IN RAJASTHAN 96 – 102

Suruchi Shrimali and Paras Sachdeva

URBANIZATION AND ITS IMPACT ON HOUSING AND HUMAN HEALTH – A CASE STUDY OF CHENNAI CITY OF TAMIL NADU 103 – 108

D. Gopi

CHANGING TRENDS IN CROPPING PATTERN OF KARNATAKA: AN OVERVIEW 109 – 115

Mahantesh B. Havani and Dr. Padmini S V

THE GREEN GOLD OF INDIA - AN EMPIRICAL STUDY WITH SPECIAL REFERENCE TO PURI DISTRICT, ODISHA 116 – 123

Dr. Neeta Dwivedi and Tinto Tom

ECONOMIC IMPACT OF AGRICULTURAL TOURISM WITH SPECIAL REFERENCE TO RURAL DEVELOPMENT AT KOLAR 124 – 129

Sagar R and Retheesh P. T

MODERN AGRICULTURAL LAWS AND POLICIES FOR THE 21ST CENTURY 130 – 132

S. Arulazhagan

ROLE OF SOCIAL ENTERPRISES IN AGRICULTURE SECTOR: INFERENCES FROM TWO SOCIAL ENTERPRISES 133 – 139

Princy Thomas, Rony Geo Alex and Shradha Kukkuje

RURAL HEALTH INFRASTRUCTURE IMPACTS ON HEALTH OUTCOME – SPECIAL REFERENCE TO KARNATAKA STATE 140 – 144

Preethi S J G

LOANS AND SUBSIDIES OFFERED BY PRIMARY LAND DEVELOPMENT BANK FOR AGRO PRODUCTS 145 – 150

Dr. Vatsala.G and Prof. Akash Vasan

MODERNIZATION OF INDIAN AGRICULTURE 151 – 157

Mudunuru. Vijay Chand

A STUDY ON THE IMPACT OF WOMEN SELF HELP GROUPS IN THE DISTRIBUTION OF PER CAPITA INCOME AMONG RURAL HOUSEHOLDS IN KANYAKUMARI DISTRICT, TAMILNADU 158 – 161

Dr. K. Vinodha Devi

AN OVERVIEW OF THE INDIAN TEA INDUSTRY: A STUDY ON ITS PERFORMANCE 162 – 171

Jethina James

DEBT WAIVER SCHEME AND FARMERS' SUICIDE IN KARNATAKA 172 – 177

Sarah Phebe J and Dr. Greeshma Manoj

CHANGES IN THE LAND MARKET AND LIVELIHOOD OF RURAL POOR IN INDIA: A CASE STUDY OF KRISHNA DISTRICT, ANDHRA PRADESH 178 – 182

Dr. V. Narayana Rao

MICROFINANCE AND SELF HELP GROUPS – A CASE STUDY OF ASSAM 183 – 192

Rashmita Saikia and Dr Mahesh E

PRODUCTION OF BANANA IN INDIA 193 – 200

Dr. R. Govindasamy and Haripriya I

A STUDY OF USING MODELLING TOOLS IN AGRICULTURE: A CASE STUDY OF KRISHNA DISTRICT, ANDHRA PRADESH 201 – 204

Dr. V. S. Rao Medindrao

DYNAMICS OF LAND USE CHANGES IN THE PERI-URBAN ENVIRONMENT- AN ANALYSIS OF BENGALURU PERIPHERY 205 211

Amrutha Mary Varkey

ECONOMIC VIABILITY OF PADDY CULTIVATION UNDER DIFFERENT TYPES OF LAND HOLDINGS – A COMPARATIVE STUDY BETWEEN ORGANIC FARMING AND INORGANIC FARMING IN TAMIL NADU 212 – 215

Dr. B. Chithirai Rajan and Dr. K. Suresh

AN ECONOMIC EVALUATION ON TRENDS AND PATTERNS OF FOODGRAINS PRODUCTION IN INDIA 216 – 222

Dr. Sujata Mali

AGRICULTURE, EMPLOYMENT AND POVERTY: AN ANALYSIS OF ITS INTER-LINKAGE 223 – 228

Budihal Nikshep Basavaraj

ROLE OF FDI IN AGRICULTURAL SECTOR IN INDIA 229 - 233

Salma Begum

International Journal of Advance and Innovative Research
Volume 6, Issue 2 (XII): April - June, 2019
ISSN 2394 - 7780

A COMPARATIVE STUDY OF LOAN WAIVERS AND DIRECT INCOME SUPPORT ON INCLUSIVE SCHEMES

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ABSTRACT
Farm sector distress is widely debated. The share of agriculture in India's GDP is 15.27 percent but share of agriculture in employment is about 45 percent. Low farm productivity, rural indebtedness, lack of technology, low capital investment, lack of infrastructure, defective market conditions and persistently low levels of market prices of farm products contribute to rural distress leading to farmer suicides which are widely reported. Committees, independent experts and agricultural economists recommend broadly three solutions for inclusive growth, namely higher minimum support price (MSP) for farm products, loan waivers for farmers and direct income support to farmers. Two among the three inclusive schemes are taken for analysis in the present paper. Secondary data published in reliable sources are used in the present study. Some suggestions for further research are given at the end of the paper.

Keywords: Loan waivers, Income support schemes, Inclusive growth.

INTRODUCTION
Higher minimum support prices (MSP), loan waivers and direct income support are considered to be the three most effective solutions to address farmers' distress in India. A recent study points out that less than 10 percent of the farmers used their farm products at MSP and among them most were big farmers owning large areas of land (Gulati, Ashok and Saini, Shweta, 2019). The study mainly says that less than 30 percent of agricultural households will benefit from loan waiver schemes even with liberal conditions and that most of the beneficiaries would be big farmers. A direct income support policy was introduced in Telangana in May 2018 under the name Rythu Bandhu Scheme (RBS). Under this scheme, a sum of Rs. 4000 per acre was paid twice in a year to every eligible farmer. Media reports say that about 93 percent of the land owners benefitted from the scheme and it contributed to the landslide victory to the ruling party in the recent state general elections held in December 2018. In this scenario direct income support scheme seems to be more effective as an inclusive growth measure compared to the other two solutions.

The present study makes an attempt to compare the loan waivers and income support schemes like RBS as effective inclusive growth schemes. Only a brief account of MSP as a solution is given to provide the context of this comparison. The following, therefore, are the objectives of the study:

1. Are loan waivers less inclusive and more distortionary than income support schemes like RBS?
2. Are RBS styled income support schemes better solutions than loan waivers at the national level?

Secondary data and findings of other studies are used with due acknowledgement. The paper is divided into three parts. In the first part a brief account of slow progress of agriculture, farm distress and the need for inclusive growth in given. Loan waiver schemes as an effective solution to farm distress is evaluated in the second part. In the third part, the question whether RBS-styled direct income support scheme can be extended to the national level for inclusive growth is addressed. The major arguments and recommendations for further research are given in the conclusion.

1. FARM DISTRESS AND NEED FOR INCLUSIVE GROWTH
Growth in agriculture has been slow compared to other major sectors namely industry and services. During the period 1951-52 to 2016-17 annual growth in agriculture has been only 2.9 percent compared to 6.1 percent in industry and 6.2 percent in service sector. Since industrial sector and service sector experienced more than double the growth rate in agriculture, the share of agriculture in the GDP of India declined from 53.1 percent in 1951-52 to only 15.2 in 2016-17. This trend of declining share of agriculture in the GDP is found in other countries as well. However there is a huge difference between the experience of most of the developed and developing countries and that of India. When a similar trend happened in other developed and developing countries in the past the effect on employment was very different. For example the share of agriculture in GDP declined to about 1 percent in the USA and France (among developed countries) in 2016 and simultaneously the share of agriculture in total employment fell to 2 percent in France and 1 percent in the USA. Similarly the share of agriculture in the GDP declined to 2 percent in South Korea and 1.6 percent in Taiwan (among

ISSN 2394 - 7780

countries which joined the group of developed countries recently) in 2016 and simultaneously the share of agriculture in total employment declined to about 5 percent in South Korea and Taiwan. In India it is a different situation. The share of agriculture in the GDP declined to 15.2 percent the share of agriculture in employment remains as high as 45 percent (Aravind Panagaria, 2019). This fact explains, to a large extent, farm distress and need for inclusive growth.

Farm distress emerges mainly because of low levels of income earned by farmers. Several reports and studies mention facts about low farm incomes for a large number of people who depend on land for a livelihood and the causes for the miserable situation. The following table gives the numbers which reveal, in a brief manner, the miserable condition of the majority of the agricultural households.

Table-1: How Much They Earn

Sl. No.	Dimensions of distress	Marginal farmers	Small farmers
1	Land holding	Up to 1 hectare	1 – 2 hectares
2	As percentage of all agricultural households	69.4	17.2
3	Average monthly income (Rs.)	5247	7348
4	Average monthly expenditure (Rs.)	6020	6457

Source: NSSO survey 2012-13 (Nirmal, Rajalakshmi, 2017)

These numbers explain the reasons for the prevalence of 'indebtedness' of farm households. It is reported that about 47 percent of all rural households are in debt. On an average these borrowing rural households have a loan of Rs. 92,000, about 70 percent of it from formal sources and the remaining 30 percent from informal sources like village money lenders. This dismal situation prevails even after the government spending about Rs. 2.2 lakh crores on subsidies on food, fertilizer and power, crop insurance etc. and other schemes including guaranteed employment for 100 days to one adult from each rural household in the country (Arvind Panagariya, 2019).

2. LOAN WAIVERS AS A SOLUTION TO RURAL DISTRESS

There are three big solutions to farm distress which are debated in recent times namely higher minimum support price (MSP) for farm products, loan waivers for farmers and direct income support to rural households (Gulati, Ashok et al, 2018). One major reason for low farm incomes is low market prices for farm products and still lower prices which farmers could actually get because of post harvest distress sale to middle men and agents. When MSP is announced for 23 crops, it is mostly applied to rice, wheat and cotton and farmers of only a few relatively prosperous states get benefit. It is reported that less than 10 percent of the farmers sold their farm products at MSP and that the scheme benefitted mostly big farmers who had large surplus produce to sell (Gulati, Ashok and Shweta Saini, 2019). In this scenario loan waivers seem to be a viable policy to address farm distress.

A look at the borrowing pattern of agricultural households will reveal the complex nature of the problem of rural indebtedness. About 43.5 percent of all agricultural households take loans and out of them 69.7 percent took loans from banks. This means only 30.3 percent of agricultural households in India availed bank loans. It means the remaining 69.7 percent of agricultural households will not get any benefit from the loan waiver schemes by the government. Another dismal dimension is that only 6.9 percent of the agricultural households which took bank loans had crop insurance protection in the year 2015-16. However the number is increasing under the Pradhan Mantri Fasal Bhima Yojana. The issue of rural distress gets further complicated because reports point out that less than a quarter of the overall income of rural households, come from cultivation of crops and rearing livestock. Agricultural households depend on wage labour to supplement their income (Regy, Prashant et al, 2018). Composition of bank loan to agriculture also needs mention. Crop loans are those given to cultivation of food crops, cash crops and plantation crops. Loans for buying farm equipment, irrigation and land development are called investment loans. Loans for allied activities like dairying, poultry and fisheries are a different category. There are huge regional differences in distribution of bank loans to agriculture. For example, the state of Tamil Nadu could get Rs. 66,878 crores while Jharkhand could get only Rs.4608 crores out of the country's total agricultural loans of Rs. 4, 50,198 crores in the year 2015-16 given by banks. Furthermore, about 17 percent of the agricultural credit is given by cooperative banks which are not covered under the schemes (Gulati, Ashok et al, 2018). In this scenario, direct income support schemes, as it is successfully followed in Telangana, seems to be an effective solution to address the farm distress issue and bring about inclusive growth in rural India.

ISSN 2394 - 7780

3. DIRECT INCOME SUPPORT SCHEME AND INCLUSIVE GROWTH

It is reported that excessive agricultural input subsidies cause inefficiencies in the production and distribution aspects of the agricultural system. Fertiliser subsidies for example lead to imbalances in soil nutrients. Similarly subsidies to power have resulted in excessive and inefficient use of water, depleting ground water levels. Loan waivers might encourage use of loans for non-agricultural and economically unproductive activities. It is suggested that the emphasis should, therefore, shift from subsidy-based initiatives to investment-based initiatives (Gulati, Ashok and Prerna Terway, 2018). In this context direct income / investment support is recommended to address farm distress and inclusive growth issues.

One such direct benefit scheme to support farmers was introduced in Telangana in May 2018.Though the period of time is very short to evaluate the performance of the scheme, there are a few indicators which prove its success, at least in the perception of the farmers in the region. Media reports say that in the recently held assembly election in Telangana, the ruling party had a landslide victory and one of the major factors in the electoral success was the support of farmers who were happy with the recently introduced Rythu Bandhu Scheme (RBS). Under this scheme the government gives Rs. 4000 per acre to every land owning farmer twice in a year to go with the two cropping seasons. With this direct cash support the farmers can buy agricultural inputs and can undertake land development activities to improve agricultural productivity. It is said that about 93 percent of the land owners will benefit from this scheme and the party in power will get political benefit in years to come. The idea of giving cash directly to the farmers seems to be catching up. A recent report says that the central government is considering the option to transfer Minimum Support Price (MSP) directly to the bank account of farmers who are not able to sell their farm products at MSP for various reasons (*Business Standard*, Jan 10, 2019).

There is a view among development economists that income policy is better than price policy in removing poverty especially among farming communities. Subsidising the prices of agricultural inputs involves inefficiencies, corruption and waste. The National Rural Employment Guarantee Act (NREGA) in 2005 was a landmark effort towards inclusive growth through employment generation. However two major objections were raised by economists who pointed out that public funds went down the drain due to the high level of corruption and the NREGA assets created in backward areas were of little real value (Dreze, Jean and Amartya Sen, 2013). It is reported that many OECD countries as well as emerging economies like China are moving towards direct income transfer to bring more inclusive growth. There seems to be a cost advantage also. A study points out that the cost of implementing a nation wide loan waiver scheme to benefit farmers would be about Rs.4 to 5 lakh crores. On the other hand a direct income support scheme framed in the model of Telangana's RBS style of transfer of income will cost only Rs.2 lakh crores when it is implemented in all states of the country (Gulati, Ashok and Shweta Saini, 2019). However all that glitters is not gold.

A recent study points out that RBS style of direct income transfer scheme may not bring the expected results (TISS, 2018). The study focuses on the problem of tenant farmers. It is reported that about 75 percent of the farmers who committed suicide during the past four years were tenant farmers, who cultivated leased land owned by others. These lessee farmers are either totally landless or marginal land holders which mean they own very small uneconomic land holdings. The study says that direct income support scheme like RBS helps only the landowners and not the tenant farmers. This is explained in the study with the help of a number of cases of tenant farmers. Lakshmanna was a farmer who committed suicide recently. He owned one acre of land and got four acres of land on lease from Venkataswamy. The lease amount was Rs.10, 000 per acre per year. For the past three years Lakshmanna cultivated cotton and lost heavily due to low price of cotton. He had an accumulated loan of Rs. 4 lakhs from money lenders and Rs. 30,000 from the bank. He pleaded with Venkataswamy to reduce the lease amount but failed in his attempts. Due to pressure from money lenders, he committed suicide. In the mean time, landowner Venkataswamy was getting Rs.4000 per acre twice a year from the Government under RBS arrangement, which is framed to empower farmers and bring about inclusive growth. There was no reduction in lease or rent amount after Rythu Bandhu support. The study reports instances where the land owners increased rent and lease amounts after availing themselves of benefits from RBS of the government. Only 15.5 percent of the landowners have agriculture as their main occupation. There is no wonder that about 75 percent of farmer suicides happen among tenant farmers (TISS, 2018). One may recollect philosopher Whitehead's definition of tragedy, "the essence of dramatic tragedy is not unhappiness. It resides in the solemnity of the remorseless working of things" (Whitehead, 1948).

CONCLUSION

The main arguments of the paper may be recapitulated. The three big solutions to reduce farmers' distress namely increasing MSP, loan waivers and direct income support are widely debated in recent times. A few

ISSN 2394 - 7780

studies point out that only 10 percent of farmers sold their products at MSP and mostly big farmers benefitted from the scheme. There are reports which say that about 70 percent of agricultural households in the country will not get any benefit from loan waiver schemes because either they do not avail loans or they do not avail loans from banks. In this scenario direct income support schemes in RBS style are recommended. The claim that Telangana government, for example, benefits farmers through RBS has to be taken with a pinch of salt. A study states that RBS benefits only land owners and not actual cultivators who pay high lease amount or rent to the land owners. We may conclude by stating that a truly ingenious scheme has to be framed to reduce farmers' distress and lead to inclusive growth. This is an exciting area of study that needs further research and analysis.

REFERENCES

1. *Business Standard*, Jan 10, 2019-01-18
2. Dreze, Jean, Amartya Sen (2013): '*An Uncertain Glory: India and its Contradictions*', Allen Lane, London
3. Gulati, Ashok, Marco Ferroni and Yuan Zhou (2018): '*Supporting Indian Farmers, the Smart Way*', Academic Foundation, New Delhi
4. Gulati, Ashok and Saini, Shweta (2019): 'MSP, Loan Waiver or Direct Income Support?', *Financial Express*, Jan 7, 2019-01-18
5. Nirmal, Rajalakshmi (2017): 'What Farmers Want from Policy Makers?', *Business Line*, June 6, 2017
6. Panagariya Aravind (2019): 'Confront the Harsh Reality', *Times of India*, Jan 10, 2019
7. Regy, Prasanth, Vijay Mahajan and Jagmeet Singh (2018): 'Financial Inclusion: A Long Way to Go', *Business Standard*, Sept 26, 2018
8. TISS Study Report (2018): '*Farmer Suicides, Land Ownership, Tenant Farmers and Rythu Bandhu*', TISS, Hyderabad
9. Whitehead A N (1948): '*Science and the Modern World*', Mentor, New York

International Journal of Advance and Innovative Research
Volume 6, Issue 2 (XII): April - June, 2019
ISSN 2394 - 7780

FINANCING OF AGRICULTURE BY COOPERATIVES - REPAYMENT BEHAVIOUR OF BENEFICIARIES WITH SPECIAL REFERENCE TO RURAL DAKSHINA KANNADA – AN EMPIRICAL STUDY

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ABSTRACT
India as we all know is a country of villages and agriculture is the primary occupation. Nearly 65% of our population depends, directly or indirectly, on agriculture. But the agriculture sector contributes hardly half our national income. This shows the extent of poverty that prevails, particularly, in rural India. The most crucial and arduous task before the country is thus, to revitalise our agriculture sector. It was Mr Nicholson who said "the lesson of universal agrarian history from Rome to Scotland is that an essential of agriculture credit. Neither the condition of the country nor the position of the agriculture affects the one great fact that agriculturists must borrow." The Indian farmer is no exception to this phenomenon.

INTRODUCTION
In the Indian context the role of the cooperative institutions, particularly in solving the problems of agriculture finance is more crucial. Since 60's we have been experiencing a lot of changes in our banking system. The cooperative institutions have been voluntarily devoting their attention considerably on the development of agriculture sector. In order to meet the increasing demand for production credit, the cooperative societies have substantially increased their scale of operations, thereby causing a remarkable decline in the relative share non-institutional sources. Again, we have been observing that crores of rupees are deployed in rural areas by the cooperatives, of which a major share, turned out to be unproductive and shared by a relatively richer section of the rural population. One of the major problems faced by the cooperatives in financing agriculture is that of mounting over dues. Over dues are caused by poor recovery, which ultimately restricts the smooth flow of credit. For the smooth flow of credit, repayment of credit is essential. Repayment of credit is of crucial importance for any public sector. Commercial credit institution, as repayment not only ensures recycling of public money but also builds up confidence amongst the credit institutions in their clientele and amongst the credit users in their own ability to develop.

Hence an attempt is made in the study to critically examine, financing of agriculture by cooperative societies among the farmers and their repayment behaviour in the selected area of the study.

OBJECTIVES OF THE STUDY
- To study the attitude and behaviour of beneficiaries towards cooperatives.
- To ascertain the association between socio-economic characteristics of beneficiaries with their repayment behaviour.
- To find out the problems faced by beneficiaries in borrowing and repayment of loan and suggest the ways to overcome them.

METHODOLOGY
In tune with the objectives mentioned above, a case study has been carried out by selecting the sample size of 140 from the beneficiaries of Primary Agriculture Credit Cooperative Societies (PACCs) of Dakshina Kannada district, Karnataka. The present study has been conducted with both primary data and secondary data.

Primary data were collected through a questionnaire consisting of both open and close-ended questions and were used to interview 140 respondents.

Secondary data are drawn, classified and studied from the published reports and are incorporated wherever necessary to supplement the primary data.

LIMITATIONS
- The beneficiaries were reluctant to several financial matters
- Possible inaccurate answers arising out of memory lapse/recall problems

ISSN 2394 - 7780

EMPIRICAL ANALYSIS

Table No-1: Distribution of beneficiaries according to their age

Categories	No of Beneficiaries	Percentage
Up to 35 years	37	26
36 to 55 years	70	50
56 years and above	33	24
Total	140	100

Above table reveals that maximum percent of beneficiaries were of middle age group.

Table No-2: Distribution of beneficiaries according to their education

Categories	No of Beneficiaries	Percentage
Illiterate & Primary school	75	54
High school	33	24
Above high school	32	42
Total	140	100

Above table reveals that maximum percent of beneficiaries were of primary school education and illiterates.

Table No-3: Distribution beneficiaries according to their size of family

Size of family	No of respondents	Percentage
1 to 4 members	48	34
4 to 8 members	59	42
More than 8 members	33	24
Total	**140**	**100**

Data shows majority of the respondents from medium family in terms of number of members in the family.

Table No-4: Distribution of beneficiaries according to their farming experience

Years of experience	No of respondents	Percentage
Less than 10 years	24	17
10 to 15 years	52	37
More than 15 years	64	46
Total	**140**	**100**

The data of table reveals that 46 percentages of the beneficiaries had high farming experience.

Table No-5: Distribution of beneficiaries according to their annual income

Annual income	No of respondents	Percentage
Below 150000	52	37
150000 to 300000	66	47
Above 300000	22	16
Total	**140**	**100**

The data of table reveals that 47 percent of respondents were medium annual income group.

Table No-6: Objectives prior to borrowings

Objectives	No of beneficiaries	Percentage
For Agriculture	57	41
Raise standard of living	65	46
No reason	07	5
Consumption	11	8
Total	**140**	**100**

Data shows that only 41% of the beneficiaries borrowed loan amount with objective of utilising it for agriculture.

ISSN 2394 - 7780

Table No-7: Utilisation of loan amount

Way of utilisation	No of respondents	Percentage
For Agriculture	42	30
Raise standard of living	49	35
For repayment of other loan	46	33
Consumption	03	2
Total	**140**	**100**

Data shows that only 30% of the beneficiaries utilised loan amount for agriculture

Table No-8: Distribution of beneficiaries according to their repayment behaviour

Repayment behavior	No of respondents	Percentage
Irregular	37	26
Moderate	58	42
Regular	45	32
Total	140	100

Table reveals that 42 percent of beneficiaries had moderate repayment behaviour and only 32 percent were regular in repayment.

Table No-9: Association between age of beneficiaries and their repayment behaviour

H_0: There is no relationship between age of beneficiaries and their repayment behaviour.

Categories	Repayment behaviour			
	Poor	**Moderate**	**High**	
Up to 35 years	15	12	10	37
36 to 55 years	13	32	25	70
56 years and above	09	14	10	33
Total	**37**	**58**	**45**	**140**
Chi square = 6.08	**p=.19275**			Non significant

The calculated Chi-square value 6.08 was found to be non-significant. This leads to accept of null hypothesis. Hence, it may be concluded that age had no influence on the level of repayment behaviour of crop loan beneficiaries.

Table No-10: Association between education of beneficiaries and their repayment behaviour

H_0: There is no relationship between education of crop loan beneficiaries and their repayment behaviour.

Categories	Repayment behaviour			
	Poor	**Moderate**	**High**	**Total**
Illiterate & Primary school	13	09	08	30
High school	12	38	28	78
Above high school	12	11	09	32
Total	**37**	**58**	**45**	**140**
Chi square = 11.44	**p=.2203**			Significant

The calculated Chi-square value 11.44 was found to be significant. This leads to reject of null hypothesis. Hence, it may be concluded that education had influence on the level of crop loan beneficiaries.

Table-11: Association between size of family of crop loan beneficiaries and their repayment behaviour

H_0: There is no relationship between size of family holding of crop loan beneficiaries and their repayment behaviour.

Categories	Repayment behaviour			
	Poor	**Moderate**	**High**	
1 to 4 members	12	27	09	48
4 to 8 members	13	21	25	59

ISSN 2394 - 7780

More than 8 members	12	10	11	33
Total	**37**	**58**	**45**	**140**
Chi-square = 10.33	**p=.035**		**Significant**	

The calculated Chi-square value 10.33 at 5 per cent level with 4d.f was found to be significant. This leads to reject of null hypothesis. Hence, it may be concluded that size of family had influence on the level of crop loan beneficiaries

Table-12: Association between farming experience of crop loan beneficiaries and their repayment behaviour

H_0: There is no relationship between farming experience of beneficiaries and their repayment behaviour.

Categories	**Repayment behaviour**			
	Poor	**Moderate**	**High**	
Less than 10 years	12	06	06	24
10 to 15 years	14	20	18	52
More than 15 years	11	32	21	64
Total	**37**	**58**	**45**	
Chi-square = 10.41		**p=.039**		**Significant**

The calculated Chi-square value 10.41 at 5 per cent level with 4d.f was found to be significant. This leads to reject of null hypothesis. Hence, it may be concluded that farming experience had influence on the level of crop loan beneficiaries.

Table-13: Association between annual income of beneficiaries and their repayment behaviour

H_0: There is no relationship between annual income of beneficiaries and their repayment behaviour

Categories	**Repayment Behaviour**			
	Poor	**Moderate**	**High**	
Below 150000	20	22	10	52
150000 to 300000	11	29	26	66
Above 300000	06	07	09	22
Total	**37**	**58**	**45**	**140**
Chi-square = 10.13		**p=.038**		**Significant**

The calculated Chi-square value 10.13 at 5 per cent level of 4 d. f was found to be significant. This leads to reject of null hypothesis. Hence, it may be concluded that annual income had influence on the level of crop loan beneficiaries.

Table No-14: Constraints experienced by beneficiaries

Problems	**No of respondents**	**Percentage**	**Rank**
Loan Procedure	**98**	**70**	**I**
Recovery procedure	**83**	**59**	**III**
Lack of awareness	**49**	**35**	**VII**
Price fluctuation	**84**	**60**	**II**
Crop failure	**72**	**52**	**V**
Family issues	**55**	**39**	**VI**
Poor marketing	**82**	**59**	**IV**

The data presents in Table indicates that in the study area, complicated process for obtaining crop loan and Fluctuation in price were the major constraint reported by the respondents. Recovery procedure is stringent were reported by 59 percent respondents and was ranked third. Poor marketing of produces were reported by 59 percent of the respondent. 52 percent respondents reported Crop failure due to natural calamities fifth in importance. Expenses on serious illness of the family members or social events were reported by 39 per cent respondents.

SUMMARY OF THE FINDINGS AND SUGGESTIONS

The cooperatives, having the local touch and being in touch with the financial problem of the area concerned, are in a definitely better position to distribute funds to the right persons. The agriculture credit institution in India has undergone qualitative as well as quantitative transformations in recent years. In order to meet the increasing demand for credit in the agriculture sector primary agricultural credit cooperative societies have

ISSN 2394 - 7780

substantially increased their scale of operation, thereby causing remarkable decline in the relative share of non-institutional sources. No doubt, financing agriculture by the cooperatives is a novel programme to uplift the rural, economically weaker and downtrodden sections from the clutches of poverty. In a country like India, wherein underemployment and disguised employment prevail in the rural areas, financing agriculture by the cooperatives would go a long way in generating income continuously, if implemented properly. But it is interesting to know to what an extent the financing efforts of the cooperatives have succeeded in increasing the income and thereby the living condition of the beneficiaries under agriculture. It makes us think whether we can really succeed in alleviating the poverty of rural masses by providing loan facility to undertake agriculture. However, the efforts of the cooperatives in financing agriculture are commendable. Nevertheless, we can pinpoint some of the problems confronted by both the beneficiaries as well as the banker.

The foremost problem of the farmer is the insufficiency of finance provided by the societies. Majority of the respondents have expressed the reasons for failure in the agriculture is shortage of finance, since the labour cost is increased remarkably during recent years, the cost of cultivation has been raised.in order to increase the productivity of land scientific techniques are to be adopted and thus majority failed in repayment of loan amount. However, these all require a higher amount of capital. Since the majority of the beneficiaries are coming under middle-income group they don't have their own fund to invest in agriculture. The reasons for the above-mentioned problem may be the normal credit limit (the maximum amount of loan that can be issued for a farmer with respect to the condition of his land), which is fixed by the bank along with the land technicians and large farmers. Since the small farmers are not taken into account while fixing the NCL and the need for finance is more for them it is advisable at least 20% of the small and medium farmers are to be invited while fixing the NCL. The farmers can get sufficient amount of assistance so as to enable them to undertake agriculture, to generate continuous income and repay the loan amount.

- In rural areas the major problem is associated with marketing the produced goods. It is well-known fact that farmers do not get adequate price for their produces. If they want to carry their produces to the market, which is situated in faraway town, it will be costly and again transportation, bad roads are the major problem. As a result, those who utilized the loan productively for agriculture are compelled to incur loss. Therefore, it has been suggested that the basic infrastructure facilities like good market and roads with good conditions must be provided in the rural areas to pursue agriculture profitably.
- At present, when the cooperatives are entrusted with divers' functions it becomes impossible for them to devote exclusive attention to any one of the activities financed by them. No doubt, their functions have got multiplied but, not their staff. Under these circumstances, the cooperatives are finding it extremely difficult to ensure the productive utilization of the loan for the purpose repayment by maintaining personal contact with the borrowers. Hence it has been suggested that the cooperatives must provide with additional employees along with other infrastructure facilities.
- The majority of the beneficiaries of agriculture are not entirely depending on agriculture as their total source of income. They have other sources as their subsidiary occupation and income. Thus, a majority of the beneficiaries who have availed of loan facilities for agriculture diverted the funds to their subsidiary source of income or to unproductive purposes. As a result, they have failed miserably to increase the income from their main occupation and repay the loan amount. Therefore, it is suggested that the cooperatives should ensure the end utilization of the loan amount by conducting proper follow-up action.
- One more problem is regarding the repayment period of short-term loans. The short-term loan or the crop loans are to be settled within a period of 12months, which the farmers' especially small farmers find it very difficult to do in such shorter period. Therefore, it is suggested to the cooperatives to think over again.
- Identifying the right beneficiary for granting the loan is another problem which the cooperatives face while lending. While lending the loan it is very important factor that the cooperative should more carefully ensure that the loan reaches the right person and also at the right time.so sufficient care must be taken while lending.
- Since the rate of interest is very less, majority of the beneficiaries is lured by this interest rate to obtain the loan facilities. In other words, majority of the beneficiaries have availed of loan facilities only for the sake of getting loan at cheaper rate on interest. Since these beneficiaries have borrowed not with the real intention of pursuing agriculture, have given less importance to the field and diverted the funds to other purposes. Hence it has been suggested that, the cooperative should create awareness in the minds of the beneficiaries that, there should be a creation of assets, continuous must be made to understand that the loan facility is given not mainly with the intention of transfer of fund but, with something more than that.

ISSN 2394 - 7780

- The variables like age were found to have non-significant association with repayment behaviour of beneficiaries. Education, farming experience, size of family and annual income was found to have significant association with repayment behaviour of crop loan beneficiaries.
- The data regarding suggestions for overcome the constraints are, issuing process of crop loan should be very simple ranked first, good marketing environment should be provided by Govt. ranked second. Borrowing, repayment and recovery procedure should be flexible ranked third. Interest rate should be low in crop loan scheme, ranked fourth. Knowledge regarding credit utilization and repayment should be provided by bank/institution ranked fifth in importance.

CONCLUSION

Today, more often we can observe in rural areas that, a large number of people standing in queues in front of cooperatives for availing loan facilities for various purposes under different schemes.it show the courage that they have developed to avail of banking facilities in recent days. There was time when activities of the cooperatives were primarily confined to some classes and it was a dream of rural people to avail of such services from the bank during those days. There is nothing wrong if we say that, these rural people have come to know about the banks because of their lending programmes under various governments sponsored schemes.

Agriculture is an opportunity for rural masses to raise their standard of living and as an avenue, for the cooperative to deploy credit in rural areas, has given special emphasis in recent years. in spite of this social emphasis, ‘financing agriculture 'has become less productive and it has failed to fulfil its real objective because of leakages in various phases of the scheme like policy making, identifying the target group, resource allocation, programme implementation and so on. A number of frauds, in various forms more or less by all the individuals involved in the system; have been taking place and ultimately spoiling the real objectives and spirit of financing agriculture. moreover, excessive emphasis focused on agriculture regardless of the availability of necessary infrastructure facilities has also contributed to the system to become a ‘less successful' one.

Nevertheless, the system of financing agriculture has benefited some really deserving rural beneficiaries. Being in a democratic country; abundant in human resources belonging to diverse religion, races, attitudes and behaviour, we cannot expect 100% positive result in any field. But, by considering only the net positive results, we can try to minimize the negative aspects of the process. Here it seems appropriate to quote an Arabian proverb; which reads as "do not complain because the rose bush has thorns, rejoice that the thorn bush bears roses". Indeed, 'financing agriculture' is a novel programme like a rose bush or plant. We cannot complain the whole system just because it has shortcomings. But we have to consider the other side of the coin that; there are people who have succeeded in raising their standard of living by way of productively utilizing the assistance given by the cooperative for agriculture.

REFERENCES

- Addisu,M.(2006). “Microfinance repayment problems in the informal sector in AddisAbaba”. Ethiopian Journal of Business and Development. Volume 1 and Number 2.
- Aynew-Belay, K.S. Suhag, R.C. Hasija and Mehta, V.P. (2003). Structure and flows of agricultural cooperative credit in Haryana: a case study of PACS. Annals of Agri Bio Research, 8 (2): 131-142.
- Badodiya, S.K., Shakya, S.K., Daipuria, O.P., Bisen, U. and Rajput, J.S. (2009). Repayment behaviour and its association with characteristics of crop loan beneficiaries. Research link. 7(5): 14-15.
- Caudill,S.B., Gropper, D.M. and Hartaska, V. (2009). “Which microfinance institutions are becoming more cost effective with time? Evidence from a mixture model”, Journal of Money, Credit and Banking, Vol. 41 No. 4, pp. 651–672.
- Dalla Pellegrina, L. (2011). “Microfinance and investment: A comparison with bank and informal lending”, World Development, Vol. 39 No. 6, pp. 882–897.
- Field, E., Pande, R., Papp, J. and Rigol, N. (2011). “Debt structure, entrepreneurship and risk: Evidence from microfinance”, Harvard Working Paper.
- Gandhimathi ,S. and Vanitha, S. (2010). Determinants of Borrowing Behaviour of Farmers – A Comparative Study of Commercial and Co-operative Banks. Agricultural Economics Research Review. 23 (1):135-1

International Journal of Advance and Innovative Research
Volume 6, Issue 2 (XII): April - June, 2019
ISSN 2394 - 7780

A STUDY ON COTTON CULTIVATION IN THENI DISTRICT, TAMILNADU

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ABSTRACT
Cost studies in agriculture provide an important part of information and knowledge essential for the formulation and evaluation of Economic policies both at micro and macro levels. Data relating to cost and return structure of cotton cultivation between small and large farmers are taken into consideration and analyzed. In this study focused cotton cultivation in theni district, Tamil Nadu. India occupies an important place among the cotton growing countries of the world. The economic upliftment of agriculturist of India and the rapid development of textile industries much to the continuous how of new varieties and hybrids developed of cotton breeders over the past 60 years cotton crop occupies altogether about 5 to 6% of the total cultivated area and is distributed over nine states. India achieved near self-sufficiency in cotton lint and has remained a significant textile exporter over the last 25 years. In India cotton production were around 1423 million bales in 1996-97 with nearly 9.12 million hectares of land under cotton cultivation and 12.77 million bales in 1998-99 with 9.04 million hectares of land under cultivation. The agricultural sector together with its sub sectors is the number one livelihood provider in India (india.gov.in 2016). In the 1950's the agricultural sector contributed with around 52% of the GDP in India whilst it today it only contributes with around 18% (Statistics Times 2015).

1.1 INTRODUCTION

India occupies an important place among the cotton growing countries of the world. Cotton plays a dominant role in India's agrarian and Industrial Economy. India is the world's third largest producer of cotton, after China and USA cotton production has been the special pride of India for many countries. Cotton occupies a unique position among the commercial crops of India. The economic upliftment of agriculturist of India and the rapid development of textile industries much to the continuous how of new varieties and hybrids developed of cotton breeders over the past 60 years cotton crop occupies altogether about 5 to 6% of the total cultivated area and is distributed over nine states. India achieved near self-sufficiency in cotton lint and has remained a significant textile exporter over the last 25 years. In India cotton production were around 1423 million bales in 1996-97 with nearly 9.12 million hectares of land under cotton cultivation and 12.77 million bales in 1998-99 with 9.04 million hectares of land under cultivation. In agro ecological regions of cotton cultivation (Northern Zone, Southern zone and central zone) productivity is the highest in the northern zone and the lowest in the central zone. The agricultural sector together with its sub sectors is the number one livelihood provider in India (india.gov.in 2016). In the 1950's the agricultural sector contributed with around 52% of the GDP in India whilst it today it only contributes with around 18% (Statistics Times 2015). The credit intensity within this sector has gone up substantially. This together with the fact that the average land holding for farmers has gone down from 2.28 hectare per farm in 1970 to 1.23 hectare in 2006 makes the agricultural sector a challenging one for farmer profitability (Press Information Bureau, Government of India 2016).

1.2 COTTON CULTIVATION IN INDIA

The cotton growing states are classified according to geographical regions. The northern region consists of Nagapattinam, Namakkal, Maduri, Sivagangai. The central region consists of Salem, Perambalur and Karur. The southern region consists of Tamil Nadu, Erode, DIndigul and Theni. In cotton production according to area cultivated Perambalur, comes first followed by Salem, Dindigul, Theni, Karur, Nagapattinam, Namakkal and Tamilnadu. These are the major states engaged to cotton production. Though it I an important commercial crop grown all over the country. Its production is concentrate mainly in state like Nagapattinam, Namakkal, Madurai, Salem, Dindigul and Theni. The districts together account for more than 95 percent of the total area and the production of cotton in the country.

1.3 IMPORTANCE OF COTTON CULTIVATION

Cotton accounts for nearly half of the world's textile production and is a vital part of any economies (WWF 2013). Cotton production is the main source of income for approximately 100 million families in over 70 countries. In the last decade about 300,000 Indian farmers have committed suicide. This makes the suicide rate for farmers approximately 47 percent above average in India (Philpott 2015). The national levels are already high, since India has the 11^{th} highest suicide rate in the world (WHO 2016). The most common cause is bankruptcy or indebtedness (Government of India 2012-2015).

ISSN 2394 - 7780

Table-1.1: The area production and yield of cotton in Tamil Nadu during 2007-2017

Year	Area (in Lakh Hectares)	Production (in Lakh bales)	Yield (per hectare Kgs)
2007-2008	2.00	5.00	425
2008-2009	0.85	3.00	600
2009-2010	1.03	3.75	619
2010-2011	1.29	5.50	724
2011-2012	1.4	5.00	668
2012-2013	1.00	5.00	850
2013-2014	0.99	4.00	687
2014-2015	1.09	5.00	780
2015-2016	1.04	5.00	817
2016-2017	1.22	5.00	697

Source: www.cotton.gov.in

It is seen from Table 1.1 that are under cotton cultivation was 2.00 hectares in 2007-2008. The area under cotton has fluctuated during the period from 2007-2008 to 2016 – 2017. The production of cotton was found to be minimum in 2007-2008 and maximum in 2012-2013. As against the production target of 5.00lakh bales (170kgs each) the achievement in 2016.17 was 5.00 lakh bales. At this level it showed an increase of 1.22 percent over its preceding year's level of 697lakh bales. The yield of cotton in Tamil Nadu registered the maximum of 850 kgs per hectare in 2012-2013.

Table-1.2: The district wise area, production and yield of cotton in India during 2016-2017

District	Area	Production	Yield per hectare in Quintals
Kancheepuram	150	312	332
Cuddalore	1305	1906	387
Villupuram	4788	10867	312
Vellore	3028	4185	431
Thiruvannamalai	2289	4340	348
Salem	11517	20423	323
Namakkal	3204	6512	267
Darmapuri	10132	11176	251
Coimbatore	8321	10948	218
Erode	6259	15128	384
Tiruchirapalli	5266	8369	239
Karur	374	689	291
Perambalur	9666	15309	294
Pudukottai	290	497	217
Tanjavur	1474	3178	400
Thiruvarur	2207	4564	238
Nagapattinam	2430	4473	289
Madurai	10674	7803	96
Theni	4238	6637	235
Dindigul	3189	6459	283
Ramanathapuram	4300	4367	119
Virudhunagar	18700	20711	162
Sivagangai	497	572	200
Thirunelveli	6328	11591	381
Thoothukudi	8142	5973	183
State	128776	187002	244

Source: season and crop report 2016-2017 Government of Tamil Nadu

It is seen from the table 1.2 the area under cotton has fluctuated during the year 2016-2017. The production of cotton was found to be minimum level is Kanchipuram district and maximum level is Salem District. The yield of cotton in Erode, Registered the maximum of 384 Quintals per Hence. About 90 percent of the crop is grown in leading cotton producing districts like Viruthunagar, Dharmapuri, Perambalur, Salem, Thoothukudi, Coimbatore, Madurai, Theni and Thiruchirapalli. The remaining 10% of crop is grown in district like

ISSN 2394 - 7780

Pudukottai, South Arcot, Thanjavur, North Arcot, Thiruvannamalai, Dindigul, and Chengalpattu currently cotton yield per hectare and as many as 26 districts in Tamilnadu grow cotton in a commercial scale.

1.4 SCOPE OF THE STUDY

Cotton production is necessary to meet the basic requirements of the large and overgrowing population for continuous increasing in the productivity of land, substantial growth in fertilizer use becomes necessary, chemical fertilizers. Assume great importance in removing soil fertility constraints and continuously raising land productivity through facilitating technological changes. The study mainly focused such objective base to know the socio-economic analysis of cotton cultivators and to analyse the problems of cotton cultivation in Theni district.

1.5 METHODOLOGY

The study of methodology which includes selection of the study area sampling technique, collection of data, method of analysis and tools used and the measurement of variables used in the present study. Stratified multistage random sampling technique was adopted for the study, Theni district as the universe, the taluks selected as the stratum the village as the primary units of samplings and the farmers cultivating cotton as the ultimate units. Area under cotton in each of 5 taluks in Theni district where obtained from the records of the statistical office, Theni. Among the five taluks, Andipatti and periyakulam taluks which shows the largest areas under cotton cultivation (58.57 percent) has been chosen for the study. Andipatti taluk having two blocks namely Andipatti and Myladumparai and consists of 25 Revenue villages. Periyakulam taluks consists of only one block and having 22 revenue villages. In each taluks, revenue villages were arranged in a decending order of area under cotton cultivation. The first five villages in each taluks were selected which account for more than 60 percent of the proportionate probability random sampling techniques has sent been used to select 100 each in MCU-5 and LRA-5166 cotton variety.

The primary as well as secondary sources of data have been collected for the present study. In order to collect primary data, a well designed interview method scheduled vide was administered tentatively to give farmers in each variety to test validity of the scheduled this pre-test specialized the removal of non response and unwarranted questions and the modified final scheduled was prepared on this basis.

1.6 TOOLS USED A MEASUREMENT OF VARIABLES

In order to measures the costs and returns the concept of cost A and Cost c have been used.

Cost A denoted by the cost on human labour, bullock labour fertilizer, pesticides, irrigation, mechanical power and seeds. It also called as an operational cost.

Cost C refers to interest on working capital rent on land and land revenue, cusses, taxes and depreciation of farm machinery.

Percentage analysis

Percentage analysis is used for finding the socio economic conditions of the respondents

$$\text{Percentage} = \frac{\text{Number of the respondents}}{\text{Total number of respondents}}$$

Lorenz curve

The Lorenz curve is used to study the degree of inequality in the distribution of the income among the respondents. It all the respondents have equal income the Lorenz curve of curve distribution the Lorenz curve of income distribution the diagonal could closer to the line.

Gini Ratio

The Gini co-efficient is use to measure the level of inequality in the distribution of income among the respondents.

$$L = \sum_{K-1}^{n} = \frac{(P_k - P_{k-1})\,(Q_k + Q_{k-1})}{10000}$$

Where

L = Gini Ratio

ISSN 2394 - 7780

R_k = Cumulative percentage of the respondents

Q_k = Cumulative percentage of the income

N = Number of respondents

The district has wide hill areas with vegetation the perennial streams. This region is the most fertile area of the district. The level tracts of theni taluk and some portion in Andipatti taluk are watered by the periyar system 25 percent of periyakulam taluk is irrigated by vaigai and 75 percent is irrigated by majjalar systems.

Table-1.3: Taluk –wise population of Theni District

S.No	Taluk	Male	Female	Total
1	Theni	100352	99631	199983
2	Bodinayakanur	90426	90363	18079
3	Periyakulam	100907	107451	217358
4	Andipatti	107856	104844	212700
5	Uthamapalayam	217142	217927	435069
	Total	**625683**	**620216**	**1245899**

Source: District statistical Hank book – 2016-2017

Table-1.4: The distribution of main workers in different categories 2016-2017

Category	Number	Percentage
Cultivators	63,371	17.34
Agricultural laborers	2,34,456	64.16
Workers in household Industry	19,840	5.43
Other workers	47,769	13.07
Total main workers	3,65,436	100.00

Source: District Statistical Hand Book 2016-2017

Table 1.4 shows that agricultural labourers constituted a major working force in Theni district of the total workers, 17.34 percent were cultivators 64.16 percent were agricultural labourers, 13.07 percent were other workers and 5.43 percent were employed in the household industry.

1.7 IRRIGATION

Theni District has achieved agricultural prosperity during the last two decades due to increase in irrigational facilities and improvement in modern technology methods of cultivation. In the study area Periyar and Vaigai are important irrigation schemes.

Table-1.7: Sour5es of irrigation in Theni District 2016-2017

Particulars **a. Net irrigation Area by**	**Area (in hectares)**
Govt. Canalls	12755
Tanks	5667
Wells	44903
Other sources	1674
Total	**64999**
b. **Area irrigated more than once**	1382
c. **Gross irrigated Area**	66381

Source: District Statistical Hand Book 2016-2011

Table 1.7 reveals that wells irrigation is the chief source of irrigation followed by canals. There are 44.903 wells and canals irrigate 12,755 hectares and tank irrigation covers 5.667 hectares. The gross irrigated area covers 66.381 hectares.

1.8 AREA UNDER MAJOR CROPS

Nearly 82 percent of the working populations are engaged in agriculture and 40.56 percent of net such area has been under food crops. The well serial modern technological methods of cultivation systems and the framing operation intensive and extensive have increased the agricultural production to a laudable extent.

ISSN 2394 - 7780

Table-1.8: The area of cultivation major crops in Theni District during 2016-2017

Particulars	Area in hectares	Percentage
Rice	19833	15.10
Millets	24443	17.85
Pulses	13997	10.66
Sugarcane	9527	7.25
Oil seeds	22261	16.94
Cotton	9320	7.10
Cardamom	1242	0.95
Coffee	3832	2.92
Silk cotton	2593	1.97
Grapes	1155	0.88
Banana	4498	3.42
Others	19649	14.96
Total cultivation area	**131355**	**100.00**

From table 1.8 one could inter that millets and oil seeds are the most popular crops cultivated in Theni district in 23.443 hectares respectively. Cotton is also popular crop with in an area of 9-320 hectares.

Table-1.9: Yield of major crops in Theni District

Particulars	Area in hectares	(Yield in Kg/ha) Production in tones
Poddy	19833	249785
Millet	23443	313461
Pulse	13997	15634
Grandnut (unshelled nuts)	9830	40178
Cotton	9320	113412
Sugar cane	9527	136096
Gingelly	1738	2942

Note: Production in bles
Source: 'G' Return particulars (2016-2017)

Table 1.9 shows that the most predominantly cultivated crop with the yield of 313461 metric tones is millet followed by paddy (249785 metric tones) sugarcane (136096 metric tones) and (113412 metric tones) cotton is cultivated in an area of 9320 hectares.

1.9 ANALYSIS AND INTERPRETATION

In social science research, it is essential to analyze the respondents' characteristics, because this would give a basic and clear understanding about the background of the sample growers. They could also help interpreting the data gathered in an effective way.

Table-1.10: Age – Wise Classification

Age in year	No of respondents	Percentage
25-35	14	14
35-45	20	20
45-55	38	38
55-65	18	18
65 and above	10	10
Total	**100**	**100**

Source: Primary date

Age is a very important feature to study the background of the respondents. Table 1.10 explains the age wise classification of the cotton grower in the study area. It is observed from the table that 14 percent of the respondents are in the age group 25-35 years. 20 present of the respondents are in the age group 35-45 years. 18 present of the respondents are in the age group 55-65 years. Only 10 percent of the respondents are aged 65 and above. The majority 38 percent of the respondents are in the aged in 45-55

Table-1.11: Educational Qualification Of The Respondents

Educational Qualification	No of respondents	Percentage
Illiterate	24	24
Primary School	18	18

ISSN 2394 - 7780

Middle school	12	12
High school	12	12
Hr.Sec.School	20	20
Degree and above	14	14
Total	**100**	**100**

Source: Primary date

It is clear from the table 1.11 that a vast of majority of the cultivators is illiterate with 24 percent of them belonging to the illiterate. 18 percent of the respondents are primary school level, 12 percent of the respondents are middle school level and 12 percent of the respondents are High school level. 20 percent of the respondents are Hr.Sec.School level and only 14 percent of the cotton growers are Degree holders because of the poor Economic condition,

Table-1.12: Size of Land Holding

Total land size (in area)	No of respondents	Percentage
Less than 5	40	40
5-10	24	24
10-15	20	20
15-20	16	16
Total	**100**	**100**

Source: Primary Data

Table 1.12 reveals the size of land holding of the cultivators in Theni district only 16% of the farmers possess 15-20 acres land. 24 percent of the farmers are holding 5-10 acres, 20 percent of the farmers are holding 10-15 acres of land and 40 percent of the farmers are holding less than 5 acres of land.

Table-1.13: Types of Farm Size

Types of cultivators	No of respondents	Percentage
Owned	50	50
Leased	28	28
Owned & Leased	22	22
Total	**100**	**100**

Source: Primary Data

Table 1.13 shows the nature of land used by cultivators 50 percent respondents are having own land 28 percent of the respondents are having leased land and 22 percent of sample grower are having own land at the same time his category farmer also using leased land. It is understood from the above table that the majority of the respondents of the extent of 50 percent have used their own and cultivation 28 percent of the respondents have leased land for cultivating cotton where as 22 percent of them have own land as well as leased land which a used for cotton cultivation.

Table-1.14: Source of Irrigation

Source of irrigation	No of respondents	Percentage
Open well	42	42
Bore well	24	24
Cannel	24	34
Total	**100**	**100**

Source: Primary Data

From table 1.14 it is inferred that the source of irrigation for 42 respondents are open wells, 24 sample growers are using Bore well irrigation whereas 24 farmers are using the cannel.

Table-1.15: Annual Income of the Respondents

Income	Cumulative Income	C.I%	No. of respondents	Cumulative Respondents	C.R.%
5000	5000	10	38	38	38
10000	10000	30	30	68	68
15000	15000	60	20	88	88
20000	20000	100	12	100	100

Gini Ratio: 0.26

ISSN 2394 - 7780

It is found that the Gini Ratio value, leads to the inference that there is loss inequality among the sample respondents. The researcher has used the Lorenz curve to measure the distribution of income among the sample respondents. The diagram of the Lorenz curve axis nearer to the line of equal distribution shows the dispersion or variation among the respondents.

Table-1.16: Total Expenditure of the Respondents

Expenditure	No of respondents	Percentage
Below 4000	40	40
4001-9000	24	24
9001-14000	20	20
Above 14000	16	16
Total	**100**	**100**

Source: Primary Data

From Table 1.16 depicts the expenditure levels of the respondents the highest level of 24% of respondent spend between Rs.4001-9000 and lowest 16 percent of the respondents spend between above 14000. Most of the respondents counting for 20% of the total spend between Rs.9001-14000 only 40% of the respondents spend below Rs.4000.

1.10 COST AND RETURNS STRUCTURE OF COTTON PRODUCTION

Cost studies in agriculture provide an important part of information and knowledge essential for the formulation and evaluation of Economic policies both at micro and macro levels. Data relating to cost and return structure of cotton cultivation between small and large farmers are taken into consideration and analyzed.

1.11 FARMING OPERATIONS

It is understood that the farmers used different energy inputs at various stages of farming operations particularly in cotton cultivation. The various farming operating in cotton cultivation in the study area is the preparation of soil, pre-treatment, irrigation, sowing operation managing, fertilization, pesticides, weeding, harvesting and post – harvesting operations for the present study the following farming operation are broadly classified into following categories.

i) Preparatory cultivation

ii) Seeding and sowing

iii) Irrigation

iv) Weeding and

v) Harvesting

1.12 BENEFITS FROM COTTON CULTIVATION

For the cotton Grower

1. Buying seed will no more be a nightmare for the farmer quality seeds of the appropriate variety will be supplied by CA.
2. Inputs purchase will be hassle-free. Good quality fertilizers and pesticides will be supplied through involvement of CA at reasonable rates.
3. Low interest loan will be available to them for purchase of inputs.
4. The farmer will get the benefits of modern technologies in crop management to reduce expenditure and maximize productivity.
5. Marketing of cotton will be easy for the farmer. He will get better price for the produce.
6. The Government may come out with concessions in future to benefit farmers in integrated cotton cultivation.

1.13 CONCLUSION

India is known for its best agricultural activities, with lot of valuable actual resources and human resources. The agricultural growth strategy of the past has intensities the inter class inequalities. The study reveal cotton cultivation is most profitable to the small and large farmers the government can pay attention by providing transport facilities. The government can take necessary steps to release water from primary of appropriate period (i.e.) during cotton cultivation time period which will enable the farmers to get a good yield of cotton. The textile sector contributes to one-third export earnings of India and cotton alone constitutes nearly 70% of

ISSN 2394 - 7780

raw material. In agro ecological regions of cotton cultivation (Northern Zone, Southern zone and central zone) productivity is the highest in the northern zone and the lowest in the central zone. Though India has been a traditional cotton grower, cotton producers and government at present are engaged in facing the challenge of modernizing and upgrading programmes. They are keen in finding ways to improve the quality of the cotton fiber as well as its productivity and total output.

REFERENCES

- **Hanumatha Rao,** "Changes in costs an returns with the use of high yielding seeds "Technological change and Distribution of gains in Indian Ltd Delhi 2005, pp.75-88.
- **J.D.Sing and K.V.Govidarajalu** "New technology of paddy yield: Adoption and Yield differentials" New seeds adoption and yield sterling publishers pvt. Ltd., New Delhi 2009, pp.3-89.
- **James quingly Harison,** "Agricultural modernization and income distribution" Ph.D, "An economic analysis of the impact of new seed varieties on the crop production of large and small farms in India (Mimeo) Ph.D., prinkaton university 1972.
- National cotton council of America Rankings cotton org (2011-03-13) Retrieved on Organic Trade Association 2011-11-27.
- **P.V.Rajagopalan** studies on cost of production of major crops in Tamilnadu department of agricultural of agricultural Economics. Tamilnadu agricultural university, Coimbatore 2008, pp2-3.
- **Quazi M. Alarm and A.K.M Habibul Haque,** "Wheat cultivation in Bangladesh: Economic profile Economic affairs, vol 43, Qr H December 2002 pp 215-217
- **Sunder Singh et al.,** "Energy and cost requirements for cultivation of Rice, Wheat and Maize" Indian journal of agricultural: sciences September, 2009, p.558
- **Technology review (2006-11-21)** Retrieved on 2011-11-27 The environmental justice foundation "Environmental foundation reports on cotton" retired February 22nd, 2010.
- **Wude Yang et.al. (2012)** Soil Nutrients and Microflora The Implications of Utilizing Market Information and Adopting Agricultural Advice for Farmers in Developing Economies. *Production and Operations Management,* 24(8), pp. 1197-1215.
- **Mohammad Maqbool Bhat (2013)** The Sanhati Collective Farmer Suicides in India: A Policy-induced Disaster of Epic Proportions. http://sanhati.com/excerpted/4504/#2 [2016-03-13]
- **Bagade and Chalwadi (2013)** Global *environment outlook. Past, Present And Future Perspectives*. (3).Earthscan Publications, London.
- **Korade and Rakesh (2014)** Supporting Smallholders to Access Sustainable Supply Chains : Lessons from the Indian Cotton Supply Chain. *SustainableDevelopment,* 22(5), pp. 289–310-310.
- **Mishra and Pankaj (2015)** Suicide data. World Weather Online (n.d.) Aurangabad Monthly Climate Average, India.
- **Nagaraj *et al* (2016)** Lost in Translation? Language Culture and the Roles of Translator in CrossCultural Management Research. *Qualitative Research in Organizations and Management*, 3(3), pp. 231-245.

International Journal of Advance and Innovative Research
Volume 6, Issue 2 (XII): April - June, 2019
ISSN 2394 - 7780

A STUDY ON EXAMINING THE EFFECTIVENESS OF THE CROP INSURANCE SCHEMES IN INDIA AS WELL AS IN KRISHNA DISTRICT, ANDHRA PRADESH

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ABSTRACT
In the Krishna region agriculture is the main source of livelihood for the people and this region is predominantly known for crop cultivation. Agriculture in this region is badly affected due to poor rainfall and non-availability of water from most of reservoirs. Flood too sometimes spoils. The area under crops in Krishna region has decreased over the period of time. Among the regions, the most severely affected by both shortage and abundance of water, scarcity when water from reservoir is insufficient and does not reach in time, and when there is higher rainfall in the coastal areas due to cyclone or depression in the Bay of Bengal resulting in flood. In both situations, agriculture is affected. The immediate impact of the various disasters affecting agriculture has been partial or total loss of crop production from the particular season, and reduced productivity of land due to salinity during flood or lack of irrigation during droughts. In addition to this it also causes a loss in investments already made in seeds, labour, fertilizers and pesticides. As a result agricultural labourers and marginal farmers almost reach a stage of destitution. Farmers without a reservoir of savings would be left with no money to invest in the next crop season and likely to be driven to non-institutional high interest and fall in the trap of 'vicious circle' of poverty.

Keywords: Agriculture, Insurance, Poor rainfall, Crops, Crucial, Poverty.

INTRODUCTION
Agriculture in India has been described as a gamble in the hands of rains and, in addition, numerous natural and economic factors add to the uncertainty. A crop failure means not only the loss of a season, family income but also of the capital invested in the crop. As most of the farmers are resource poor and belong to small and marginal category their capacity to bear such loss is very limited, the resulting adversities of farmers lead to their failure to pay rents and taxes, loss of purchasing power and mounting debts. This leads to reduced harvesting and curtailment of agricultural operations in the subsequent seasons consequently increasing the unemployment among agriculture labour. Crop failures affect also the flow or raw materials to agro-industries. This way the entire economy of the country is affected by crop losses of which the farmers are direct and worst victims. In the interest of stabilizing the economy, it is, therefore, clear that adequate protection should be provided to the farmers to continue their agricultural operations unhampered and the economy undisturbed.

Agricultural sector plays a significant role in the process of economic development of India. Agriculture provides food to nation, labour, contributes raw materials to market of industrial goods and earns foreign exchange. Agricultural growth is an integral part of the overall economic development of a nation. Agricultural contribution towards the global economy was very low, but it remains central part to the lives of many people. According to the World Bank reports in 2018, 19 percent of the world's population was directly engaged in farming, but agricultural and allied sectors contributed 2.8 % of the total income. In India, Agriculture and allied activities contributed nearly 50 % towards the national income. Nearly 72 percent of total working population was engaged in agricultural sector. Agriculture is the means of earning livelihood for almost two thirds of the population in India. Most of the Indian population lives in its villages; therefore the share of agricultural sector becomes inevitable in the economic development of India. The share of agricultural sector in GDP has declined from 26.2% in 2000-01 to 21.7% in 2005-06. The rate of growth has also been fluctuating from 0% in 2000-01 to 5.9% in 2002-03 and as high as 9.3% in 2003-04 which again dipped to 0.6% in 2004-05. This is primarily because of decline in production while about 65.70% of population is depending on agriculture for their livelihood. Even after a decline in the share of agricultural sector of India, it is still considered to be the largest contributor to India's GDP. This confirms that Indian economy was mainly an agriculture based economy at the time of Independence.

NEED FOR CROP INSURANCE
In such a scenario, it is necessary to have a mechanism like crop insurance which would enable them to transfer their agricultural risks to a third party. In broader sense agricultural insurance provides the option for the farmers to manage the risk efficiently and also enable them to go for successive cultivation in the next season. Therefore, failure of crops is not a constraint to continue agriculture, unless it has negative impact on farming. Failure may act as a push factor to go for some other survival strategies. Hence such a process neither supports the livelihood of the farmers nor conductive for the growth of agriculture economy.

ISSN 2394 - 7780

OBJECTIVES OF THE STUDY

1. To critically examine the effectiveness of the crop insurance schemes in India as well as in Krishna District.
2. To examine and compare the characteristics of different farmers in terms of access to crop insurance.
3. To study the risks faced by the farmers in the Bay of Bengal Region in Krishna District

METHODOLOGY

Multi-stage sampling method was used for collecting primary data. At the first stage- Krishna District has been divided in to 3 regions and from each region one of the districts was selected. The farmers facing higher risk in agriculture are mainly in Nuzvid, Machilipatnam, and Vijayawada urban. So these districts were selected from Krishna District. At the second stage- from each of these selected regions 10% of Grama Panchyat based on highest area/ farmers covered under agricultural risk were selected by simple random sampling. At the third stage- 10 farmers each were selected from these selected GP.

REVIEW OF LITERATURE

Yasmin and Hazarika (2015, reported that the adaptability of MNAIS in Kamrup (rural) district of Assam was very low mainly because of the lack of awareness. They also stated that the insured farmers had to face a number of constraints like long claim settlement process and improper and inadequate CCE conducted in the area. It was further suggested that insurance literacy camps should be held from time to time and also the camps should ensure more participation from the farmers.

Mani and Selvanayaki (2012) in their study on the crop insurance scheme in Tamil Nadu concluded that there is lack of awareness among the farmers of Tamil Nadu about the various crop insurance related schemes, and that agricultural insurance has fared poorly in the state since its inception, at least in parts, because of the problem of moral hazard and adverse selection.

Bujar baruah (2012) states that there is a huge loss suffered by the farmers every year during the floods, but no claims as such are raised by the farmers, showing that the farmers are very much unaware of the crop insurance scheme and the claim settlement procedure.

RESULTS AND DISCUSSIONS

Table-1: Premium rates for different crops in Krishna District

S. No	Season	Crops	Premium Rate
1	Kharif	1. Rice 2. Maize 3. Green gram 4. Black gram	6.00 5.00 11.00 15.00
2	Rabi	1. Rice 2. Maize 3. Green gram 4. Black gram	6.00 5.00 11.00 15.00
3	Kharif & Rabi	Annual Commercial /Horticultural Crops	Actual Rates

Source of Data: DES, GOVT of AP

A subsidy of 5o percent in premium is allowed in respect of small and marginal farmers, to be shared equally by the centre and state. Initially it was proposed that the premium subsidy will be phased out on a sunset basis in a period of three to five years, but subsidy in premium is still continuing.

Table-2: Problems facing the agriculture in Krishna District

S. No	Reasons	Large	Marginal	Small	Medium	Total Sampling
1	Water do not reach on time	56 (56%)	17 (17%)	12 (12%)	15 (15%)	100 (100%)
2	No electricity connection	42 (42%)	31 (31%)	09 (9%)	18 (18%)	100 (100%)
3	Electricity not sufficient	41 (41%)	19 (19%)	23 (23%)	17 (17%)	100 (100%)
4	No Problem	0	0	0	0	0

Source of Data: Primary

ISSN 2394 - 7780

In above table 75 percent of the farmers totally depend on canal water for irrigation in which about 39 per cent of the farmers reported that water from different canal does not reach on time to undertaken for cultivation.

Table-3: Total crop loss report in Krishna Region

S. No	Total Crop Loss reported	Marginal	Small	Medium	Large	Total
1	Kharif Crops	46 (46%)	12 (12%)	31 (31%)	11 (11%)	100 (100%)
2	Rabi Crops	41 (41%)	23 (23%)	17 (17%)	19 (19%)	100 (100%)
3	Kharif & Rabi (Annual Commercial Crops)	56 (56%)	31 (31%)	06 (06%)	07 (07%)	100 (100%)

Source of Data: Primary

During the October 2018, the machilipatnam region was badly affected by flood due to consecutive machilipatnam division. Some farmers reported that for weeks paddy fields were submerged in water due to poor drainage and these floods affected prospects of pady and maize crops.

CONCLUSION

Since 1972 so many schemes of crop insurance have been launched in the country but they failed to influence the farmers and share the risk of farmers. Now days some farmers are committing suicide due to lack of risk management. And they are selecting the option of suicide rather than crop insurance. Hence there is need of serious concern of this problem of sharing the risk of farmers and protecting their crops against adverse weather and natural calamities. On this background, NAIS has been introduced since Rabi 1999-2000. There are so many expectations from NAIS but it also failed to meet farmer's expectations Government of India constituted a joint group to overcome shortcomings of NAIS. The group made in depth study and made important recommendation like reduction in the unit area of insurance to gram Panchayat for major crops, improving the basis of calculation of threshold yield, higher indemnity level of 80 per cent and 90 per cent coverage of pre-sowing / planting risk and post-harvest losses. Personal accident insurance cover and package insurance policy etc. based on the recommendation of joint group and views/comments of various stake - holders, proposal of Modified National Agricultural Insurance Scheme (MNAIS) was prepared and sent to the Planning Commission.

REFERENCES

1. Torkamani, J. 1998. Effects of Crop Insurance on Technical Efficiency and Risk Attitude of Farmers: An Applicati on of Stochastic Frontier Production. Iranian Journal of Agricultural Sciences. 29(1): 161-69.
2. Dandekar. V. M. (1976), "Crop Insurance in India", Economic and Political Weekly, June 26.
3. Vijay bhinandana, B and Suryamani, M.A. 1999. A comparative study on knowledge above crop insurance between insured and non insured farmers. Journal of Research, ANGRAU. 27(1&2):43-46.
4. Directorate of Economics and Statistics Department, Government of Karnataka, 2003.
5. Jennifer Ifft (2001), "Government V/S Weather: The True Story of Crop Insurance in India", Centre for Civil Society, Internship Paper no. 10.
6. Mishra, P.K. 1994. "Crop insurance & crop credit, impact of the comprehensive crop insurance scheme on cooperative credit in Gujarat. Journal of international development 6(5):529-568.
7. Lunawat, M.L. (1998), "Risk Management in Agricultural Insurance", the Insurance Times, Vol. No. XVIII no. 8, August, 1998, pp-3-8.
8. Manojkumar B. & Ajitkumar G. S. (2003), "Crop Insurance Scheme: A Case Study of Banana Farmers in Wayanand District", Discussion Paper no. 54, Kerala Researh Program on Local Level development, Centre for Development Studies, Thiruananthpuram.
9. Raju, S.S. & Chand, Ramesh (2007), "Progress and Problems in Agricultural Insurance", Economic and Political Weekly, May 26.

International Journal of Advance and Innovative Research
Volume 6, Issue 2 (XII): April - June, 2019
ISSN 2394 - 7780

ECONOMIC IMPACT OF RURAL CROP INSURANCE ON AGRICULTURAL GROWERS – A STUDY AT RURAL VIRAJPET (KODAGU DISTRICT)

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ABSTRACT
In the present economic condition in India, most of the population belongs to the category of middle class and population who are having small proportion of landholdings compared to the rich farmers having large holdings of land. Population who are having small proportion of land have to grow only traditional crops visit soil testing centers etc. frequently due to their poor soil conditions and natural calamities they will not be able to produce the required output of crops in their cultivation. Today cost of farming is sky rocketing and middle class population find very difficult to afford the entire costs. A frequent visit to banks, borrowing loans and meeting expenses of cropping is one of the biggest formidable challenges before middle class population (Farmers). One of the important alternatives available to get individual farmer and his family protected from these unexpected issues is opting for crop insurance. Crop insurance particularly focuses on providing solutions for unforeseen risks taking place to farmers due to any kind of natural calamities etc. Especially most of our rural middle class and poor farmer population is unaware about the benefits of the same. This paper throws light on impact of crop insurance especially in rural economics especially at rural Virajpet taluk of Kodagu district.

Keywords: Landholdings, Frequently, Sky rocketing, Formidable and Impact.

INTRODUCTION
Rural economy in India mostly compromises of unplanned infrastructure, under developed people and lack of education. Most of the populations live in lower standard of living. Awareness of natural calamities affecting anytime which can have a negative impact on crops is too little and also crop insurance. Due to one or other natural reasons, farmers suffer a loss, gets depressed in life commits or attempts to commit suicide and the whole family have to suffer with physical and mental agony. Growing inflation in our economy has negatively influenced on rural farmers, facilities and the benefits available, absence of qualified and professional experts etc.in the relevant agricultural fields have brought down the interest of small and marginal farmers of rural area. This will desperately bring lot of changes in the living conditions of rural farmers of this district. Large farmers are very much aware about crop insurance and have made their land as well as crops covered under the benefits of crop insurance. These farmers are also aware about the government subsidy available on the cultivation of innovative crop and make themselves eligible for the same. On the other side, most of the poor and middle class farmers and agriculturists especially from the rural areas of south Kodagu find difficult to afford insurance for their crops. This is because of lack of awareness, difficulty in affording payment of premium, lack of encouragement from their peer farmers (adjoining farmers) and also limited source of income. Over the years climatic changes have been deeply witnessed. This has also resulted in increasing heat, reducing water and depletion of water resources etc. This has resulted in absolute necessity of having crop insurance to cover sudden risks arising and unexpected expenses which shall keep rural farmers away from a kind of anxiety and mental maladies which they directly or indirectly make themselves and their families suffer in course of time. Crop insurance is necessary even for small and medium sized farmers especially for that population who stay in rural areas due to the following reasons:

1) Increasing inflation year on year will result in rise in maintenance costs.
2) To avail best facility provided by insurance company and to overcome crop losses.
3) To cover land and crops under the blanket of one single master policy.
4) To prevent depressions and suicides among small and medium size farmers.
5) To prevent direct and indirect exploitations of small and medium size farmers by large farmers.
6) To keep up the living standards of the farmers.

For people residing in rural areas crop insurance awareness is too little and moreover these populations are not much aware about unforeseen risk that can affect their crops anytime, the result of these risks can retard person's income and make him forcibly impoverished. After getting victim of destruction of crops farmers and

ISSN 2394 - 7780

his dependents have to undergo various kinds of tragedies in lives, as per government rules, these farmers should be paid compensation for the losses suffered by them. To get this compensation they have to undergo a lot of formalities which are very much lengthy and consume lot of time. The compensation is paid on the basis of nature of losses suffered by the farmer for which he has to use contacts and influence, which is practically impossible for majority of small farmers. The best alternative that acts as a protective shield against this problem is to go for crop insurance from a reputed insurance company which meets the requirements of population of rural farmers and provides better services with affordable premium cost.

A study carried out has pointed out that a very small percentage of rural population (less than 10 percent) especially in India has been covered by crop insurance. The difference is more striking when it comes to BPL (Belo Poverty Level) families who are very small and marginal farmers. Tight personal and family commitments, growing inflation, lack of awareness, no any other source of additional income can affect our small farmers a lot. This clearly signifies finite thinking levels of these small farmers who can easily become victims of risks arising out of blindfolded circumstances.

REVIEW OF LITERATURE

1) According to **Chinmaya R**, three recent incidents involving in farm care sector in Delhi have sparked wide spread outage over the alleged mercenary motives and callous conduct of high profile government officials. It is observed that there is lack of professional standards in terms of competence and compassion in settlement of claims. Three major issues that can be assessed in crop insurance are access, quality and cost. This can be very well set by developing wider coverage of insurance which is presently a requirement for meeting sustainable development goals in farming. Crop insurance is necessary to avail better protection for crops.

2) According to **Srinath Reddy K**, inadequacy in the level of services is compounded by improper claim settlements; whereas some of the private insurance companies boast of high quality advanced care for policyholders and compete with each another. Necessity of crop insurance arises due to rising risks that are very likely in the events like natural calamities that are likely to destroy the crops completely; by the virtue of this small farmer suffer from heavy losses.

3) According to **Ravindra Ramrao**, cost of premium is a major challenge in private insurance companies, where farmers find difficulty to bear the same. This will be directly influenced by the overall cost burden on the small farmers. High out of pocket and unexpected spending on on crop inputs, other direct and indirect expenses have directly lead to unacceptable levels of impoverishment among rural farmer population especially those who grow single variety of crops and are dependent on them, also are coming from poor and middle class background in their economic status.

4) According to **Sampath Kumar**, crop insurance required for individual and marginal farmers should be a fair one. Presently crop insurance covers a small risk pool and provides only limited cost coverage to policy holders. This should cover a large sum insured and also include multiple crops under the same policy. Only a part of claim settlement coverage is provided which finds difficult to have access to better living standards.

5) According to **Parameshwaran**, social insurance schemes do increases to advance care, but fail to provide financial protection as they provide only a part of limited cost coverage to policy holders. Rural populations, especially small farmers have very lesser access to such insurance facilities especially those who come from economically backward families.

OBJECTIVES OF THE STUDY

A major objective of this study is as follows:

1) To understand the awareness level on rural crop insurance.

2) To study the importance of rural crop insurance for rural farmer population.

3) To study the perception and satisfaction level of policy holders.

4) To give suggestions based on findings of the study.

METHODOLOGY USED

Primary data is collected by distributing questionnaires to the selected respondents of the study areas (rural Virajpet taluk of Kodagu District) and also by personal interview method. Secondary data is collected from magazines, journals, books, newspapers and related sites. Responses obtained from the primary data collected from the questionnaires is later tabulated and analyzed. From the analysis carried out, suitable findings and

ISSN 2394 - 7780

suggestions are given. It is also possible to carry out a detailed study by choosing a larger geographical area and with higher population size.

SAMPLING METHOD USED

Method of sampling used is stratified random sampling. Small and medium size farmers having less than five acre of landholdings are taken in this study. Crop insurance holders are purely from rural areas of Virajpet taluk kodagu district. Population targeted in this study are small and marginal farmers, small estate owners, landless labors etc. data is extracted from seven major villages coming under Virajpet division.

Major villages taken for this study are

1) B Shettigeri
2) Badaga
3) Chambe bellur
4) Kukloor
5) Onte angadi
6) Byrambada
7) Ammathi village

Size of the population is restricted to hundred respondents including male and female.

LIMITATION OF THE STUDY

This study observes the following limitations

1) Size of the sample size is restricted to one hundred respondents only.
2) Only one taluk (Virajpet) is taken in this study.
3) Highly rural and remote areas could not be touched due to transportation and connectivity problems.

DATA ANALYSIS

Table-1: Age of respondents

Age (in years)	Number of respondents	Percentage (%)
Up to 30	39	39
31 – 50	27	27
Above 50	34	34
Total	**100**	**100**

Source: Primary data

Table-2: Gender of respondents

Gender	Number of respondents	Percentage (%)
Male	70	70
Female	30	30
Total	**100**	**100**

Source: Primary data

Table-3: Marital status of respondents

Marital status	Number of respondents	Percentage (%)
Single	52	52
Married	48	48
Total	**100**	**100**

Source: Primary data

Table 4: Size of family of respondents

Family size	Number of respondents	Percentage (%)
Small	48	48
Medium	30	30
Large	22	22
Total	**100**	**100**

Source: Primary data

ISSN 2394 - 7780

Table 5: Purpose of taking crop insurance

Purpose	Number of respondents	Percentage (%)
Coverage for crops	45	45
Increased chances of uncertainty	24	24
Safety & security of dependents	31	31
Total	**100**	**100**

Source: Primary data

Table 6: Type of crop insurance policy respondents purchased by respondents

Type	Number of respondents	Percentage (%)
Private insurance company	38	38
Government Insurance company	62	62
Total	**100**	**100**

Source: Primary data

Table 7: Insurance coverage (Sum assured) opted by respondents

Insurance coverage (in Rs)	Number of respondents	Percentage (%)
Up to 100000	58	58
100001 to 500000	24	24
Above 5 lakh	18	18
Total	**100**	**100**

Source: Primary data

Table 8: Awareness level of crop insurance among the rural farmer population

Awareness level	Number of respondents	Percentage (%)
Highly aware	16	16
Aware	24	24
Not aware	60	60
Total	**100**	**100**

Source: Primary data

Table 9: Source from where respondents (farmers) came to know about crop insurance

Source	Number of respondents	Percentage (%)
Agents	40	40
Company officials	16	16
Agricultural department officials	28	28
Insurance professionals	16	16
Total	**100**	**100**

Source: Primary data

Table 10: Respondents expectations from crop insurance policy & insurance company

Expectations	Number of respondents	Percentage (%)
Transparent conditions	24	24
Complete education	28	28
Proper claim settlement	48	48
Total	**100**	**100**

Source: Primary data

Table 11: Respondents perception rating on crop insurance

Perception rating	Number of respondents	Percentage (%)
Excellent	16	16
Good	45	45
Average	36	36
Satisfactory	03	03
Total	**100**	**100**

Source: Primary data

ISSN 2394 - 7780

Table 12: Respondents satisfaction level on crop insurance

Satisfaction level	Number of respondents	Percentage (%)
Highly satisfied	24	24
Satisfied	46	46
Not satisfied	30	30
Total	**100**	**100**

Source: Primary data

CHI SQUARE TEST

Chi square test is a non-parametric test which is used in this study to determine the independence of two attributes. Calculated value is given by

$$\sum \frac{(fo - fe)^2}{fe}$$

Where 'fo' is observed frequency and 'fe' is expected frequency

Expected frequency is given by

(Row total X Column total)/ Gross total

After expected frequency is calculated the difference between observed and expected frequencies are made which is then squared and then divided by expected frequency. This will give the value of calculated chi square.

Tabulated value of chi square is taken from chi square table. This is done by taking selected confidence interval limit and calculating degrees of freedom using (r-1) (c-1) where 'r' is the number of rows and 'c' is for number of columns. If chi square calculated is greater than chi square tabulated null hypothesis is rejected else it is accepted.

1) H_0: Size of the family and crop insurance coverage taken is independent of each other.

Size of family	Insurance coverage (in Rs)			Total
	Up to 10000	100001 to 500000	Above 5 lakh	
Small	28	14	06	48
Medium	18	05	07	30
Large	12	05	05	22
Total	**58**	**24**	**18**	**100**

The value of chi square calculated is 3.0036 and the value of chi square tabulated at degree of freedom (r - 1) (c – 1) i.e. (3 – 1) (3 – 1) = 4 is 9.487. Hence null hypothesis is accepted.

2) H_0: there is a closer degree of association between type of companies crop insurance taken and purpose of taking crop insurance policy.

Type of company	Purpose of taking health insurance			Total
	Coverage for crops	Increased chances of uncertainty	Safety & security of dependents	
Private	20	08	10	38
Government	25	16	21	62
Total	**45**	**24**	**31**	**100**

The value of chi square calculated is 32.004 and the value of chi square tabulated at degree of freedom 2 is 5.991. Therefore calculated value is higher than the table value, hence null hypothesis is rejected.

3) H_0: Awareness level of respondents and expectations from their crop insurance policy is significant of one another.

Awareness level	Expectations from their crop insurance policy			Total
	Transparent conditions	Complete education and awareness	Proper claim settlement	
Highly aware	05	05	06	16
Aware	06	08	10	24
Not aware	13	15	32	60
Total	**24**	**28**	**48**	**100**

ISSN 2394 - 7780

The value of chi square calculated is 2.46 and the value of chi square tabulated at degree of freedom 4 is 9.487. Hence calculated value of chi square is lesser than table value, therefore null hypothesis is accepted.

FINDINGS OF THE STUDY

1) Majority of the respondents taken in this study are aged up to 30 years.
2) 70% of the respondents taken in this study are male respondents.
3) 52% of the respondents taken in this study are single and the rest 48% are married.
4) 48% of the respondents belonging to small size families, 30% belong to medium size and the rest 22% belongs to larger size families.
5) Majority of the respondents prefer to take crop insurance policies to get proper insurance coverage for their crops.
6) Majority (62%) of the respondents purchased crop insurance from government insurance companies & the rest 38% purchased crop insurance from private insurance companies.
7) 58% of the respondents took crop insurance with insurance coverage up to rupees one lakh, 24% preferred up to 3 lakhs and the rest 18% took larger sum assured of above five lakh coverage plans.
8) Majority (60%) of the respondents are not aware about crop insurance.
9) Major parameters for purchase and promotion of rural crop insurance policies are authorized insurance agents.
10) Highest expectations of crop insurance policy holders from their plan and the company are proper claim settlement.
11) 45% of the respondents have given their perception rating for their crop insurance policy as good.
12) 46% of the respondents are satisfied with their policies.

SUGGESTIONS

The following suggestions are worth implementing as far as health insurance is concerned.

1) Material information should be clearly started by the policy holders and terms and conditions for claim settlement should be clearly stated.
2) As per the opinion of rural customers policies should be revived from time to time and must be intimated clearly.
3) Riders (additional benefits) should be transparently stated and must be clearly communicated to the policy holder.
4) Schedule of terms and conditions should be mentioned clearly and the schedule of the same must be provided to the crop insurance policy holders.
5) Most of the rural farmers are not proficient with English; hence materials pertaining to insurance must be supplied to them which are entirely written in their local languages.
6) As per the recommendations of policyholders and the local respondents, authorized insurance agents and the company professionals must be in touch with them frequently, they must not feel the services gap.

CONCLUSION

Land itself is god's gift. Protecting little bit of land whatever small farmer has and the crops grown on that is important to farmers. In the present day situations, one of the challenges facing mankind due to vastly changed climatic conditions and farming practices is lack of awareness of crop insurance. Due to increased farming costs on one side and lack of protection for those crops which have been cultivated with difficulties made life of rural farmers miserable, due to financial reasons if crop insurance is overlooked it can still cause more damages to crops as well as the lifestyles of farmers. If the overall cost of maintenance of landholdings and cultivation is high it becomes difficult for small and middle class farmers to afford the same, this may demoralize them totally and pave the way for causing suicide and end their precious life. To avoid this, the easiest available option is to go for crop insurance which provides a fair insurance coverage to the crops cultivated by the farmers as well as moral and financial standby support to his family in cases of unexpected risks affecting the crops. Crop insurance would work like a social and financial security tool to most of poor and middle class farmer communities in developing set up like India.

ISSN 2394 - 7780

REFERRENCES

1) Dr. Gupta S.P 'Indian insurance guide – 2013'Excel publication New Delhi 2012.
2) Dr. Gupta S.P 'Insurance & risk management' S Chand & sons New Delhi 110006 4th edition 2014.
3) Dr. Udaya Chandra P.N 'Insurance & risk management' united publishers Mangalore 2010 edition (p-p) (81-84).
4) Kothari C.R 'Research methodology' (p-p) (311-317) New Age International (p) Ltd New Delhi 110006.
5) Keerthi 'Life insurance in India' Excel books Delhi (p-p) (71-74).
6) Mahipal Naresh 'Introduction to insurance laws' cultural law publications New Delhi (p-p) (451-452).

International Journal of Advance and Innovative Research
Volume 6, Issue 2 (XII): April - June, 2019
ISSN 2394 - 7780

ASSESSING STAKEHOLDERS PERSPECTIVES ON GROUNDWATER MANAGEMENT INITIATIVES IN RAJASTHAN

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ABSTRACT
Rajasthan, the largest state of the country covering 10.4 percent of total area, owns only 1.6 percent of the total water resources. Drought is a frequent phenomenon in Rajasthan. On an average out of five years, three years are drought years. Uncertain and varied distribution of rainfall leads to unstable groundwater level. Due to lack of proper water harvesting mechanism in the watershed area, the rainwater is lost due to runoffs. Groundwater not being properly recharged in rainy season and due to heavy burden of utilization throughout the year, the water level lowers which results into problems like dissolved salts, land degradation etc. Approximately 90 percent of the population depends on groundwater for drinking water needs and as high as approximately 63 percent of agriculture depends on groundwater. Central Groundwater Board (CGWB) has declared 227 of 295 blocks as dark zone in Rajasthan. Understanding the problem, the state government came up with a water management policy called as Mukhiyamantri Jal Swalamban Abhiyan (MJSA) to utilize the four types of water – rainfall, runoff, ground water and in-situ soil moisture. This paper is a venture to investigate the early impacts of implementation of MJSA Phase-I on the status of groundwater level. A primary survey in six districts has been conducted to determine the impact of MJSA Phase-I in May-June 2018. Six districts were selected such that they represent the drought-prone categories aptly selected from each most drought affected districts to make the data representative. Further, in these districts 87 villages which were under phase-I were selected by purposive stratified random sampling method. An impact assessment of the work carried under the first phase of MJSA shows mixed impact on the enhancement of groundwater level. But an important outcome of this study is if initiatives like these are properly implemented would surely enhance water recharge and water availability. However proper maintenance of these structures is to be looked at, which the MJSA does not cater to.

Keywords: Central Groundwater Board (CGWB), Groundwater recharge, Mukhiyamantri JalSwalamban Abhiyan (MJSA), Rainwater harvesting.

1. INTRODUCTION
Rajasthan is the largest state of the country, with an area of 343 lakh hectare. Out of this only 168 lakh hectare is arable land. State has 101 lakh hectares of wasteland. In addition, has more than three quarters of its population living in rural areas. The Arrival range extends from South West to North East dividing the state in two parts; on its west, there is Thar Desert, which has an area around 60 percent of the state. The annual rainfall is approximately 100- 150 mm in dry hot West to approximately 850 - 900 mm in South East. Generally, out of five years, three years are drought affected which means untimely, uncertain and varied distribution of rainfall, and is responsible for the unstable groundwater and crop production. State of Rajasthan amassing 75 percent of rural population depends on agriculture and livestock for their livelihood. Rajasthan economy is based on agriculture providing one fourth of the SDP (State Domestic Product). Proper utilization of runoff does not take place due to lack of water harvesting structures in the watershed area. Availability of water has a clear impact on the crop production, conversion of arable land to wasteland, availability of fuel, fodder and dairy products, deciding the socio- economic condition of the peasants. Lack of proper harvesting mechanism has resulted in scarcity of water availability especially for rural agriculture and domestic use.

Sensing the gravity of the situation, Government of Rajasthan realized the need for a proper planning for conserving all forms of water. In light of these conditions a massive programme named Mukhiyamantri Jal Swalamban Abhiyan (MJSA) was implemented in 2016. MJSA aims to utilize the four types of water- rainfall, runoff, and ground water and in- situ soil moisture. It called for the coordinated efforts of a number of departments including the watershed, irrigation, agriculture, groundwater, horticulture and many others. The aim was to provide water especially for drinking purpose and for assured irrigation.

2. BACKGROUND
Chambal, the only perennial river in Rajasthan running through nine districts Chittorgarh, Bhilwara, Bundi, Sawai-Madhopur, Tonk, Jhalawar, Kota, Baran and Dholpur while most of the districts are dependent upon rainfall and groundwater for drinking and agriculture activities. Rajasthan covers 10.4 percent area and 5.2 percent population of India but shares only 1.6 percent of the water resources.

ISSN 2394 - 7780

The ground water scenario in Rajasthan is quite grown. 227 blocks in 2015 are declared overexploited (Table 1). The rate of exploitations of ground water is more as compared to the rate of recharge, which is depicted by the stage of ground water level. Illegal groundwater being rampant in the state is also a cause of concern.

Table-1: Groundwater Scenario of Rajasthan (1984 to 2015)

Year	Stage of Groundwater Development (%)	Number of Blocks in Category				
		Safe	Semi Critical	Critical	Over Exploited	Total
1984	35.73	203	10	11	12	236
1990	53.89	148	31	13	44	236
1992	47.87	149	19	15	53	236
1995	58.88	127	35	14	60	236
1998	69.1	135	34	26	41	236
2001	104.26	49	21	80	86	236
2004	125.13	32	14	50	140	236
2007	132.09	31	13	39	153	236
2008	137.94	30	8	34	164	236
2009	134.54	31	16	25	166	238
2011	N.A	25	30	24	172	241
2013	N.A	44	28	9	164	246
2015	N.A	49	14	6	227	295

Source: State Water Policy Draft 2008, GoR and CWGB, 2006, 2011 and 2016. N.A.(Not Available)

Earlier programs of water harvesting, were either were too technical or only dependent on community, paved way for planning MJSA. The water harvesting ventures tried earlier by various departments, felt the need to synchronize the efforts, which was aimed in Phase-I MJSA program.

The way MJSA is designed included different stakeholders along with the government machinery. Four Waters concept was formulated, in the drought-prone Rajasthan for countering drought and subsequent damage. MJSA had been conceptualized so to provide maximum benefits through minimizing use of public funds and adopting other funding methods like crowd funding, corporate social responsibility and real resources in the form of manpower etc.

The methodology of the Four Waters concept revolved around the harvesting of available runoff (rainwater, groundwater, underground water and in situ soil moisture) in rural areas by treatment of catchment, proper utilization of availability, renovation of the non-functional and creation of new water harvesting structures.

2.1 MJSA: ACCOUNT OF ACTIVITIES

Activities undertaken under MJSA are the following:

1. Minor Irrigation Tank, Continuous Contour Trenches (CCTs), Deep CCTs, Staggered Trenches, Anicuts, Check dams, Minor Percolation Tank etc.
2. Harvesting of available runoff in rural area by treatment of catchment.
3. Renovation of old water harvesting structures and creation of new water harvesting structures.
4. Increasing green spaces through plantations.
5. Creating awareness and responsiveness towards the scheme.

3. Materials and Methods

To ascertain the impact of MJSA on groundwater in various districts of Rajasthan, the state is divided into five groups depending on the frequency of drought (Table 2). Purposive stratified random sampling method was used to select districts- Two districts from most drought-prone categories and one each from lesser drought prone category are selected. The selection of districts was based on the frequency of drought years as districts of Rajasthan our clustered according to the frequency of drought (once every XXX year). Jalore and Sirohi were selected from I category, Ajmer and Dungarpur from II, Pali and Tonk from III and IV category respectively.

ISSN 2394 - 7780

None was selected from the category V with frequency once in 8 years (Table 3). Random selection of 87 villages spread across six districts where phase I MJSA was implemented was done.

Table-2: Clustering Districts of Rajasthan based on frequency of Droughts

Frequency of Drought (Once every xx years)				
3 years	4 years	5 years	6 years	8 years
Category I	Category II	Category III	Category IV	Category V
Barmer, Jaisalmer, Jalore, Jodhpur, Sirohi	Ajmer, Bikaner, Bundi, Dungarpur, Sri Ganganagar, Nagaur, Hanumangarh,	Alwar, Banswara, Bhilwara, Jaipur, Jhunjhunu, Pali, Sawai Madhopur, Sikar, Dausa, Karauli	Chittorgarh, Jhalawar, Kota, Udaipur, Pratapgarh, Tonk Rajsamand, Baran	Bharatpur, Dholpur
	Churu			

Source: Adapted from Verma, S. and Shah, M.(2018)

Table-3: Sampling of Districts

Frequency of Drought (Once every XXX years)			
3 years	4 years	5 years	6 years
Jalore, Sirohi	Ajmer, Dungarpur	Pali	Tonk

Figure1: Sample Districts

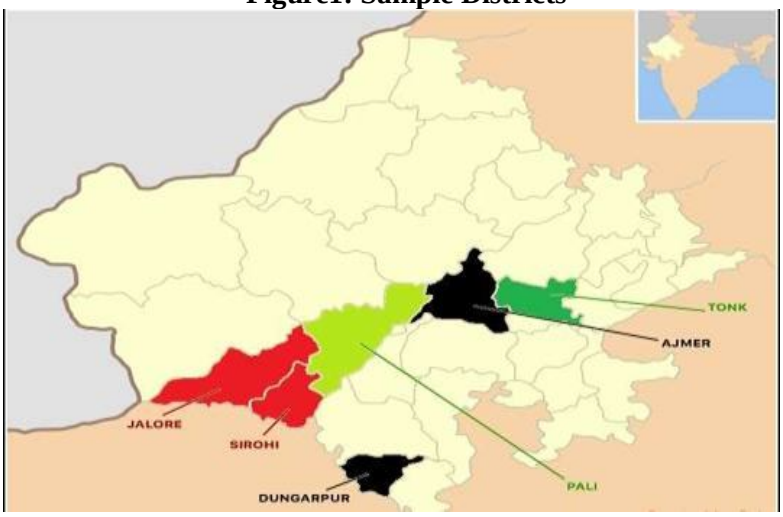


Table 4: Sampled Districts and number of villages from each sampled district.

District	Jalore	Sirohi	Ajmer	Dungarpur	Pali	Tonk	Total
Sample size	15	16	15	20	8	13	87

Focused Group Discussion (FGD's), personal interview and schedule were used to determine the perception of the various stakeholders and also to collect information on various indicators of crop pattern, livestock rearing etc. Phase I of MJSA was selected which ensured at least three year (2015, 2016 and 2017) of agriculture seasons and before -after comparison status of underground water and its related parameters.

3. DATA COLLECTION AND ANALYSIS

To ascertain the impact of MJSA I, FGD was used to get perspective of farmer's, Sarpanch and members of the local bodies. Apart from this, some published reports of government were also referred to. Even though much of the data collected from farmers could be obtained from secondary sources such as of Irrigation department, Groundwater level department and statistical department, but what makes FGD better than it is, that the data collected from this method allows us to know the farmer's perspective. And also gives an opportunity to cross check the data with secondary sources also.

From FGDs, enables to analyze both quantitative impact indicators and qualitative change felt by the people after phase I MJSA. Therefore, the situation was analyzed by investigating explanations for the observed

ISSN 2394 - 7780

changes based on data collected through primary survey. A comparative analysis before and after phase I MJSA of irrigation, productivity, fertilizer usage, groundwater levels is used to encapsulate the impacts of MJSA on farmer's lives. For groundwater analysis, additional months of water availability was the main observation in the data collected from primary and secondary sources. In addition, to this, the change in post monsoon ground water was crosschecked with secondary data. Apart from all these, an analysis of how other livelihoods are benefitted from MJSA was also done.

4.1 IMPACT ON GROUNDWATER

The main objective of MJSA was to increase the underground water level. In order to assess the impact, rainfall data of last three years of pre-monsoon water level and post-monsoon water level, and villager's perception on whether the groundwater level has increased or not was intended. With the help of secondary data and primary survey we found that the groundwater level increased. At many places, a rapid increase in groundwater level was noted.

Figure-2: Pre-post monsoon groundwater level.

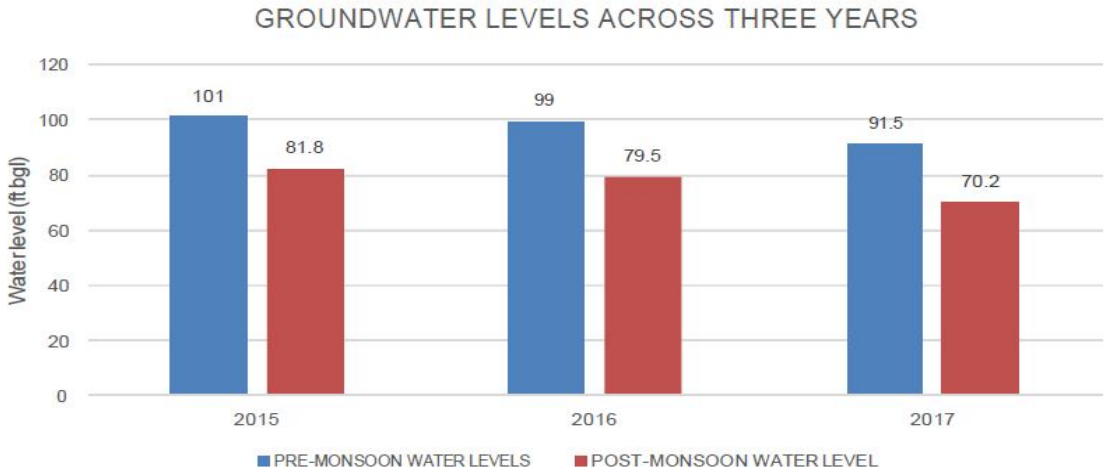


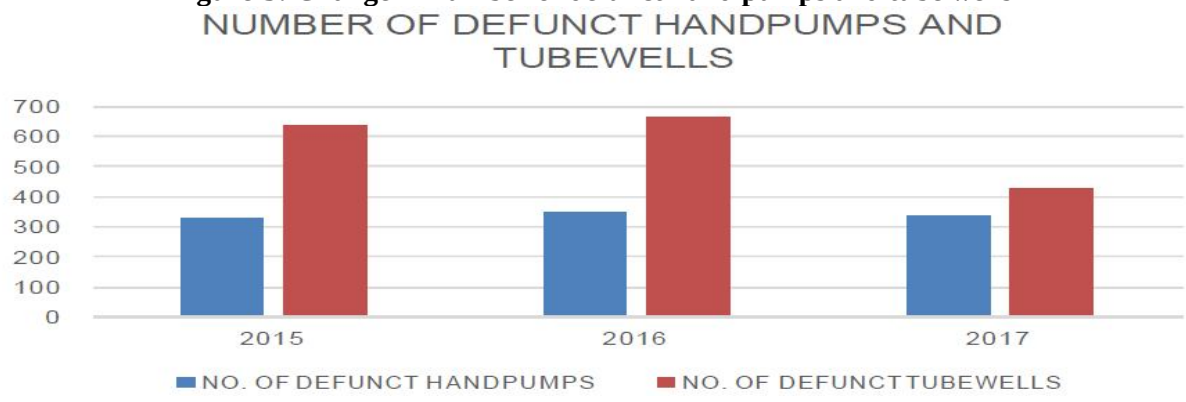
Figure-2 shows the groundwater level across three year, primary data, from 2015-17. In 2015, pre-monsoon groundwater level is approximate 101 ft (bgl.) and in 2017, it was just 91.5 ft (bgl.). This shows an improvement in groundwater level.

Through primary data, it was observed the net increase in post monsoon groundwater level was 11.6 ft (bgl.) or 3.5 meter (not accounting for variation in rainfall) but in official reports (Groundwater Year Book, India 2016-17), using piezometers installed across the state, it was recorded that out of 21 non-desert districts, 16 districts showed rise in groundwater levels with average rise being 4.66 ft.

4.2 DEFUNCT HAND PUMPS AND TUBE WELLS

The response from villagers on defunct hand pumps and tube wells of last three years revealed that number of defunct hand pumps were stagnant. A deeper investigation revealed that once a hand pump becomes defunct, villagers are of the opinion that it would be non-functional forever. They were not aware that if the ground water level increases, a defunct hand pump becomes functional. However, the farmers reported decrease in number of defunct tube wells. As a result, farmers started growing different types of crops and increased their cultivated land area. Data collected through primary survey on defunct hand pumps and tube wells was cross-checked with the secondary data collected through government's reports.

Figure-3: Change in number of defunct hand pumps and tube wells



ISSN 2394 - 7780

A comparison of the primary data and secondary data (government report) of defunct hand pumps and tube wells of six districts in last three years 2015, 2016 and 2017 represented in (Table 2) shows, that all six districts reported an increase in groundwater level. Both government and primary data bring out that the defunct tube wells have decreased although variation in data is there but both indicate towards the same thing. But contradictory results were witnessed in the number of defunct hand pumps. According to government report decrease in defunct hand pump was substantial (i.e. 63.64%), but primary survey revealed an increase in number of defunct hand pumps. This might be due villager's perception about the defunct hand pumps.

Table 5: The defunct tube well and hand pump (government reports and primary data)

Parameter	Government Reports	Primary Survey
Defunct Tubewell	19.7 percent (increase)	32.7 percent (increase)
Defunct Hand Pump	63.64 percent (increase)	-1.2 percent (decrease)

4.2 WATER AVAILABILITY IN WELLS

Normally water disappears with the end of rainfall in Rajasthan, which creates problem for people in Rajasthan, also for vegetation and livestock. Primary data was collected for the month till which water was available in the wells.

Figure 4: Percentage of wells with available water till (XX) Month

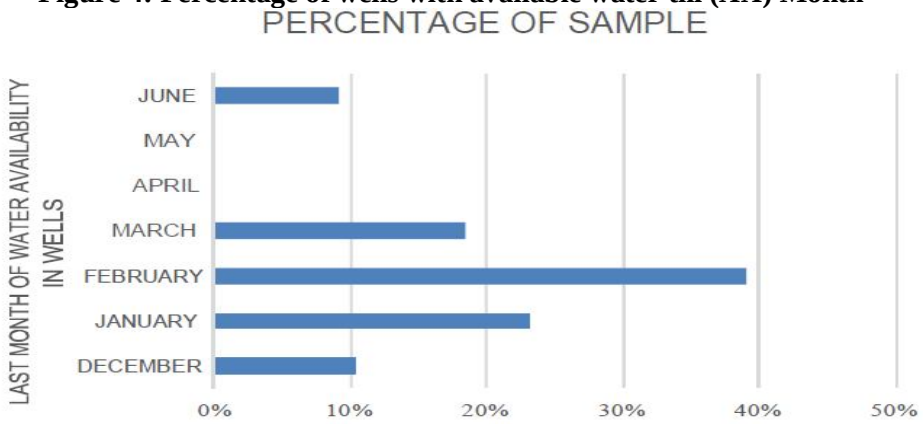


Figure 4 shows the water availability across six districts in three years from 2015-17. Five out of six districts reported an additional one or two month increase in water available in open wells. Therefore, the additional water availability for a month would enhance income and living standard. In two-third villages, water is only available until February-March, which is sufficient for partial irrigation of Rabi crops. In addition, at some place it is available till the month of June.

4.3 AVAILABILITY OF DRINKING WATER

One of main objective of MJSA was to overcome the problem of drinking water and make villagers aware how to store and use the rainwater which could be used for drinking, irrigation purpose, etc.

Table 6: The primary data on the number of tankers use

2015-16	2016-17	2017-18
65	64	64

Figure 5: Decline in demand of tankers for drinking water

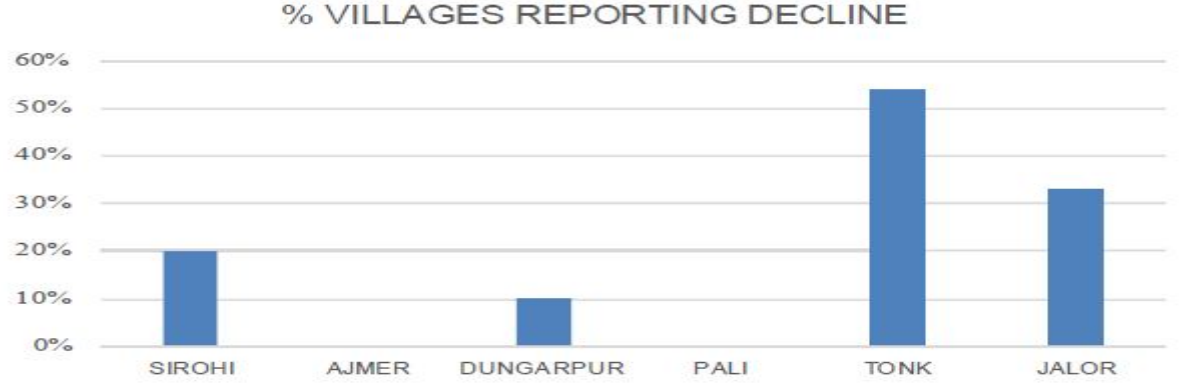


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Figure 5 shows the districts with decline in demand of tankers for drinking water. Tonk district recorded highest decline in demand of tankers for drinking water (approximate 55%) but in Ajmer and Pali districts, there is no change in demand of tankers for drinking water, which could be due to supply of water to Tonk district through Bisalpur Dam. On an average (weighted) 20 percent of sampled villages reported decline in demand of tankers for drinking water. Official report suggested reduction of 14.3 percent in transportation of water supply during summer 2017 against summer of 2016.

Though primary data showed negligible change in the demand of tankers, that means people are using more water with increase in groundwater level day by day. This indicates that all six districts reported on an average negligible change in demand of tankers from 2015 to 2017. As drinking water level and groundwater level increase in this period, tankers were easily available at cheaper rates; therefore demand for tankers did not decline.

4.5 CONCLUSION

MJSA is a massive program carried by the GOR to enhance ground water level and provide water availability for drinking and other purpose. The FGD conducted in 87 villages of 6 districts of Rajasthan revealed an improvement in ground water level, decline in number of defunct tube wells and decline in demand for tankers in some of the districts. The initial impacts of MJSA on the increased groundwater level are supported by average to good rainfall in these districts.

Initiatives like the one undertaken in MJSA holds learning for the regions aiming at improving the water availability especially for the rural folks. Apart from the water availability, both surface and ground, it aims at improving the livelihoods of the farmers and the livestock recourses. An impact assessment of the work carried under the first phase of MJSA shows mixed impact on the enhancement of groundwater level. But an important outcome of this study is if initiatives like these are properly implemented would surely enhance water recharge and water availability. However proper maintenance of these structures is to be looked at, which the MJSA does not cater to.

ACKNOWLEDGMENTS

The authors would like to thank Ms. Manisha Shah, for providing necessary inputs in data analysis and interpretation and. Mr. Dinesh Kumar Meena for data collection.

CONFLICTS OF INTEREST

The authors declare no conflict of interest.

REFERENCES

1. Central Ground Water Board (CGWB). Ground Water Year Book; Report from the Ministry of Water Resources; Government of India: Delhi, India, 2014.
2. Chinnasamy, P.; Agoramoorthy, G. Groundwater Storage and Depletion Trends in Tamil Nadu State, India, Water Resour. Manag. 2015, 29, 2139-2152.
3. Ground Resources Estimation Committee (CEC). Ground Water Resources Estimation Methodology; India Ministry of Water Resources Report; India Ministry of Water Resources: Delhi, India, 2009; pg.107.
4. Ratna Reddy, V.; Rout, S.K; Chiranjeevi, T. , Performance and Factors Influencing the Impact of Watershed Development Programme in Rajasthan. Ind. Jn. of Agri.Econ. Vol.67, No.1, Jan.- March 2012.
5. Rodell,M. and Famiglietti, J. The Potential For Satellite- Based Monitoring of Groundwater Storage Changes Using GRACE: The High Plains Aquifer, Central US. J. Hydrol. 2002, 245- 256.
6. Verma, S. and Shah, M. Drought Proofing through Groundwater Recharge, Draft Discussion Paper, IWMI-TATA Water Policy Program.No.2, 2018.

International Journal of Advance and Innovative Research
Volume 6, Issue 2 (XII): April - June, 2019
ISSN 2394 - 7780

THE STATUS OF HOMESTEAD CULTIVATION IN KERALA: FINDINGS FROM A VILLAGE STUDY

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ABSTRACT
This paper is an attempt to analyze the land use under homestead in the context of land-use change that has been extensively taking place in Kerala. The features of homestead gardening, its importance, the present status and the obstacles in home gardening have been given prime focus. Homesteads are traditionally used for self-sufficiency and pleasure. But due to real estate boom, we observe large scale conversion of agricultural land and fragmentation of holdings. In this context, homestead cultivation is considered to be the most suitable form of cultivation. The study finds underutilization of land under homesteads due to lack of sufficient incentives for growing in homestead. Though the structural and functional diversity of the traditional homestead gardening has been not observed, a preference for perennial crops makes the homestead more homogeneous across households. Such monoculture affects not only food security but also biodiversity and ecology and harms sustainability of agriculture. This situation may lead to a disappearance of homegardens in Kerala.

Keywords: Homestead gardening, land use, monoculture, household produce, marketed surplus, constraints.

BACKGROUND

The land-use pattern plays an important role in agricultural development. The changes in the land use affect the pattern of production and livelihood. In Kerala since land reforms, there has been a structural change in the land-use pattern within agriculture, causing a shift from food to non-food crops. It has also created increased housing plots by giving land to agricultural labourers as homestead for their sustenance and also through private proprietorships. Added to these, the house construction boom, which started in the late 1970s and early 1980s due to gulf migration and the remittance investments in land mainly for house constructions (Gopikuttan, 1990), continue unabated without any restrictions placed on the type of land used for the same (Raj and Azeez, 2009). The investments by gulf migrants of Kerala in land spurred the price and created the demand for house plots. Due to scarcity of land and growing demand for houses, a shrinking land holding size is also commonly observed in Kerala. The reliance on market for consumption of food articles and the decline in food production commonly observed in Kerala have led to an increasing import of food grains, fruits and vegetables from the neighbouring states3. Moreover attaining self-sufficiency in the production of vegetables has become a challenge to the state much more now than before as the vegetables importing from the neighbouring states are found to be affecting the health of the people due to over usage of pesticides and chemicals for the production (Balakrishnan, 2015). This has forced the state to produce more food grains and vegetables to bridge the demand-supply gap. All these necessitated cultivation in the homestead and a revival of the traditional homestead cultivation in Kerala.

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ISSN 2394 - 7780

demand-supply gap. All these necessitated cultivation in the homestead and a revival of the traditional homestead cultivation in Kerala.

Homestead cultivation means, cultivation around the immediate surroundings of a house. Homegardening is considered as the oldest land-use activity and has evolved through generations of gradual intensification of crop cultivation in response to two important factors—increasing human pressure and the shortage of arable land (Kumar and Nair, 2006). Such intensification of crops is very important in Kerala considering that land is getting scarcer as it is being increasingly converted for non-agricultural uses. The traditional homegardens have been proved as an integral component of family farming and local food system and agricultural landscape in developing countries all over the world (Wiersum, 2006).Hence the loss of homestead has a bearing on nutritional security of the poor households as their income is insufficient to meet entire household consumption expenditure. Homegardens overthe world exhibit some basic features such as they represent a multi-storey combination of various trees and crops in association with domestic animals around the homestead (Kumar and Nair, 2006). They are known by different names such as mixed gardens, farmyard enterprises, kitchen gardens, and traditional food production system at the household level (Ali et.al, 2005), homegardening, agro-forestry homegardens, household or homestead farms, compound farms, backyard gardens, village forest gardens, dooryard gardens and house gardens (Kumar and Nair, 2006). Homestead production was considered to be a subsystem of the agricultural system that aims to produce items for household consumption that are not obtainable, readily available, or affordable through the field of agriculture and hence needs to be promoted. Being an independent operational unit, growing a number of crops along with rearing livestock, poultry or fish, it helps the farmers meet their basic needs (John, 2014). Homestead cultivation is different from other cultivation as it concentrates only on the immediate surroundings of the home and produces all types of food items using mainly organic manures provided by livestock whose milk and meat provide rich nutritional security to the households. Other cultivation mainly focuses on market demand and is cultivated on land away from their homestead farms (Ali et al, 2005).

Homestead cultivation is important in terms of the benefits it confers. There are not only economic benefits but social and environmental benefits too are associated with homestead gardening (Galhena et.al, 2013). The social benefits include enhancing food and nutritional security in many socio-economic and political situations, improving family health and human capacity, empowering women, promoting social justice and equity, and preserving indigenous knowledge and culture (Mitchell and Hanstad, 2004). The economic benefits in bibliographic evidence suggest that homegardens contribute to income generation, improved livelihoods and household economic welfare as well as promoting entrepreneurship and rural development. Studies from Nepal, Cambodia, and Papua New Guinea report that the income generated from the sale of home garden fruits, vegetables, and livestock products allowed households to use the proceeds to purchase additional food items as well as for savings, education, and other services (Iannotti et. al, 2009; Vasey 1985). The environmental and ecological benefits are conservation of biodiversity and natural resources because they contain a rich composition of plant and animal species, ecosystem services such as habitats for animals and other beneficial organisms, nutrient recycling, reduced soil erosion, and enhanced pollination (Galhena et.al, 2013).

On the basis of the importance of home gardening, this study focuses mainly on three aspects. Firstly, to assess how the homestead land is being used in the sample village. Secondly, to examine the crops grown and the surplus generated in homestead cultivation, and thirdly, explore the constraints that emerges if the households produce for market. Accordingly, the paper is organised into five sections. Section 2 offers the methodology used for analysing the homestead cultivation; section 3 evaluates the status of homestead cultivation and section 4 examines the constraints and opportunities in homestead cultivation. Major conclusions and implications are listed in section 5.

DATA AND METHODOLOGY

To examine the objectives of the study with respect to homegardens, a survey was conducted in Manimooly village of Vazhikkadavu Panchayat, located in the northern most part of Malappuram district. The village chosen was primarily an agrarian village where the cultivation of paddy, tapioca, and other food crops flourished along with forest trees since the time of migration to the place which started in early 1940s. The measurement of variables, the source and methodology is explained in Table 1.

Table-1: Measurement and Data Source of Variables and Methodology

Variables	How measured	Source	Methodology
Socio-economic characteristics of the village households, homestead area, types and number of crops grown,	The interview schedule consisted of question based on these variables which	A Household Survey of the entire village in Manimooly village, in	Simple averages, percentage share, and meaningful

ISSN 2394 - 7780

household labour, hired labour, cost of labour employed and quantity produced under each crop, home consumption, marketed surplus and market price.	were put to the households and the responses were elicited and coded for the analysis.	Vazhikkadavu Panchayat in Malappuram District for the period 2013 July to 2014 June.	discussions based on literature review are used.

Source: Field Survey 2013-14

ANALYSIS OF THE HOMESTEAD CULTIVATION

Socio-Economic Characteristics of the Homestead Households

The village has 360 households. Among these 94 percent of the households have homestead area and these households are found to be cultivating in their homesteads. The remaining 6 percent of the households are not able to cultivate as they do not have place near their residences as they live in rented houses built only for the purpose of renting. These are mainly landless households. The respondents in the village are mostly female (62.2 percent) having an average education of 10 years. The average age of the respondents is 46 years and most of the family had on an average about five members. The females dominated the number of responses as they were more comfortable with the interviewer. The head of the householdsand other members in the family too participated and provided information. A brief summary of the socio-economic characteristics of the households are presented in Table 2.

Table-2: Socio-Economic Characteristics of the Homestead Households

Sl.No.	Particulars	In %
1	Households with Homestead cultivation	94.2
2	Gender of the respondents (Male)	37.8
3	Gender of the respondents (Female)	62.2
4	**Respondents Caste**	
5	General	56.9
6	OBC	36.6
7	SC/ST	6.5

Source: Field Study 2013-14 in Manimooly Village

Note: The figures in parentheses are absolute number in each category

The categorisation as early settlers and recent settlers reveals a clear cut agrarian transformation in the village as very few recent settlers are engaged in agriculture (6.7 percent).The early settlers, who had mainly concentrated on farming then, have now turned to some other occupations such as teaching or wage earning or find employment in gulf (22.2 percent). Recent settlers also include the children of the early settlers. Such transformation in village setting and their preference for non-agricultural employment would explain the declining importance of agriculture. This has also affected homestead cultivation which is visiblein the analysis.

CHARACTERISTICS OF HOMESTEAD GARDENS

In Kerala, homegardening is seen as a way of life for centuries and is still critical to the local subsistence economy and food security. The existence of a unique pattern of homestead cultivation in Kerala is seen in its structural and functional diversity. The structural diversity is seen in the multi-storey cropping pattern, where the upper layer occupy perennial crops such as coconut, arecanut, jackfruit, mango, cashew, tamarind, and forest tree species; pepper, clove, nutmeg and cinnamon; the second layer; banana, cassava, yam, and the like, and the third layer, ginger, turmeric, pineapple, vegetables, and guinea grass occupy the ground layer (Snehana et. al, 1992). This is to achieve higher efficiency in the resource use by efficiently harvesting solar energy and soil nutrients and moisture and to exploit the space both temporally and spatially (Salam et.al, 1995). The functional diversity of the system helps to meet the many demands of food, fuel, timber, organic mulch and medicinal plants. Home gardens in Kerala also combine with livestock rearing, where the different components interact synergistically to sustain productivity. Such evolution of homegardens in Kerala represents the wisdom and insight of farmers in response to shrinking of arable lands (Kumar and Nair, 2004).

Analysing the features of homestead gardening in the present study of a rural set up unravels the fact that there is a mixture of both traditional subsistence and commercial homegardening practised in the village. However, less number of crops is grown and there are no consistent and conscious efforts to grow more crops filling the entire homestead area. For most of the families, the homestead crops have come up from the waste thrown out around the house. This reveals that though the fertility of soil is very conducive for growing varieties of crops, they are not grown by their conscious efforts. There are traditional fruit trees grown in the homestead by most of households. They are mango, jackfruit, custard apple, rose apple and papaya. But they are mostly neglected

ISSN 2394 - 7780

as the surplus generated could not be marketed due to low market price and high labour cost. Moreover, the households also face labour scarcity at the time of harvest and these lead to wastage of fruits. Thus the production under homestead is not efficiently used for consumption. It seems that the nutrition value of these crops is highly undermined by the households. Besides this common observation, the particular characteristics of the homestead cultivation in the village are captured in Table 3.

Table-3: Characteristics of Homestead Gardens in Manimooly Village

Sl.No.	Characteristics	
1	Total Homestead Area (in Acre)	81.8
2	Average homestead Area (in acre)	0.24
3	Total number of plants species	33
4	Average number of plant species	9.7
5	Total number of Species in the homegardens (vegetables)	14
6	Fruits grown in homegardens	8
7	Tuber species in the homegardens	3
8	Spices and condiments species	4
9	Coconuts and other plantations	4
10	Share of homestead in Total land (100%)	57.2
11	Share of homestead in Total land (<25%)	31.6

Source: Field Study 2013-14 in Manimooly Village

The total land under homestead is calculated as 81.8 acres. The average size of homegardens is 0.24 acres. The total number of plant species of about 33 in number looked as if there is a structural diversity in the homegardens of the village. But a close observation reveals that the upper layer feature is only visible here as most of the households prefer perennial crops such as coconuts, mangos and jackfruit than the second layer, third layer or ground layer crops as highlighted by Snehana and others (1992). If we take the total number of crops, in terms of vegetables, fruits, tubers, spices and plantation crops, on an average 14 types of vegetables, 8 fruit trees, 3 tuber species, 4 spices and condiments and plantations, including 4 typescoconuts are seen across the households. The households mainly cultivated in their homestead for home consumption as there is no market for the homestead products. Sincetheprice is determined by the traders, they were unable to sell their products and generate surplus income with which they could buy other items which they do not produce. Such situations demotivate them from utilising their homestead efficiently for cultivating wide varieties of crops and thus maintain the structural diversity of homegardens. This could have preserved the bio-diversity of the village too. But a changing picture is observed in the village. Majority of the household grow coconuts in their homestead and along with it, a few vegetables on their own as a daily activity for almost half-an-hour or one hour per day. The households use simple traditional tools such as spade and sicklesfor cultivation. The uses of organic fertilisers were limited to the households who have livestock rearing. The others mostly prefer to put some other organic manure such as ashes or dried leaves or kitchen wastes as these manures are sufficient for the few crops they are cultivating.

The importance of homestead cultivation to household nutritional and food security in the absence sufficient income from other sources is also seen in the village as 57 percent of the households have only their homesteads to cultivate. An average area of 0.24 acres can actually provide them with sufficient vegetables and fruits, provided they grow these crops. The other category households (32 percent) homestead is just one fourth of their total land area.

AREA- WISE ALLOCATION OF HOMESTEAD CROPS

An area wise allocation of the crops was computed to know how many households under each category cultivated these crops. After this, the crops are ranked based on the preferences of the households for these crops. The results of this analysis are given in Table-4.

Table-4: The Households (Percentage) growing different crops in the homegardens: Area-wise allocation

Sl. No	Name of the crop	Area (in acres)				Rank
		0.01 to 0.3	0.31 to 0.6	0.61 to 2.0	Total	
1	Coconut	46	14.7	3.6	64.3	1
2	Mango	30.1	12.4	2.9	45.4	2
3	Jackfruit	29.2	12.1	2.7	44	3
4	Plantain	28.9	12.4	2.1	43.4	4

ISSN 2394 - 7780

5	Long Beans	19.8	8	1.7	29.5	5
6	Arecanut	13.9	7.4	2.3	23.6	6
7	Curry Leaf	14.5	6.5	0.2	21.2	7
8	Chilli	14.5	5.9	0.5	20.9	8
9	Drumstick	15.6	4.1	0.9	20.6	9
10	Ladyfingers	13	5.9	1.2	20.1	10
11	Teak	9.4	5.9	1.5	16.8	11
12	Papaya	10.6	5	0.6	16.2	12
13	Spinach	8.6	4.1	1.5	14.2	13
14	Slippery Yam	8	3.2	0.3	11.5	14
15	Brinjal	6.8	4.1	0.6	11.5	15
16	Rubber	4.4	3.8	2.7	10.9	16
17	EF Yam	6.5	3.8	0.3	10.6	17
18	Rose apple	6.5	3.5	0	10	18
19	Pepper	9.1	0.3	0	9.4	19
20	Guava	6.2	2.1	0	8.3	20
21	Asiatic Yam	5.3	2.4	0	7.7	21
22	Pumpkin	4.7	2.7	0.3	7.7	22
23	Turmeric	4.4	2.1	0.6	7.1	23
24	Bitter gourd	5.9	0.9	0	6.8	24
25	Tapioca	2.9	3.5	0.1	6.5	25
26	Koval	3.5	2.4	0.3	6.2	26
27	Ash Pumpkin	3.8	2.1	0.3	6.2	27
28	Tomato	3.5	1.2	0.6	5.3	28
29	Ginger	2.1	2.4	0.5	5	29
30	Tamarind	3.24	1.18	0.28	4.7	30
31	Bulls heart	1.8	1.1	0	2.9	31
32	Pineapple	0.9	0.9	0	1.8	32
33	Snake gourd	0.9	0.0	0.3	1.2	33

Source: Field Study 2013-14 in Manimooly Village

An area-wise distribution of crops under each household shows that as the area under homestead increases, the diversity of crops are declining. This means the small and marginal households prefer to grow under homestead more than those who have larger area. This highlights the fact that these households are still dependent on their homestead for the consumption of these crops because it is expensive for them to buy these items from the market. The households with larger area could be more dependent on market for the consumption of food articles. This might be the reason why they do not venture much into homestead cultivation. Another important finding from the above analysis is that very few households prefer to grow vegetables and spices. The major reason for this is also due to the dependence on outside market for the consumption of vegetables and spices. Market led consumption also explains this pattern of production. This means households prefer to buy from market than produce under homestead.

A large number of households (which varies from 23.4 percent to 63.4 percent of households) have perennial crops grown in their homesteads because of easy maintenance. These perennial crops rank first, in the order coconut, mango and jackfruit at about 64.3 percent, 45.4 percent and 44 percent respectively. The preference for plantain (4^{th} rank) is justified on account of the demand for cheap bananas for home consumption and it commands better price in the market. It also requires less effort in cultivation and maintenance. Thus we see that homesteads with its focus on perennial crops are mostly devoid of great diversity in ground layer crops. Thus one can say that the land use under homestead is not efficient as the area is not utilised well to produce more fruits and vegetables, tubers and spices.

Another important change noticed in the homestead cultivation is the tendency to grow rubber even when the homestead is small. The rubber cultivation is more remunerative and the incentives given by the rubber board and the aspiration to find a regular source of income are some of the reasons for the preference for rubber even in the homestead. The cultivation of rubber destroys the bio-diversity of the place and also affects cattle rearing. Moreover, the households will have to increasingly depend upon market for their food consumption which will affect their food security adversely. Thus preference of the households to grow remunerative crops such as rubber and teak signifies a transition from the traditional homegardens to commercialisation of homegardening.

ISSN 2394 - 7780

OCCUPATION-WISE DISTRIBUTION OF CROPS

The farmers prefer to grow all crops at least in some quantities. The insight and wisdom of farmers to combine many crops along with livestock rearing is remarkable. Their love for farming and their knowledge of the importance of traditional crops still encourage them to cultivate crops such as spinach, papaya, tapioca, curry leaves, beans, fruits and tubers for home consumption despite a depressed market for the traditional products grown under the homestead.

The salaried class stands on equal footing with farmers in their preference to grow mainly perennial crops and along with it various vegetables and tubers. This is because of two reasons. Firstly, they have more land compared to the other categories such as wage earners, or businessmen and those who are depend solely on cattle rearing. Secondly, they are better informed of the problems associated with the imported vegetables as they contain high levels of pesticide and chemical content. The government of Kerala took initiatives to promote the production of vegetables, with the cooperation of students by giving them vegetable seed kits for cultivation after conscientising them about the need to produce vegetables for home consumption.

The households who depend upon remittances and the business income show no interest in cultivating under homestead as they largely depend on market for consumption. The females in their family could very well get engaged in the production of such crops but they prefer to buy than cultivate. This also shows their ignorance about the high nutrition value of these crops and the problems associated with imported foodgrains and vegetables. The mono-cropping such as cultivation of rubber and teak in their homestead is seen across the households since these are more remunerative in nature. Thus homestead also is market determined than need oriented. This is depicted in Table 5.

Table-5: Occupation-wise distribution of crops (% of households)

Name of Crops	Agriculture	Agriculture-allied Activity	Wage Earning	Salaried Employment	Business	Gulf Employed	Total
Spinach	27.1	0	16.7	27.1	18.8	10.4	14.1 (48)
Curry leaf	27.8	1.4	13.9	29.2	15.3	12.5	21.2 (72)
Papaya	25.5	1.8	18.2	30.9	9.1	14.5	16.2 (55)
Tapioca	36.4	0	4.5	31.8	13.6	13.6	6.5 (22)
Long Beans	30	0	11	33	14	12	29.5 (100)
Koval	23.8	4.8	4.8	52.4	4.8	9.5	0.06 (21)
Tomato	11.1	0	16.7	44.4	5.6	22.2	5.3 (18)
Ladyfingers	20.3	0	13	40.6	15.9	10.1	20.3 (69)
Drumstick	15.3	1.4	19.4	31.9	15.3	16.7	21.0 (72)
Pineapple	50	0	0	16.7	33.3	0	1.8 (6)
Ashpumpkin	38.1	0	4.8	28.6	14.3	14.3	6.2 (21)
Plantain	23.8	1.4	17.7	30.6	10.9	15.6	43.4 (147)
Bitter gourd	21.7	0	21.7	30.4	8.7	17.4	6.8 (23)
Snake gourd	50	0	0	25	25	0	1.2 (4)
Brinjal	23.1	2.6	10.3	43.6	12.8	7.7	11.5 (39)
Chilli	18.3	1.4	18.3	33.8	12.7	15.5	20.9 (71)
Bulls heart	20	0	0	50	30	0	2.9 (10)
Tamarind	25	6.3	18.8	25	12.5	12.5	4.7 (16)
Ginger	29.4	0	23.5	41.2	5.9	0	5.0 (17)
Turmeric	33.3	4.2	16.7	29.2	8.3	8.3	7.1 (24)

ISSN 2394 - 7780

Rose apple	23.5	0	26.5	29.4	11.8	8.8	10.0 (34)
Guava	14.3	3.6	7.1	35.7	25	14.3	8.3 (28)
Pumpkin	15.4	0	15.4	34.6	15.4	19.2	7.7 (26)
Pepper	35.3	0	14.7	29.4	14.7	5.9	10.0 (34)
EF Yam*	33.3	0	8.3	44.4	5.6	8.3	10.6 (36)
Slippery yam	30.8	2.6	10.3	28.2	17.9	10.3	11.5 (39)
Kachil	34.6	0	7.7	42.3	7.7	7.7	7.7 (26)
Rubber	29.7	2.7	18.9	32.4	8.1	8.1	10.9 (37)
Coconut	18.3	0.5	24.8	27.1	13.8	15.6	64.3 (218)
Arecanut	23.8	1.3	20	31.3	12.5	11.3	23.6 (80)
Mango	27.9	0.6	16.9	29.2	14.3	11	45.4 (154)
Jackfruit	29.5	1.3	16.8	32.2	12.1	8.1	44.0 (149)
Teak	29.8	1.8	15.8	29.8	17.5	5.3	16.8 (57)

Source Field Study 2013-14 in Manimooly Village

Figures in parentheses are number of households who grow the crops *Elephant Foot Yam

THE CROP-LIVESTOCK INTEGRATION IN THE HOMESTEAD CULTIVATION

The homegardens in Kerala is very often said to combine crops with livestock rearing which ensures productivity, enhance nutritional status and augment farm income and help to reduce dependence on inorganic chemical fertilisers and help to maintain soil health through organic recycling (Salam et al. 1995). The total number of livestock in the village and across the occupational distribution shows that the livestock rearing is done by a few farm families and wage earners. Thus number of livestock such as cow, buffalo, goat and rabbit is very less. The households as a whole tend to rear poultry. This could be due to changing consumption habit of people from vegetable to meat and egg. The details of livestock rearing in the village are given in Table 6 and Table 7.

Table 6: Animal Stock of the Village Household

Particulars	Number	percentage of households
Cow	71	10.0
Buffalo	5	0.8
Poultry	421	32.2
Goat	54	4.7
Rabbit	12	1.4

Source: Field Survey 2013-14

Table 7: Occupation-wise Distribution of Animal Stock in the Village

Percentage of Households with different Animal Stock						
Sl.No.	**Major Occupation**	**Cow &Buffalo**	**Poultry**	**Goat**	**Rabbit**	**Total**
1	Agriculture	63.9	30.1	58.8	60.0	71 (20.9)
2	Agriculture-allied Activity	2.8	1.7	5.9	0.0	4 (1.2)
3	Wage Earning	16.7	18.1	11.7	20.0	30 (8.8)
4	Salaried Employment	11.1	27.5	17.6	0.0	39 (11.5)
5	Business	0.0	13.7	5.8	20.0	18 (5.3)
6	Gulf Employment	5.6	8.6	0.0	0.0	12 (3.5)
7	Total	100.0 (36)	100.0(116)	100.0 (17)	100.0 (5)	51.3 (174)

Source: Field Survey 2013-14

ISSN 2394 - 7780

From Tables 6 and 7, the following inferences could be drawn. The farmers in the village practise a crop livestock integrated system of cultivation to some extent. Such farmers utilise their time and energy to cope with their low income as they do not have other sources of income. The cows, goats and poultry are a major supplementary source of income other than crop production besides meeting the home demands for milk, egg and meat. Besides this, the organic manures from these livestock maintain and sustain the soil nutrients which are essential for the production of other crops under homesteads.

From the above analysis of the characteristics of the homestead cultivation, we can see that the structural and functional diversity of homegardens and the crop livestock integration in the homegardens, one of the traditional features of homegardens in Kerala, are missing in the study area. Rather a commercialised pattern of cultivation, largely driven by market, dominates the homesteads. Thus a monoculture is observed in homestead than a structural diversity. In the present socio-economic conditions, this raises the question as to whether homegardens are becoming irrelevant (Kumar and Nair, 2004) in the present study too.

PRODUCTION, CONSUMPTION AND MARKETTED SURPLUS OF THE CROPS FROM HOMESTEADS

The crops grown in the homesteads are broadly classified into food grains, vegetables, tubers, fruits, spices and condiments, coconuts and other non-food trees.

FOOD GRAINS IN THE HOMESTEAD

The people in the village had grown paddy extensively in the immediate surroundings of their homes in the initial years as they migrated to the village to sustain their lives (from 1940s till early 1980s). Paddy and tapioca were the major food items then. But now the land use has undergone such a dramatic change that paddy cultivation has completely disappeared. The paddy field has been converted for the cultivation of coconut and arecanut and also to construct houses. The increasing cost of production in the wake of high labour cost and lack of availability of labour has made paddy production unattractive. Moreover, the cheap supply of rice through PDS for consumption discouraged production. The consumer friendly policies such as these, without catering to the problems of the primary producers, compelled them to change their area under food crops such as paddy to more remunerativecrops like coconut and arecanut. Other farmers who have grown food grains were encouraged to sell the land than to cultivate. All these have brought out severe consequences of land-use change in the village. Such change in the land use also has its bearing on the production of food crops such as pulses, sugar and vegetables, tubers and spices. The major fallout of the disappearance or conversion of wetlands is manifested in the loss of numerous ecosystem services and other environmental problems such as water logging.

THE VEGETABLES CULTIVATED IN THE HOMESTEADS

The major vegetables grown and their average production, consumption, average market value of self-consumption and the total marketed surplus are given in Table 8.

Table 8: Annual Production, Consumption and Marketed Surplus of Vegetable grown in the Homestead

Sl.No	Name of the crops	Average Production (kg)	Average consumption (kg)	Average Market Value of self-consumption (Rs.)	Marketed Surplus (Rs.)
1	Spinach	4.2	4.2	42.3	0
2	Curry leaves	2.0	2.6	61.0	0
3	Tapioca	80.8	55.4	1107.3	11200
4	Beans	6.7	6.7	201.5	0
5	Ivy gourd (Koval)	26.0	26.0	650.0	0
6	Tomato	8.2	7.1	107.1	277.5
7	Ladyfingers	3.5	3.5	34.7	0
8	Drumstick	3.3	3.3	132.3	0
9	Bitter gourd	4.3	4.3	108.2	0
10	Snake gourds	24.3	4.3	85.0	1600
11	Brinjal	9.4	9.4	140.4	0
12	Pumpkin	12.2	12.2	121.5	0
13	Ash pumpkin	11.7	11.7	140.6	0
14	Chilli	2.8	2.8	139.1	0

Source: Field Survey 2013-14.

ISSN 2394 - 7780

Since the preference for vegetable cultivation is very low compared to other crops, the average production of most of the crops is below 10kg. In case of tapioca, ivy gourd and snake gourd, few farmers (<10 percent) cultivate these crops. The average production of all vegetables is 199 kg and average consumption of vegetables is 154 kg. All the vegetable crops are mainly grown for home consumption. It also reveals that since the households grow very few quantity of each crop, it cannot make a market surplus. In the case of tomato, snake gourds and tapioca, only very few farmers cultivate it.Since they cultivated more than theyneed for home consumption, they were able to make some surplus for sale and generate income. While taking into consideration the average market value of self-consumption, the households are able to reduce their consumption expenditure on these items and were able to save their income. But much more than saving their income, the fact is that they are able save their lives from consuming highly polluted vegetables from the market.

THE TUBERS IN THE HOMESTEADS

The similar pattern is observed in the case of tubers too. The tubers are nutritionally essential, traditionally grown staple food grown in Kerala. Despite its rich role in health enhancement, tubers in homegardens have come under great pressure because of the dynamics of new agrarian structure and shifts in cropping patterns. This has led to increased market dependence of the households and adversely affected their food security. However, the preference for these crops by a few households is still praiseworthy. The production and consumption pattern of tubers are given in Table 9. These crops yield is reported to be much high compared to other crops in the study area. However, the low production is recorded due to the attack of rats and monkeys. This also discourages the households from growing tubers.

Table9: Annual Production, Consumption and Marketed Surplus of Tubers Grown in the Homestead

Sl.No	Name of the crops	Average Production (kg)	Average consumption (kg)	Average Market Value of self-consumption (Rs.)	Marketed Surplus (Rs.)
1	Elephant foot Yam	20.4	20.4	204.2	0
2	Taro (Chempu)	6.0	6.0	150.0	0
3	Asiatic Yam (Kachil)	12.2	12.2	243.1	0

Source: Field Survey 2013-14

THE FRUITS AND SPICES

A wide variety of fruits could be grown in homesteads. The present study reported about eight species of fruits with a scattered preference. Hence the average production is flimsy. Households prefer to grow mostly the plantain as it gives them a good income. The fruits such as mango and jackfruit, though produced by more than half of the households, are largely wasted at the time of harvest due to labour scarcity and home consumption. Hence its marketed surplus is very low compared to plantain. However, these crops satisfy the need for organic manure for coconut and other crops. The other fruits like custard apple and rose appleare not available in the market and so there is no market for these crops. Hence, the few people who have these trees in their homesteads just keep it as it is. The production of papaya, guava and pineapple also is very small due to the lack interest. The dependence on market for the consumption also could explain this phenomenon. Details are given in Table 10.

Table-10: Annual Production, Consumption and Marketed Surplus of Fruits grown in the Homestead

Sl.No	Name of the crops	Average Production	Average Consumption (in kg)	Market Value of self-consumption (Rs.)	Marketed Surplus (Rs.)
1	Papaya	20.4	20.4	203.6	0
2	Custard Apple	6.3	6.3	157.5	0
3	Pine Apple	5.0	5.0	150.0	0
4	Rose Apple	16.4	16.4	163.8	0
5	Guava	4.9	4.3	86.4	340
6	Plantain	73.2	52.0	1300.0	77950
7	Mango	67.6	64.8	1620.6	10750
8	Jack fruit (nos)	38.1	36.6	549.4	3300

Source: Field Survey 2013-14

ISSN 2394 - 7780

The spices such as tamarind, ginger, turmeric etc. are ground layer crops whose market value is very high compared to all other crops. But still no interest is shown in the cultivation of these crops too. Hence the production is very low. The change in attitude of the households to a market-led culture with increase in standard of living could be reason for such negligence. The ignorance of the high medicinal value of these crops is also evident. Table-11 shows the pattern of production, consumption and marketed surplus of spices.

Table-11: Annual Production, Consumption and Marketed Surplus of Spices and Condiments grown in the Homestead

Sl.No	Name of the crops	Average Production (kg)	Average consumption (kg)	Market Value of self-consumption (Rs.)	Marketed Surplus (Rs.)
1	Tamarind	5.9	5	1000.0	3000
2	Ginger	11.7	11.7	588.2	0
3	Turmeric	12.0	12.0	963.3	0
4	Pepper	2.9	2.7	1164.7	1600

Source: Field Survey 2013-14

THE COCONUTS AND OTHER NON-FOOD TREES

Coconut-based farming system is a time-tested practice in Kerala with large variety of crops grown in interspace in coconut gardens (John, 2014). But looking at the present system, the coconut has become largely a monocrop as its interspace is not sufficiently utilised for growing vegetables, fruits or spices as is examined above. The perennial crops such as coconut, arecanut and rubber are said to be intensively managed crops (Peyre et al, 2006). The preference of the households to cultivate only these crops is because of less attentionrequired. Secondly, it brings regular income to the households. The crop such as coconut is helpful to the family in many ways. It is mainly used as a food crop. Sufficient amount of money can be saved by the households by way of oil and buying coconuts for daily cooking. On an average, the households consume about 473 coconuts in a year. And the average market value of coconut self-consumption is also very high (Rs.31552 per year). Coconut production also generates sufficient marketed surplus as it has demand in the market. The other crops such as arecanut and rubber are highly commercialised crops and bring high and regular income to the households. Hence, they prefer to grow these crops even under homestead. Total marketed surplus for rubber is the highest (Rs.10.8 lakh per year). This type of land use change in the homestead reveals that even the homestead production is largely market determined.

Table-12: Annual Production, Consumption and Marketed Surplus of Coconut and other Non-Food Trees in the Homestead

Sl.No	Name of the crops	Average Production (kg)	Average consumption (kg)	Average Market Value of self-consumption (Rs.)	Average cost (Rs.)	Average income (Rs.)	Marketed Surplus (Rs.)
1	Coconut (in nuts)	700.6	472.9	31552.7	1385.0	6964.3	330933.3
2	Arecanut	87.8	0.0	0.0	443.6	2702.1	210600.0
3	Rubber	196.4	0.0	0.0	5210.8	23364.9	1089900.0

Source: Field Survey 2013-14

Thus there is a transition in the land use under homestead from large varieties of crop cultivation to a single crop. And this monoculture is market driven. Also one can claim that the government initiatives to grow more fruits and vegetable have not been spread to all the villages.

THE VALUE OF HOMESTEAD CROPS IN TOTAL CONSUMPTION EXPENDITURE

The share of homestead crops in the average annual consumption expenditure of the households shows that it contributed very little to the total consumption expenditure. But comparatively high contribution is made by coconut as the households were able to make edible oil with coconut and reduce the consumption of oil. The fruit production, especially plantain, contributes about 27 percent of the average annual consumption expenditure of the household. Thus homestead crops supplement households' consumption expenditure. The vegetables satisfy only 3 percent of the demand of the households. A kind of consumerism is reflected in their consumption pattern because of which instead of cultivating these vegetables they prefer to spend on an average Rs.9445/- per year for the purchase of thesecrops. The analysis of homestead products consumption in the total consumption expenditure is depicted in Table 13.

ISSN 2394 - 7780

Table-13: Share Value of Home consumption of Crops from Homestead in the Total Consumption Expenditure					
Crops	**Total Consumption Expenditure (Rs./year)**	**Average Consumption (Rs. Spent/year)**	**Total Value of Consumption from homestead (Rs./year)**	**Average Value of Consumption from homestead (Rs./year)**	**Percentage share of self-consumption from homestead**
Vegetables	3201924	9445.204	102292	301.7	3.1
Fruits	1994076	5882.23	544270	1605.5	27.3
Edible Oil	1597848	4713.416	687293.3	2027.4	43.0

Source: Calculated from Field Survey 2013-14.

Considering the importance of homestead cultivation in bringing about food security, it is important to analyse the constraints faced in homegardening in Kerala.

THE CONSTRAINTS AND OPPORTUNITIES IN HOMESTEAD CULTIVATION

Land reforms, i.e. the agrarian reform measures of the government since 1960s and 1970s, were to bring about a change in ownership of land to address the problem of agricultural development in terms of social justice and economic returns. The reforms assured land to the landless and also to the tenants who became the tillers of the soil. The private proprietorship on land was to boost agricultural production employing the family labour efficiently. The small plots given to the landless agricultural labourers as homestead have been found to provide assured food and nutritional security and the probability to bring income to the household through the cultivation of large varieties crops using family labour. Thus everyone got an opportunity to cultivate in their homesteads. However, the homestead production as a sub system of the entire agricultural system suffered due to the overall decline in crop production.The major constraint faced was that the homesteads given to the agricultural labourers were very small which could neither produce enough for the sustenance of the family nor could generate income. The labourers were still dependent on the large and small holders for cultivation. However, passing of the wage bill forced the large and small holders of land to opt for labour saving technology. Thus employment in agriculture was reduced. Hence the labourers started looking out for employment elsewhere and this has brought about labour scarcity in farms. As a result, those who have land and wanted to produce under homestead couldn't do so because of labour scarcity. For example, the cultivators needed labour for harvesting tree crops and coconut which cannot be done using family labour. Skilled labourers are essential for it. Lack of labour availability further increased the cost of cultivation. Supply of rice through PDS brought about an assured supply of food grains at a cheaper rate. This made one class of people dependent on PDS, while another class such as producers of food grains and vegetables stopped growing crops. Such a situation had an effect on the overall production in Kerala and also on the homestead cultivation. The initial dependence on public distribution system rather than production, slowly gave way to depending on market for consumption as the standard of living increased.

The second and major constraint is related to the land-use change which took place in the village as a result of gulf migration and the resultant remittances. Those who were employed in the Gulf found land a safe and sound investment. Land began to be considered as a speculative asset. The commodification of land in terms of purchase and sale largely influenced the land-use change. This has brought about a change in ownership of land from farmers to those who are not interested in farming. Moreover, the increasing conversion to housing plots as a result of the investment in land took away major chunk of homestead land away from cultivation. The housing boom in the study area as a result of the gulf remittances created more house plots and led to increased fragmentation of holdings. The opportunity that could be tapped in this phase was that there had been increase in the prices of fruits and vegetables in the market. Had the gulf migrants invested their money in agricultural production, it would have created a market for these products and would have encouraged others to grow the crops even in their homesteads. Since such a situation never arose in the village, large part of the income was spent on buying goods rather than producing them.

Moreover, there was no incentive to grow vegetables and fruits and spices in the homestead as these indigenous homemade commodities does not command good price in the market.

Marketing of the crops was another constraint faced by households in homestead cultivation. This has resulted in negligence of these crops. However, households generously responded to the cultivation of rubber as its cultivation is subsidised by the government and it fetches more income. The mono-cropping of coconut,

ISSN 2394 - 7780

arecanut and rubber are mostly market driven which has resulted in a land-use change, affecting environment and food security of the state.

When remittances shot up the prices of fruits and vegetables, the homestead production which is socially acceptable and environmentally sound could have been augmented. However, the ignorance of households regarding the high nutrition and medicinal value of crops posed another constraint in the production of these crops under homestead. An awareness of the side effects of consuming the highly poisonous vegetables imported fromneighbouring states could have rejuvenated homestead cultivation to some extent. Such awareness created through newspapers was not sufficient enough to bring about the change. This also reveals that there was no effective media information regarding this.

The decentralised governance could have addressed many issues related to the homestead cultivation such as efficient employment of manpower in the village to produce more and efficient utilisation of homestead area by providing vegetable seed kits, saplings and providing tools for its production. But this was sorely lacking in the study area as there were no organised cultivation of crops or efficient manpower utilisation. As a result, the quantum of homestead land was further reduced in the village when the demand for house plots went up because ofrising population and inflow ofGulf money.As a result, there was wide-spread destruction of homestead trees. There has been increasing underutilisation of the newly-created plots of the non-farm households.

MAJOR CONCLUSIONS AND POLICY IMPLICATIONS

The study has mainly looked into the nature of homestead farming, its importance, opportunities and major constraints. The study found that homestead farming was not done in an organised way in the study area. The households prefer to grow a perennial crop which needs less care and labour saving due to the crisis of labour in farmland. There is also a transition towards mono-cropping pattern observed in the village. The economic value of the crops in the market is driving the use of homesteads. This is reflected in the selection of crops such as coconut, arecanut, rubber and teak. On the whole, the structural diversity that had existed in the traditional homegardens is not seen in the village. The mono-cropping pattern and underutilisation of homestead area coexist in the study area. The major constraints faced in the cultivation of homegarden are the lack of interest in producing under homestead and market-led consumption pattern. This could probablybe due to the ignorance of the households of the high nutritious value of homestead products. The labour scarcity in harvesting tree crops such as mango, jack fruit, coconut etc. leads to wastage of huge chunk of fruits and neglect of these crops. The incentives for the production and marketing of these crops for those wanted to sell their surplus is highly inadequate. Thus even the Gulf money is not invested in cultivation but in land. This investment of Gulf money has spurred a land market for real estate in the study area. As a result of this, there is a housing boom and consequently, a decline in the size of homestead area and destruction of homestead tress. This has created a loss of bio diversity and other environmental problems.

The importance of home-gardening cannot be undermined as it is an asset to the household in preserving the health of its members. Its medicinal and nutritional value enhances the development of human capacities and capabilities. The agricultural landscape and ecology is highly essential for sustainable development. There is a scope even now for the development of agriculture that can generate employment and can arrest the export of its manpower to other nations. Homestead cultivation can address the problem of food security within household level. If the constraints are taken seriously, it can bridge the production-consumption gap which should be the major concern of the government. So the state needs to direct its attention to the ways in which homestead cultivation could be rejuvenated on a large scale covering all Panchayats on an equal basis for the better utilisation of homestead area, in generating surplus from homesteads and thus maintain the health of both human and natural resources. If one section of people converts the land for better economic return, another section with sufficient time, especially women, can concentrate on homestead cultivation if the cost of devoting time on homestead cultivation is not so high. The Panchayat can solve the problem of shortage of labour very efficiently if it organises its labour, conscientise them and make them available for those who undertake production. The women employment under homestead should be promoted to get rid of the problem of unemployment among women as in the village, women are mostly dependent and not employed.

APPENDIX 1

Table-1: Distinction between Homegardens agriculture and Commercial Agriculture

Characteristics	Home garden agriculture	Commercial agriculture
Holding size	Extremely small; maximum size < 1 ha	Larger
Major objective	Meeting home demand (food, fodder,	Income generation by sale of

ISSN 2394 - 7780

	fuel, timber, organic mulch, medicines)	produce
Resource use level	Intensive	Extensive
Labour use	Mostly family, supplemented by hired labour	Mostly hired
Species diversity	High	Low
Nature of cropping	Polyculture	Single crops
Integration of farm enterprises	High	Low
Organic and nutrient cycling	High	Low
Dependence on market- purchased inputs	Low	High
Nutritional security of household members	High	Low
Environmental sustainability	High	Low
Market linkages	Poor	Well developed

Source: Salam et.al, 1995.

REFERENCES

- Ali S.M (2005), "Home gardens in Smallholder Farming Systems; Examples from Bangladesh", *Human Ecology*, Vol.33, No.2. PP.245-270.
- Balakrishnan T.R (2015), "Homestead Farming in Focus",www.the*hindu.com/news/national/kerala/ homestead Farming-in-focus, article.*
- Galhena D.H, Freed R and Maredia M.K (2013), "Home gardens: a promising approach to enhance household Food security and wellbeing", *Agriculture & Food Security* Vol.2, No.8, PP.2-13.
- Gopikuttan G (1990), "House Construction Boom in Kerala: Impact on Economy and Society", *Economic andPolitical Weekly*, Vol.25. No.37, pp.2083-2088.
- Iannotti L, Cunningham K, Ruel M (2009), "Improving Diet Quality and Micronutrient Nutrition: Homestead Food Production in Bangladesh", *International Food Policy Research Institute, Discussion Paper* 00928. Washington DC, USA.
- John J (2014), "Homestead Farming in Kerala: A Multi-Faceted Land Use System". *Review of Agrarian Studies*, Vol.4, No.1, ras.org.in/homestead-farming-in-kerala.
- Kumar B.M and Nair P.K.R (2006), "The Enigma of Tropical Homegardens", *Agroforestry Systems*, Vol.61, pp.135–152.
- Mitchell R and Hanstad T (2004), "Small Home garden Plots and Sustainable Livelihoods for the Poor", *LSP Working Paper*, No. 11, Rome, Italy.
- Peyre A, Guidal A, Wiersum K.F. and Bongers F (2006), "Dynamics of homegardenstructure and function in Kerala, India", *Agroforestry Systems*, Vol. 66, pp.101-115.
- Raj N and Azeez P.A (2009), "The Shrinking Rice Paddies of Kerala", *The IndiaEconomyReview*, Vol.6, pp.176-183.
- Shehana RS, Sathees Baby K, Salam M. A (1992), "Spices: a multipurpose homesteadcomponent in South Kerala", *Spice India*, Vol.5, No. 9, PP.15-18.
- Salam M.A, Mohanakumaran N and Babu S. K (1995), "Home garden agriculture in Keralarevisited", *Food and Nutrition Bulletin (UNU).* 0379-5721, V.16 No. 3, PP. 220-223.
- Wiersum K.F (2006), "Diversity and Change in Homegardens Cultivation in Indonesia", B.M. Kumar and P.K.R.Nair (eds.), Tropical Homegardens: A Time-Tested Example of Sustainable Agroforestry, 13–24. © *2006 Springer. Printed in the Netherlands*
- Vasey D. E (1985), "Household gardens and their niche in Port Moresby, Papua NewGuinea", *Food Nutrition Bulletin*, Vol.7, No.3, PP.37–43.

ISSN 2394 - 7780

- The land reforms measures initiated during 1960s abolished landlordism, put a ceiling on land holdings and gave tenants the ownership right on land. It also gave the agricultural labourers a right on their homesteads.
- Kerala State Planning Board had formed a working group to come up with a Report on Food security in its 12^{th} Five year Plan, which explains the acute food scarcity in state and its dependence on imports from neighbouring states.

International Journal of Advance and Innovative Research
Volume 6, Issue 2 (XII): April - June, 2019
ISSN 2394 - 7780

A STUDY OF AGRI- FOOD SUPPLY CHAIN MANAGEMENT IN ANDHRA PRADESH: A CASE STUDY OF KRISHNA DISTRICT

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ABSTRACT
The agricultural sector provides an important contribution in the development of a country due to its contribution in both economic and environmental development. As the backbone of the development in most of the developing countries, agriculture holds important roles in deciding the stability of the economy of the country itself. Statistical figures show that 70% of the world population lives in rural areas and only 38% of the land in the world is used for agriculture cultivation, depleting from time to time, due to industrial expansion and human population growth (World Bank, 2010). Achieving sustainability in agricultural contexts means meeting three challenges commonly known as three parameters that are: (a) profit strengthening the viability and competitiveness of the agricultural sector; (b) planet the ecological challenge of promoting good environmental practices; and (c) people the social challenge to improve the living conditions and economic opportunities in rural areas. Consumer's wants and preferences are not transmitted directly to the farmers who produce or plant the crop. The present paper reflects the existing supply chain architecture of the Indian Agri-food sector and provides areas where concentration is needed for its improvement. The research work is followed by designing an Avon grade sustainable supply chain study named as "Agri- Food Supply Chain Management in Andhra Pradesh" for Indian Agri-food sector. The present study also highlights the impact of FDI in Indian scenario and is followed by developing a performance measurement framework for the Agri-food supply chain network by an analytical decision making tool named analytical hierarchy process

Keywords: Agri- Food, Management, Analytical Decision, FDI, Ecological.

INTRODUCTION
While agriculture sector in India contributes one fourth of country's GDP and provides employment to approximately two thirds of the population, today the Food Processing Industry alone accounts for 6% of the GDP. The quantity of processed food produced in the country is under 1.6% while in other countries such as 65-75%. The Agri supply chains in India and their management are now evolving to respond to the new marketing realities thrown by the wave of globalisation and other internal changes like rise in the level of disposable income of consumers, change in the food basket of the consumers towards high value products like fruits, vegetables and animal protein. Government agencies have now shown interest in making legal reforms to enable and invite private investment in marketing infrastructure and removing the possible barriers to entry so that there could be coordination in and traceability of the supply chain. With liberalization of trade in the post-WTO regime, India has the opportunity to export agricultural and food products to the world. Over the last decade food processing has grown at a rate of 7.1% p.a. The food supply chain in India is highly fragmented. The number of intermediaries in the chain is exceedingly high. These intermediaries are important because they act as a substitute for infrastructure where none exists. But over the years a layer of intermediaries has grown most of which add little value to the produce but collectively they add significantly to the final cost. India accounts for 10% of the world fruit production (Food and Agricultural Organization of the United Nations, 2008). Agribusiness, store network the board (SCM) suggests dealing with the connections between the organizations in charge of the effective generation and supply of items from the homestead level to the purchasers to meet buyers' prerequisites dependably as far as amount, quality and cost. By and by, this regularly incorporates the administration of both level and vertical coalitions and the connections and procedures between firms. In the customary plan of action; wholesalers are delegates and a dominating connection in the retail vegetable calculated chain. When all is said in done, every one of the retailers are definitely reliant on the nearby wholesales advertise. The real requirements are poor transport offices, non-accessibility of extensive scale cold stockpiling, no spotless arrangement rules from government and divided and little ranchers. The leafy foods cultivating for preparing isn't just business escalated, yet in addition upgrade the gross just as net returns of the ranchers.

CHALLENGES IN INDIAN AGRI-FOOD SECTOR
"Agriculture sector is witnessing radical changes and challenges at national and global level. There can be seen a tremendous rise in demand for agricultural and consumers are changing their food preferences however, agriculture sector is not able to catch up to this rising demand because it is facing decelerating profitability which is slowing down its performance. The emerging challenges and opportunities call for a paradigm shift in

ISSN 2394 - 7780

the innovation driven agricultural research system to connect inventions with all the stakeholders in the entire food supply chain". Two different types of contrasting trends have been noticed in present times with respect to present Indian scenario:

1. India is being recognized as the global power in the key economic sectors with consistent high economic growth and
2. Its slow growth observed in the agriculture sector is causing concerns for the future food and nutritional security of the country.

REVIEW OF LITERATURE

Sun and Kuang (2014) establishes the advantages of staggered stock and made an optional stock administration model of an appropriation focus which submits a request and disseminate to each store. Note that it appears to be appealing to hold back some part of the stock at the focal stockroom; in any case, stock held at the distribution center isn't straightforwardly accessible to fulfill client need and does not specifically add to the offered administration level. In this way, the essential test is to adjust the productivity of focal inventories with appropriation of inventories with the retail locations.

According to Baron, Berman and Perry (2011) Request of the item is affected mutually by rack space allotted to an item and to its supplement or supplement item and the moment stock seen by the clients.

OBJECTIVES OF THE STUDY

- Promoting Knowledge Transfer and Innovation in agriculture and forestry and rural sector;
- Promoting Competitiveness of all Types of Agriculture and the viability of farms;
- Improving the organization of the Food Supply Chain and Management Risk in the agricultural sector;

METHODOLOGY

The present my study work is based on a real Krishna District problem and then it is modelled in the ideal Andhra Pradesh with certain assumption in order to meet with the desired criteria. A real world problem is taken, in the present case the traditional Indian Agri-Food supply chain network. It is then modelled in the ideal Andhra Pradesh with certain assumptions and after then it is analyzed with respect to different criteria's (in the present case wastages and supply chain cost). There is no single model of procurement and distribution for Andhra Pradesh Agri-food products. It depends on various factors, such as type of product, place, etc.

RESULTS OF THE STUDY

Table-1 Supply Chain Scenarios for Framework of Sustainable in Krishna District

S.No	Items	Status	Out come
1	Walk the Talk	Leadership	Knowledge sharing with stakeholders
2	Get "outside the box"	Innovation	Sustainable product and process development
3	Align with corporate strategy	Integration	❖ Supply chain operations ❖ Procurement ❖ Supplier Management
4	Measure and improve results	Continuous Improvement	❖ Supplier engagement ❖ Pollution prevention
5	Meet or exceed requirements	Compliance	❖ "Price of entry" ❖ A given

Source of Data: Primary

Agriculture was and is one of the largest employment sectors in the world and for India it's the major or the primary source of employment. More than half of Indian population depends on agriculture as their primary source of livelihood. Agriculture is the backbone of Indian Economy. The occupational structure of Indian workforce can be divided into three classes. Agri-food sector constitute the primary sector of the occupational structure. India is the fruit and vegetable basket of the world. India being a home of wide variety of fruits and vegetables holds a unique position in production figures among other countries. Estimates currently suggest that India ranks second in terms of farm output, first being china.

Table:2. The total Supply Chain Network response of Krishna District Wise

S.No	Mandals Wise	No. Of Respondents
1	Vijayawada Urban	85
2	Vijayawada Rural	66

ISSN 2394 - 7780

3	Nuzvid Mandal	18
4	Machilipatnam Region	21
Total		190

Source of Data: Primary

In this section the response set is analyzed to determine the distribution of in store Supply chain network response of Krishna district wise out store SCM and collaborative practices within the study participants. Box plots are generated for each survey item, grouped by the independent constructs in the theoretical model. In above Figure shows the distributions of responses in Krishna region wise Vijayawada Urban 85, rural 66, Nuzvid mandal 18 and finally Machilipatnam Region 21 allocation to movement in study area.

Table: 3. The Beer Supply Chain information on cultivation of Krishna District

Response	Farmers	Traders	Retailers	Total
NO	61 (57%)	32 (62.7%)	23 (69.7%)	116
YES	46 (42.9)	18 (35.3%)	10 (30.3%)	74
Total	107	51	33	190

Source of Data: Primary

Information on source of supply chain information on cultivation of Krishna district, date of harvest, instruments used in cultivation, pesticide residue level are not provided to the customer by any of the supply chain partners namely the farmer including the trader or retailer who also fail to provide information to the next level in the supply chain. On the whole, the supply chain information on cultivation appears to have a shortage of information considering the responses provided by the farmers (57%), traders (62.7%) and retailers (69%).

Table-4 Food Supply Chain and Management Risk in the agricultural sector in Krishna District;

S.No	Item	Farmers	Traders	Retailers	Total
1	Completely Dissatisfied	51 (62.9%)	29 (42%)	14 (35%)	94 (49.5%)
2	Somewhat dissatisfied	11 (13.5%)	13 (18.8%)	9 (22.5%)	33 (17.3%)
3	Neither Satisfied nor Dissatisfied	6 (7.4%)	9 (22.5%)	6 (7.4%)	21 (11.1%)
4	Somewhat satisfied	11 (13.5%)	9 (22.5%)	7 (17.5%)	27 (14.2%)
5	Highly satisfied	2 (2.4%)	9 (22.5%)	4 (10. %)	15 (7.9%)
Total		81	69	40	190

Source of Data: Primary

The respondents who are neither happy nor dissatisfied with services offered with the transport operators are 62.9% of farmers, 42 % of traders and 35% of retailers. On the whole 33.4 percent of the respondents are five categories satisfied, 49.5 percent of the respondents are dissatisfied with services offered by the transport operators

CONCLUSION

As the Supply Chain involves a number of players, the extent of integration of services depends on the degree of trust and information sharing amongst the players. It is often observed that the big players in their efforts to make vertical/horizontal integration of different activities end up gobbling up the weak ones. What in fact is called for is strengthening of the system and process, so that requisite synergies evolve to give benefits to all the partners. In order to shore up the emergence of professionally managed agri-supply management of different agricultural produce, the Government should play its facilitating role to its hilt. Some of the major issues that need to be focused in the public domain are:

- Focus should be laid on free play of demand and supply forces in the market. This has to be enabled by removing different entry barriers, having a proper market information system, promoting grading and standardization, taking care of quality and safety issues, putting up a strong system of risk management and price formation mechanism.

ISSN 2394 - 7780

- Different legal restrictions inhibiting growth of competitive environment should be dismantled and replaced by a facilitating legal environment.
- Infrastructure constraint is Achilles heel of marketing system in India. Since it is difficult to arrange sufficient funds from the public exchequer for the development of infrastructure facilities, the need of the hour is to explore different Public Private Partnership models.
- The extension mechanism of the country is production oriented relegating the marketing aspects to the backburners.

REFERENCES

1. Oliveira, A. 2001. Exploring the experiences of collaborative planning
2. Barratt, M. & initiatives, International Journal of Physical Distribution & Logistics Management, Vol. 31 No. 4, 2, pp. 266-289.2002. Project description Tops Thailand Fresh chain project, Wageningen University.
3. Boselie, D.2001, supply chain management, Prentice Hall
4. Chopra, S. & Meindl, P.G. 1998. Logistics and supply chain management; strategies for reducing costs and
5. Christopher, M. improving services, London, Pitman Publishing. 1993. Characteristics of SCM and the implications for purchasing
6. Cooper, M.C. & Ellram, L.M.and logistics strategy, The International Journal of Logistics Management, 4, 2, 13-24
7. Cooper, M.C., Lambert, D.M. & Pagh, J.new name for logistics, International Journal of Logistics Management, 8, 1, 1-13
8. Agarwal, A., Shankar, R., Tiwari, M.K. (2006). "Modeling the metrics of lean, agile and leagile supply chain: an ANP based approach", European Journal of Operational Research, 173, 211–225.
9. Basu, R., Wright, N. J. (2007). Total Supply Chain Management. 1st Ed. USA: Butterworth-Heinemann.
10. Blanchard, D. (2007). Supply Chain Management: best practices. 1stEd. Canada: John Wiley and sons, Inc.
11. Li, S., Ragu-Nathan, B., Ragu-Nathan, T.S., Subba Rao, S. (2006). "The impact of supply chain management practices on competitive advantage and organizational performance", Omega 34 (2) 107-124.
12. Trkman, P., Indihar Stemberger, M., Jaklic, J., Groznik, A. (2007). "Process approach to supply chain integration", Supply Chain Management-an International Journal, 12 (2), 116–128.
13. Sun, H.,and Kuang, M.(2014), Supermarket Multi-Level Inventory and Distribution Optimization Research‖, ICLEM 2014,32-38.
14. Baron, O., Berman O., and Perry D. (2011), ―Shelf space management when demand depends on the Inventory level‖, Production and Operations Management, 20(5), 714-726.

International Journal of Advance and Innovative Research
Volume 6, Issue 2 (XII): April - June, 2019
ISSN 2394 - 7780

AN ECONOMIC ANALYSIS ON SUGARCANE CULTIVATION IN MADURAI DISTRICT

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ABSTRACT
Agriculture is one of the most significant sectors of the Indian Economy. Sugarcane is one of the most important industrial cropping India occupying about 5.0 million hectors (Mha) in area that's 3 per cent of the gross cultivatable area in the country Sugar industry, one among the largest agro – based industries , contributor significantly rural economy. In Madurai district two blocks were identified on the basis of predominant Cultivation of sugarcane by which Alanganallur and Chellampatti were selected, two villages from each block were selected on the basis of predominant sugarcane cultivation were selected by census method. In total 92 respondents were interviewed. The net returns for four villages after covering fixed and variable cost was Rs. 48106.13, for Alanganallur, Rs. 51869.82 for Thanichiyam, 47826.82 for Valampatti and Rs. 55913.64 for Natamangalam respectively. The in out ratio is 1.02, 1.92, 1.81 and 2.02, for Alanganallur, Thanichiyam, Valandhur and Natamangalam respectively.

Keywords: Sugarcane, Yield, input output ratio, cost.

INTRODUCTION
Agriculture is one of the most significant sectors of the Indian Economy. There are number of crops grown by farmers. These include different food crops, commercial crops, oil seeds etc., sugarcane is one of the important commercial crops grown in India.

Agriculture is the main sources of the Indian economy and it provides the principal means of livelihood for about 60 percent of India's population. It contributed about 8.2 percent of the country's gross domestic product (GDP) for 2018-2019. For decades, Indian agricultural policy has focused on self- sufficiency and self-reliance in food-grain production. Considerable progress has been made on this front, with food-grain production rising from 52 million tonnes from 1951-52, to 244.78 million tones from 2010-2011, and an estimated 250 million tonnes in 2018.

Sugarcane is a major cash crop in India responsible for the overall socio-economic development of the farming community. In India, the sugar industry is the second largest agriculture based industry after textile fibers. It arises over INR 225 billion in taxes for the common wealth and state governments

Sugarcane is one of the most important industrial cropping India occupying about 5.0 million hectors (Mha) in area that's 3 per cent of the gross cultivatable area in the country Sugar industry, one among the largest agro – based industries , contributor significantly rural economy.

The sugar industry in India has been instrumental in accelerating the Socio-economic development in villages through mobilizing rural resources leading to generation of employment, increasing income and overall improvement in facilities for transport and communication. Further, many sugar factories have established schools, colleges, medical centre and hospitals for the benefit of rural population. A large number of sugar factories have diversified into by- product based industries and have invested in and set up distilleries, organic chemical plan and fertilizer unit. The Indian sugar industry is a green industry i.e., sufficient in its energy needs and generating surplus exportable power through co-generation. The various by – products of sugar industry also contributes to the economic growth by promoting a number of subsidiary industries.

CULTIVATION PROCESS AND HARVESTING METHOD
Sugarcane cultivation requires a tropical or temperate climate, with a minimum of 60 centimeters (24 in) of annual moisture. It is one of the most efficient photo synthesizers in the plant kingdom. It is a C-4 plant, able to convert up to 2 per cent of incident solar energy into biomass.[citation needed] In prime growing regions, such as India, Peru, Brazil, Bolivia, Colombia, Australia, Ecuador, Cuba, the Philippines, El Salvador and Hawaii, sugarcane can produce 20 kilograms (44 lb) for each square meter exposed to the sun.[citation needed].Although sugarcanes produce seeds, modern stem cutting has become the most common reproduction method. Each cutting must contain at least one bud and the cuttings are sometimes hand-planted. In more advanced countries like the United States and Australia, billet planting is common. Harvested from a mechanical harvester are planted by a machine which opens and recloses the ground. Once planted, a stand can be harvested several times; after each harvest, the cane sends up new stalks, called rations. Successive harvests give decreasing yields, eventually justifying replanting. Two to ten harvests may be possible between plantings.

ISSN 2394 - 7780

Sugarcane is harvested by hand and mechanically. Hand harvesting accounts for more than half of production, and is dominant in the developing world. In hand harvesting the field is first set on fire. The fire burns dry leaves, and kills any lurking, venomous snakes, without harming the water-rich stalks and roots. Harvesters then cut the cane just above ground-level using cane knives or machetes. A skilled harvester can cut 500 kilograms (1,100 lb) of sugarcane per hour.

In India, sugarcane is the most important commercial crop which is grown over 2.57percent of its gross cropped area. Globally India is the second largest producer of sugarcane after Brazil and accounts for about 25percent of the world's production Sugarcane is considered as the crop for the future because of its contribution to production of sugar, jaggery, khansari and many by products like molasses, biogases and press mud and also certain renewable sources of green energy in the form of bio ethanol and many bio-based products. In India, the agro-climatic regions of sugarcane cultivation can be divided into two: tropical and sub-tropical. The sub-tropical region constitutes the northern states of Uttar Pradesh, Bihar, Uttarakhand, Punjab; Haryana it contributes 47percent of country's sugarcane production. The tropical region constitutes mainly the southern states of Maharashtra, Karnataka, Tamil Nadu and Andhra Pradesh. Despite having lesser area i.e. 42of the total area under sugarcane, the tropical region contributes higher i.e. 51percent of country's sugarcane production as the longer duration crop and favorable climatic condition causes higher productivity and better sugar recovery.

HISTORY

Sugarcane was first grown in South East Asia and Western India around 327 B.C. It is theorized that sugarcane was first domesticated as a crop in New Guinea around 6000 BC .It was introduced to Egypt around 647 A.D. and, about one century later, to Spain i.e., (755A.D.). Since then, the cultivation of sugarcane was extended to nearly all tropical and sub-tropical regions. Portuguese and Spaniards took it to the New World early in the Twenty sixth century. It was introduced to the United States of America in the year 1741.The Sugarcane growing countries of the world are lying between the latitude 36.7°

OBJECTIVES OF THE STUDY

1. To examine the growth of area, production and productivity of sugarcane in India
2. To analyze cost and returns of sugarcane cultivation in Madurai district.

METHODOLOGY

Data Collection: For the present study, the data were obtained from primary as well as secondary sources.

Sources of Data: The data were collected in various sources is given in below.

i. Co-operative sugar.

ii. Season and crop Government Tamil Nadu.

Collection of Secondary Data: The secondary data collected for the study were as follows.

1. To examine the trends in area, production and productivity of sugarcane in India. State-wise data on area, production and productivity of sugarcane producing states were collected for the period (2008-09 to 2017-2018).
2. The particulars regarding the location, climatic conditions, rainfall, and soil type, irrigation, population. etc. related to the study area were collected from the existing records available from the office of the respective of Madurai district.

Collection of Primary Data: A preliminary survey was undertaken with pre tested interview schedule. The selected respondents were contacted in person and enquired the information required for the study. the purpose of the study was explained to the respondents and also they were assured that the information collected would they kept confidential.

The field investigation was carried out during 2018 and data were related to agricultural year 2017-2018 in **Aug-Oct**. In, addition to the information related to sugarcane production data on general socio-economic profile such as age, education level, type of the family, type of the farmer etc, were also collected from the respondents.

METHOD OF DATA COLLECTION (OR) SELECTION OF RESPONDENTS

In Madurai district two blocks were identified on the basis of predominant Cultivation of sugarcane by which Alanganallur and Chellampatti were selected, two villages from each block were selected on the basis of predominant sugarcane cultivation.

All the respondents, who involved in the sugarcane cultivation, were selected by census method. In total 92 respondents were interviewed.

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GARRETT RANKING TECHNIQUE

This technique was used to evaluate the problems faced by the Marketing of coconut by coconut cultivators. In this method, the coconut cultivators were asked to rank the given problem according to the magnitude of the problem. The orders of merit given by the respondents were converted into ranks by using the following formula.

$$\text{Percentage Position} = \frac{100(R_{ij} - 0.5)}{N_j}$$

Where

R_{ij} = Rank given for i^{th} item j^{th} individual

N_j = Number of items ranked by j^{th}individual

The percentage position of each rank thus obtained was converted into scores by referring to the table given by Henry Garrett. Then for each factor the scores of individual respondents were added together and divided by the total number of respondents for whom the scores were added. These mean scores for all the factors were arranged in the order of their ranks and inferences were drawn.

Dr. Saravanan. K and Dr. Parvathi. S (2015) in their study on An Analysis of Cost and Returns of Sugarcane Production in Krishnagiri District of Tamil Nadu the aim of this study was to estimate the cost and returns of sugarcane production per acre on different size of farms in Krishnagiri talus of Krishnagiri District in Tamil Nadu. The study was confined to a sample of 175 sugarcane farmer households selected from seven villages of Krishnagiri talus of Krishnagiri District. A simple percentage analysis was employed to identify the socio-economic characteristics and cost and returns of sugarcane cultivation for the selected sample farmers. The results of the study showed that out of the 175 sample sugarcane farmer selected for the study, the majority of them belonged to nuclear family; their family size had 2-4 members; their age had 40–60 years and had a small family monthly income of Rs.15, 000 to Rs.30, 000. The educational status of the farmers was secondary level. The study concluded that the majority of the sugarcane farmer's still employ low level of modern technology in sugarcane cultivation. Also, most of the sugarcane farmers are middle-aged, non-literate males; this had greatly contributed to inefficiency in sugarcane production among the sugarcane farmers. To this end, there is a need for continuous research in understanding the differences observed, which in this study concerns the magnitudes rather than conflicts. Further limitation of the study is that the data used as shown in the yield curves tend to fluctuate considerably. This mean that yield of sugarcane was influenced by climate and soil parameters.

RoutR.K. (2015) Sugarcane is a major cash crop of India, particularly in UP, Maharashtra, Tamil Nadu, Karnataka, Andhra Pradesh, Bihar, Gujarat, and Foot hills of Uttarakh and. Sugarcane crop has productivity of 70 tonnes/per hectare and an area of 4.2 million hectare. It plays a pivotal role in the national economy. Sugarcane is considered as one of the best cash crops in Orissa. It is grown in all the 30 districts of Orissa. The selected district Dhenkanal occupied 4th position in area (1.49 thousand ha) & in production (99.06 thousand MTs) and 5th position in yield (668.50 qtls/ha) in 2005-06. This study was carried out in Dhenkanal district, Orissa. A sample of 160 farmers was randomly selected from two blocks i.e. Dhenkanal & Kankadahad. The establishment of a sugar factory in Dhenkanal district has increased the prospect of this crop in the surrounding area. The average size of holding was 2.44 ha in region-I and 1.89 ha in region-II. The land was unequally distributed among different categories of farms. The net returns over variable costs per hectare were` 38220.96 in region-I and`34380.10 in regions- II. The average yield of sugarcane per hectare was 73.88 tonnes and 69.88 tonnes in region –I and region-II respectively

RESULT AND DISCUSSION

PRIMARY DATA ANALYSIS

Before presenting the cost and returns in cultivation of sugarcane, the socio-economic profile of the sample farmers presented in this section so as to provide background information for drawing inference. Analyzing the socio-economic indicators will benefit the researcher to draw the inferences regarding the farmers.

1 Age-Wise Classification of the Respondents

Source: Computed

Note: Figures in parentheses are percentage to the total

Table 1 shows that the age-wise classifications of the respondents in the study villages age classification has been groped in four categories viz., Youth (<30), Middle (31-60), and Old (>60) categories. It is seen from the

ISSN 2394 - 7780

table that most of the farmers were either middle (40.22%) or old (40.22%) aged. Among the study villages of both the blocks also comprised more middle and old aged. The participation of young in all the study villages of both the blocks was less.

Table 2: Sex of the Respondents

SL.No	Sex	Alanganallur		Chellampatti		Total
		Alanganallur	Thanichiyam	Valandhur	Natamangalam	
1	**Male**	18 (100.00)	40 (100.00)	20 (100.00)	14 (100.00)	92 (100.00)
Total		18 (100.00)	40 (100.00)	20 (100.00)	14 (100.00)	92 (100.00)

Source: Computed

Note: Figures in parentheses are percentage to the total

The sex of the respondents is presented the table 2 the table reveals that all the respondents from both the blocks were male and no female was found in the study region.

Table 3: Marital Status of the Respondents

SL.No	Marital Status	Alanganallur		Chellampatti		Total
		Alanganallur	Thanichiyam	Valandhur	Natamangalam	
1	**Married**	15 (83.33)	32 (80.00)	16 (80.00)	11 (78.57)	74 (80.43)
2	**Un married**	3 (16.67)	8 (20.00)	4 (20.00)	3 (21.43)	18 (19.57)
Total		18 (100.00)	40 (100.00)	20 (100.00)	14 (100.00)	92 (100.00)

Source: Computed

Note: Figures in parentheses are percentage to the total

Table 3 portrays the marital status of the respondents. In all 80 per cent of the farmers were married and the rest were unmarried. Among the blocks and villages also the married farmers were higher than the unmarried.

Table 4: Religion – Wise Classification of the Respondents

SL.No	Religion	Alanganallur		Chellampatti		Total
		Alanganallur	Thanichiyam	Valandhur	Natamangalam	
1	**Hindu**	15 (83.33)	40 (100.00)	20 (100.00)	14 (100.00)	89 (96.74)
2	**Christian**	3 (16.67)	0 (0)	0 (0)	0 (0)	3 (3.26)
Total		18 (100.00)	40 (100.00)	20 (100.00)	14 (100.00)	92 (100.00)

Source: Computed

Note: Figures in parentheses are percentage to the total

The table 4 depicts the religion of the respondents in the study villages. It is revealed that almost all the respondents were belonged to Hindu. In Alanganallur village of Alanganallur block a few belonged to Christian religion.

ISSN 2394 - 7780

Table 5: Classification of Farmers

SL.No	Types of Farmers	Alanganallur		Chellampatti		Total
		Alanganallur	Thanichiyam	Valandhur	Natamangalam	
1	**Small** (0-2)	4 (22.22)	8 (20.00)	2 (10.00)	4 (28.57)	18 (19.57)
2	**Medium** (2-5)	10 (55.56)	20 (50.00)	15 (75.00)	7 (50.00)	52 (56.52)
3	**Large** (above 5)	4 (22.22)	12 (30.00)	3 (15.00)	3 (21.43)	22 (23.91)
Total		18 (100.00)	40 (100.00)	20 (100.00)	14 (100.00)	92 (100.00)

Source: Computed

Note: Figures in parentheses are percentage to the total

Table 5 represents the types of farmers. In this table the selected farmers were categorized into Marginal, Small and Large farmers based on the operational holdings. The operational holding refers to the area cultivated by a single household i.e. area owned plus leased in an area mortgaged in (with possession) minus area leased out and area mortgaged in (without possession) and defaulter. Farmers were classified as Marginal farmers owning below 2.5 acres, 2.6 to 5 acres were considered on Medium Farmers and Large Farmers were holding above 5 acres respectively. It could be observed from the table that more than one half of the farmers were medium (56.52%) and one fourth were large farmer. The same trend cloud be notified among the study villages also.

Table 6: Farmers Annual Income

Sl.No	Income	village				Total
		Allanganallur	**Thanichiyam**	**Valandhur**	**Natamangalam**	
1	Below-100000	11 (61.11)	14 (35.00)	1 (5.00)	0 (0)	26 (28.26)
2	100000-200000	7 (38.89)	8 (20.00)	2 (10.00)	2 (14.29)	19 (20.65)
3	200000-300000	0 (0)	5 (12.50)	1 (5.00)	0 (0)	6 (6.52)
4	300000-400000	0 (0)	3 (7.50)	0 (0)	0 (0)	3 (3.26)
5	Above-400000	0 (0)	10 (25.00)	16 (80.00)	12 (85.71)	38 (41.30)
Average Income		94777.78	284600.00	574100.00	698928.5714	373445.65

Source: Computed

Note: Figures in parentheses are percentage to the total

Table 6, explains the distribution of annual family income. The income distribution aims at highlighting the income inequality of the respondents. The value of income was classified in to five categories viz., Below Rs. 100000, Rs. 100000 to 200000, and Rs. 200000 to Rs 300000. It is notified from the table that a majority of the respondent's income was above Rs. 400000 per annum. About the fourth of the respondents, annual income below Rs. 100000. Among the study villages the pattern was not inform. In Valandhur and Natamangalam vest majority of the farmer's annual income was above Rs. 400000 but in Allanganalur and Thanichiyam majority of the farmers income was below Rs. 100000. The average income also varied significantly among the study villages.

ISSN 2394 - 7780

Table 7: Average Borrowings from various Sources

SL.No	Amount Borrowed (Rs)	Alanganallur		Chellampatti		Total
		Alanganallur	Thanichiyam	Valandhur	Natamangalam	
1	Bank	4 16457.1	8 18755.6	2 10078.3	4 9768.3	18 15626.8
2	Private	10 11521.4	20 16444.4	15 6652.2	7 5542.3	52 12246.5
3	Friends & Relative	0 0.0	13 7111.1	4 4478.3	3 2878.6	22 4300.2
Total		14 (100.00)	42 (100.00)	21 (100.00)	14 (100.00)	92 (100.00)

Source**:** Computed

Note: Figures in parentheses are percentage to the total

Table.7 showed that liabilities from various sources in the study villages. In the formers availed loan mainly from banks, friends and relatives? The table reveals that more than one half of the respondents (52) availed loan from friends and relatives. Among the villages also the same trend could be mocked. However the loan amount was higher in banks when compared to other two sources.

Table 8: Cost and Returns in Cultivation of Sugarcane in Madurai District (Rs per Acre)

Sl.No.	Particulars	Alanganallur	Thaniyachiam	Valandhur	Natamangalam	Average
Variable Cost						
1	Ploughing	3245.31	2986.28	3344.21	3100.24	3169.01
2	FYM	8762.31	8431.21	728.84	9183.07	815.36
3	Seed cost	9104.32	9272.81	9431.27	9375.13	9295.88
4	Forming of Ridges	4197.32	4472.67	4631.17	4435.27	6601.6
5	Planting cost	2173.56	2462.01	2571.09	2367.42	2393.52
6	Weed side cost	931.82	949.81	1087.41	917.09	984.03
7	Pesticide cost	350	425	495	397	416.75
8	Spaying cost	347.37	372.61	391.09	411.89	380.74
9	Earthling up	2150.82	2072.81	2471.81	2124.31	2204.93
10	Irrigation	4136.84	4234.34	4919.09	4086.17	4344.11
11	Harvesting cost	607.31	650.81	715.42	680.21	443.44
Total variable cost	36007	36330.4	37342.4	37127.8	36701.9	
Total Fixed Cost						
1	Rental value of land / Rent on leased land	20000	18000	19000	16000	18250
2	Interest of fixed Investment	2400	2160	2280	1920	8760
Total Fixed Cost	22400	20160	21280	17920	7240440	
Total operating cost	58407	56490.4	58622.4	55047.8	57141.9	
Return per acre						
a.	Yield per acre	49.71	51.62	52.32	53.61	51.81
b.	Price per tonnes	2142.69	2099.19	2034.58	2069.79	2086.56
c.	Gross Returns	106513	108360	106449	110961	108079
Net Income	48106.1	51869.8	47826.8	55913.6	50929.1	
Input / Output ratio	1.82	1.92	1.81	2.02	1.89	

Source: Computed

Note: Figures in parentheses are percentage to the total

ISSN 2394 - 7780

Fixed Cost

Fixed cost includes the such as rent paid for leased in land or rental value of land, and interest of fixed, Investment, Rental value of own land was worked out based on the rates paid for leased in land which was estimator cost per acre, the total fixed cost was Rs. 22400 for Alanganallur, Rs 20160 for Thanichiyam, Rs. 21280 for Valampatti and Rs. 17920 for Natamangalam. The estimated average fixed cost together was Rs. 7240440.

Variable Cost

Variable cost include Ploughing, FYM, Seed cost, Forming of Ridges, Planting cost, Weed side cost, Pesticide cost, Spaying cost, Earthling up, Irrigation, Harvesting cost, etc,. The estimate variable cost was Rs. 36006.98 for Alanganallur, Rs. 36330.36 for Thanichiyam, Rs. 37342.4 for Valampatti area and Rs. 37127.8 for Natamangalam Respectively.

Total Cost

The total cost of cultivation of sugarcane for the year of 2018-19 for Alanganallur, Thanichiyam, Valampatti and Natamangalam was estimated Rs. 58406.98, Rs. 56490.36, Rs. 58622.4 and 55047.8 respectively. Hence there was a small difference in the total cost among the farmers.

Returns

The returns comprise income earned by selling products. To estimate the gross returns one acre of sugarcane cultivation was Rs. 106513.11 for Alanganallur, Rs. 108360.18 for Thanichiyam, Rs. 106449.22 for Valampatti and Rs. 110961.44 for Natamangalam respectively. The net returns for four villages after covering fixed and variable cost was Rs. 48106.13, for Alanganallur, Rs. 51869.82 for Thanichiyam, 47826.82 for Valampatti and Rs. 55913.64 for Natamangalam respectively. The in out ratio is 1.02, 1.92, 1.81 and 2.02, for Alanganallur, Thanichiyam, Valandhur and Natamangalam respectively.

Table 9: Problems by the Farmers in Cultivation of Sugarcane in Madurai District

SL. No	Factors		I 77	II 63	III 54	IV 46	V 37	VI 23	Total Score	Mean Value	Rank
1	Non-Availability Suitable variety	F	13	18	22	10	12	17	92	50.56	II
		FX	1001	1134	1188	460	444	425	4652		
2	Inadequate Loan Facilities	F	16	13	16	21	16	10	92	51.33	I
		FX	1232	819	864	966	592	250	4723		
3	Inadequate irrigation Facilities	F	20	9	7	12	27	17	92	48.48	V
		FX	1540	567	378	552	999	425	4461		
4	Wage rate for Labour is high	F	11	8	22	31	8	12	92	49.57	III
		FX	847	504	1188	1426	296	300	4561		
5	Transport cost is high	F	7	11	33	11	21	9	92	49.15	IV
		FX	539	693	1782	506	777	225	4522		
6	Price is Low	F	9	21	11	8	22	21	92	46.92	VI
		FX	693	1323	594	368	814	525	4317		

Source: Computed

Note: X-Scale value, F-Number of sample respondents, Fx-Score

The problem of the farmers are listed and ranked in table 9. Among the various problem and stated inadequate loan facilities stood first with the mean value of 51.33 Non-Availability Suitable variety of sugarcane (50.56) high labour change (49.57) high transport change (49.15) poor irrigation (46.92) were ranked respectively from two to six.

ISSN 2394 - 7780

CONCLUSIONS

It's concluded that there is a positive relationship in Area, Production and Productivity of Sugarcane production in India, However in Tamil Nadu the fluctuation is much higher than other sugarcane producing states. The sugarcane cultivation in all four villages especially in Thaniyachiayam was high in terms of productivity Tamil Nadu should average yield was very less and it was reflected in the study villages. So, the government of India should provide subsides given to the farmers to increasing area productivity.

REFERENCE

- Dr. Ankasala samba Siva Rao (2014), Monsoon in Coimbatore,'' Madras Agricultural Journal, Vol.45 (1), Pp .13, 2014.
- Mohanasundari.P(2013) '' Determination of sugarcane prices – a case study'' Indian Journal of Agricultural Economics,vol.36 (1) ,pp. 112,2013.
- Mahalakshmi.B (1996), "Production of sugarcane in Madathukulam Block Coimbatore District'', Unpublished M.Phil. Dissertation Bharathiyar University, Coimbatore
- More,M.M et,al (2017) ''Sugarcane Productivity '', Kissan World ,vol.39, No.1, PP.20-21, June 2016
- Padmanadhan (2009), ''In their study of sugarcane and sugar in India''
- Rout. R .K (2015), Area, production and yield '',Agricultural Economics Research,Vol :20,Aug 7,2015
- Dr.Saravanan.k (2015), ''Organic Sugarcane Farmer for Enhancing Farmers'' Income and Reducing the Degradation of land and water Resources in Maharashtra'', Indian journal of Agricultural Economics, Vol 63, No.3, 396-405
- Venkatraman A.L. (2008), ''Sugarcane Productivity '', Kisan World , vol.39,No.1,Pp. 20-21,June 2009.

International Journal of Advance and Innovative Research
Volume 6, Issue 2 (XII): April - June, 2019
ISSN 2394 - 7780

AGRICULTURAL INPUTS BY RURAL WOMEN IN SELF HELP GROUPS: A STUDY OF DULIAJAN AND JOYPUR PANCHAYAT IN DIBRUGARH DISTRICT OF ASSAM

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ABSTRACT
Self Help Groups have emerged as an effective agency to integrate women in the rural economy and bring economic stability. The neo-liberal market has seen a dynamic shift in socio-economic systems and with it change in women's traditional role in agriculture. The state initiative of extending credits to rural women through self help groups for inputs in various agricultural activities and other forms of livelihood has seen a significant step in integrating her into the contemporary economic system. Even though, the agency constructs a way to promote traditional farm based activities and other rural occupations concerning both economic and environmental sustainability, there is a diversification in livelihood with women taking up various activities like growing vegetables, rearing livestock and practicing pisciculture. Diversification of livelihoods has seen credit utilization operating in various farm-based and also non-farm activities. This paper discusses the various socio-economic factors defining women's choice in spending credit inputs in farm-based activities and also diversifying into non-farm activities. It observes the engagement of rural women in various agricultural activities and other allied activities and their contribution to agricultural growth in the state.

Keywords: Agricultural inputs, rural women, self help groups, livelihood diversification, farm based and non-farm activities.

INTRODUCTION
Agriculture is the most important source of livelihood to more than half of the country's population and women being an integral part of it. About 2/3rd of total female workforce in India is absorbed into agricultural activities. The female workforce participation in Assam is 22.46% and rural workforce participation of females in the state is 23.7%. Traditionally rural women in Assam have been engaged both in household activities and agriculture (Saikia, Gogoi & Lekharu, 1986, pp.12-13). However, changes in the socio-economic scenario of the market has resulted significant changes in women's role in the economy, including education levels, socio-economic levels and technology (Baruah, 1992, pp.22). There has been and increasing valuation of land due to commercialization and growing of cash crops which grew to a disadvantage for women. In some parts of Asia women were completely exempted from working in the fields and all agricultural work carried out by men, even those earlier done by women. Freed from work women were confined to domestic work and losing her economic value as observed in the "plough culture" (Borserup, 2008, pp.13.).

The state intervention to introduce and encourage the growth of Self Help Groups (SHG) to provide micro-credits and self-finance communities gave way to women's inclusion to the existing economic growth. These self help groups formed as small informal association of people with preferably similar socio-economic background get together to help each other and take up collective responsibility. It establishes credit worthiness of the poor especially women and also enhances the ability and potentiality to empower women members (Shandilya and Kumar, 2012, pp.39-40). It has given equal opportunities to people from different socio-economic backgrounds, which may have unequal access to resources to provide for themselves. Such that access to land may not be available to most of the rural women, thus SHGs have helped them to put emphasis on other farm assets and livelihoods. According to Mishra (2012), "the reallocation of economic assets and activities, within and outside household is shaped by the layer process of change in political economy as well as micro-realities of power and powerlessness". Therefore, social and economic conditions affect women's choice and access to resources. Therefore, only providing credits wouldn't mean that a woman is capable of putting her credits into any venture she desires. Her access to resources is defined by the political economy and social limitations, which includes her social, economical and personal characteristics.

OBJECTIVE OF THE STUDY
To study the various socio-economic factors that define women's choice in spending credit inputs in agriculture and other farm-based livelihoods and diversifying into non-farm activities.

STUDY AREA
The paper focuses its observations on two village panchayats namely Duliajan and Joypur, both located in Dibrugarh district of Upper Assam. The villages lie within a radius of 60kms from Dibrugarh Town and lie in close proximity of 6kms near the Duliajan OIL Town, a rising industrial town, thus making an impact on those living around it.

ISSN 2394 - 7780

METHODOLOGY

The study is based on a primary survey conducted in the period from December 2017 to January 2018 through the help of a prepared questionnaire. Responses were collected during weekly gatherings and from door to door. The respondents were chosen by using a purposive random sampling and a total of 117 samples were collected for the study. The 117 samples were active members of SHGs from Duliajan and Joypur village panchayats. 75 women out of 148 were selected from Duliajan village which had 10 SHGs, while 42 women out of 83 were selected from Joypur village which had 7 SHGs. Thus, a representation of 50.6% was taken from both villages.

ANALYSIS AND FINDINGS

Socio-economic characteristics

Self help groups cater to the needs of people of all age groups who strive to make or start a living. The respondents of the study were found to be within the age of 24 years up to 55 years, most of them in the age of 31-40 years (41.9%) and below 30 years (35%). Their level of education was poor but everyone attended school at least for a few years before dropping out. Thus, there was no illiteracy and everyone could read and write. Nevertheless, they could continue only for a few years in their primary education (31.6%) and middle school (27.4%). Higher dropouts effected in only 21.4% giving their 10^{th} boards and 12% their 12^{th} boards. Only a handful of 7.7% have completed their graduation. Furthermore, a majority of 81.2% are married women in the sample group. Lying in the Dibrugarh district both the villages have a high population of Ahom, Sutiya, Sonowal, Moran and Muttock people which falls in OBC and scheduled tribe communities. Therefore, the sample has a high number of OBC (47.9%) and scheduled tribes (28%) and a majority of 93.2% are Hindus.

Based on their rural background most (37.6%) rely on primary activities or remain unemployed or a homemaker (41.9%). These activities range from working in their own farms or on other's farm and also take up other allied activities. A considerable number of 16.2% had been involved in some form of secondary activity namely tailoring and garment making. While those working in the tertiary sector (4.3%) are employed as village auxiliary nurse and mid-wives or teachers in the village school. Economic conditions are often defined by the amount of land one owns. However, most of the respondents had no land in their own names as it is common in a patriarchal society where land property is usually passed on to a male heir except in few cases like widows where she is the custodian of her son's left behind property. As a result, the study considered the family's land size where it was found that 4.3% of the respondent's family was landless and a 25.6% had landholdings of 1 to 5 kathas. A majority of 53.9% had lands between 6 to 10 kathas and only 16.2% had more than 11 kathas of land. Moreover, family type and size also were considered for the how the family behaved and how many people were there in the household to share the income. Family sizes didn't vary much in number with most households having 5 to 7 members (41.9%), followed closely by 35% in families having 1 to 4 members and least with 23% in large families having more than 8 members. Among these 75.2% was living as nuclear families and rest as joint families.

Table 1: Socio-economic characteristics of sample respondents

Characteristics	*Category*	*No.*	*%*
Age	<30 yrs	41	35
	31 to 40 yrs	49	41.9
	41 to 50 yrs	25	21.4
	> 51 yrs	2	1.7
Education	Primary	37	31.6
	Middle	32	27.4
	Secondary	25	21.4
	Senior Secondary	14	12
	Graduation	9	7.7
Marital Status	Unmarried	7	6
	Married	95	81.2
	Saperated	9	7.7
	Divorced	2	1.7
	Widowed	4	3.4
	Muslim	8	6.8

ISSN 2394 - 7780

Occupation	Unemployed/ Homemaker	49	41.9
	Primary	44	37.6
	Secondary	19	16.2
	Tertiary	5	4.3
Land size	Landless	5	4.3
	Small (1-5 katha)	30	25.6
	Medium (6-10 katha)	63	53.9
	Large (above 11 katha)	19	16.2
Family size	Small(1-4)	41	35
	Medium(5-7)	49	41.9
	Large(8 above)	27	23.1
Family type	Nuclear	88	75.2
	Joint	29	24.8

Different choices of livelihood

SHGs have extended credit to all its members and are growing especially in rural areas. Rural women have actively been a part of rural economy and working alongside men as agricultural labour in cultivation, rearing of livestock and allied activities. However, most of this work falls into "invisible labour" with the fact that they do-not own neither land nor livestock. However, with help from SHGs women can now get credit loans and put them into use under their own ownership. The following are different livelihood options are where women have put their credit input to use.

Table 2: Women involve in putting credit inputs in different livelihood options.

Livelihood options	*% of respondents putting credit inputs*
Seeds and saplings	11.1
Fertilizers and Pesticides	19.7
Farm tools and machineries	6
Poultry	64.1
Animal husbandry	14.5
Pisciculture	10.3
Weaving and sewing	72.6
Beauty Parlour	13.7
Trade	2.6
Home expenditure	76.1

It is observed that among agricultural or farm activities majority of 64.1% women have put their SHG credits into poultry. These women included in their responses that investing in poultry (chickens and ducks) was both beneficial and easier for them as they gave easy returns in form of eggs and meat. Eggs and meat could be easily sold from house to house and did not need any kind of establishment and selling could be done by casual conversations in the village. However, this was not in the case of keeping large farm animals (14.5%) as they were costly and needed larger space to keep them. Similarly, in the case of pisciculture (10.3%) the need of large water bodies is necessary to breed fish and that too for commercial purpose.

Direct inputs in agriculture or cultivation of crops haven't gained preference among women as inputs in buying seeds and saplings, fertilizers and pesticides and farm tools and machineries are low. The lack of ownership of land and also small family landholdings discourage women to venture into sole cultivation of crops. However, it was reported that even if they have not used their credit inputs into buying seed, sapling and farm tools but they have in fact cultivated cash crops in whatever land available to them. These seeds and saplings have been freely donated by both government agencies and NGOs for the welfare of women and agricultural growth in the village. Rural women have grown vegetables, mustard and the growing cultivation of Agar trees for commercial production. In many case women themselves sell these produces in the local market. The Assam government has distributed tractors under the Chief Minister's Samagra Gramya Unnayan Yojana to collective group of youths has been a welcome initiative to growth of agriculture in the state, but has been of little benefit to

ISSN 2394 - 7780

women's role in agriculture. However, to contribute to farm inputs women have considerably used their credits to buy fertilizers and pesticides (19.7%) and claim their economic rights to crop outputs.

Rural women have also diversified their credit inputs into non-farm activities namely weaving and sewing, working in beauty parlours and some even trade. Women in entire Northeastern India are traditionally engaged in weaving and it has been an integral part of women's life. With credit input rural women are now commercializing this day-to-day activity in their lives and earning an income. Thus, a large share of 72.6% women has put credits into weaving. While some among them has also opened tailoring shops, some have ventured into newer business enterprises in beauty parlours (13.7%). These women have collectively opened their establishments or are hired into them. A few women have also taken into trade (2.6%) specifically garment import-export and opening food stalls. However, the study observes a high engagement of women utilizing their credits for day-today home expenses for paying bills, fees and buying household goods. These loans hamper the growth of women's empowerment as they give no return and act more like liabilities than assets to growth.

Effect of socio-economic variables on choice of input

Rural women of Duliajan and Joypur village had utilized their credit input in various economic activities, diversifying their livelihoods in both farm-based and non-farm based activities. However, it is observed that there are various socio-economic variations among the women which affect their access to resources and in turn affect their choice of livelihood. The effect of various personal, social and economic variables are shown below which effect different livelihood options of the rural women.

Table-3: Correlations of various socio-economic variables of respondents on their choice of livelihood.

		Seed and Saplings	Fertilizers and Pesticides	Farm machineries and tools	Poultry	Animal husbandry	Pisciculture	Weaving and Sewing	Beauty Parlour	Trade	Household expenses
Personal variables	Age	-0.70	-0.05	-0.15	-0.22*	0.01	-0.03	0.15	0.22	-0.15	-0.37
	Education	0.82	0.03	-0.16	-0.09	0.01	0.14	0.05	0.14	0.34**	0.12
Social variables	Caste	-0.60	0.41**	-0.30**	0.03	0.16	0.11	-0.50**	0.04	0.18*	-0.01
	Religion	0.10	0.13	0.07	0.29**	0.11	0.09	-0.01	0.36**	0.04	0.32**
	Marital status	-0.04	-0.08	-0.10	0.09	-0.01	-0.05	0.09	0.09	0.04	-0.15
	Family size	-0.01	0.21*	0.14	0.38**	-0.18	-0.05	-0.23*	0.16	0.15	0.41**
	Family type	0.01	0.28**	0.15	0.31**	-0.10	0.06	-0.31**	0.06	0.09	0.51**
Economic variables	Occupation	-0.01	0.05	-0.03	-0.40**	-0.02	-0.07	-0.19*	-0.52	0.03	-0.01
	Landholding size	0.22	0.52**	0.33**	0.21**	0.24**	0.35**	-0.52**	-0.44**	0.05	-0.11

*significant at 5% level of significance

**significant at 1% level of significance

The above table shows some significant (as marked) correlations among the variables and on the livelihood options that rural women have chosen to put their credit in. Few variables may not affect some choice of livelihood as the others.

Personal variables like age has a negative relation to poultry (-0.22) as a livelihood option to put their credits into, suggesting that women in younger age groups tend to invest more in poultry. Many of the young women start new into any economic activity face the risks of loss. As discussed earlier it was reported by respondents that poultry gave easier returns and had less risks in management, therefore making it best choice for young venturers to put their credits into use in rearing poultry. It was also observed that women with a higher educational status were the ones investing in trade (0.34) as a livelihood. As trade needed much understanding of business it is explainable that it is taken up by women with higher educational status. Apart from these two relations personal variable did not much affect or had any significant relations with any other livelihood choices.

Social variables include caste, religion, marital status, family size and family type. Caste is seen to have a significant positive relation with credit inputs in fertilizers and pesticides (0.41) and trade (0.18), meaning that credit inputs in these livelihoods are put by women belonging to higher castes. Meanwhile, women in lower castes groups tend to have their choices in farm tools (-0.3) and weaving and sewing (-0.5). Women putting their credits in buying tools reportedly bought small hand tools like trowel, hand forks, and hoes; to be used for planting vegetables and other plants, while those involved in weaving bought threads and tools to work in the loom. Also, more Muslim women were putting their credits into poultry, beauty parlour and spending more in

ISSN 2394 - 7780

household expenses. During the survey these women informed SHG credits aided them to establish and invest in the grooming sector, while some bought 2 to 3 chickens to trade in eggs. However, their household expenses have remained high as loans are easier to get from SHGs than any bank. The marital status of the women didn't have any significant relationship with any of the livelihood options. The size of the family and family type has both a positive relation to credit inputs in fertilizers and pesticides (0.21; 0.28), poultry (0.38; 0.31) and household expenses (0.41; 0.51), meaning credit input in these livelihoods were being put by women from large families and joint families; while having a negative relation to weaving and sewing (-0.23; -0.31).

The economic conditions of the respondents were observed by their type of occupation and amount of landholding. Type of occupation had a negative relation to both poultry (-0.4) and weaving (-0.19). Women in primary occupations and those who were unemployed or homemakers tend to put more of the credit inputs into these activities. In case of size of land holdings, women having larger landholding had put their credit inputs into fertilizers and pesticides (0.52), farm tools and machineries (0.33), poultry (0.21), animal husbandry (0.24) and pisciculture (0.35). These livelihoods need large land spaces to accommodate farm activities and thus are implemented by those who have larger landholdings. Weaving and sewing (-0.52) and beauty parlour (-0.44) need not need much space and are implemented by women with even lesser landholdings.

CONCLUSION

The various socio-economic variables have effected each livelihood option separately and specifically. While personal variables like age and educational status of the women affected their experience and knowledge in managing livelihoods such as trade, social and economic variables affected their financial and asset efficiency in accessing resources. The study observed that personal variables- age and education determined the individual's capacity to indulge in activities like poultry and trade consecutively. Social variables observed that women from socially higher sections of the society had put their credit inputs in trade and also fertilizer and pesticides to put in their farm lands. Lower caste women had to rely on weaving and sewing and in some cases working in beauty parlours. This was also seen in case of Muslim women who had put their credit to use in tailoring and working in beauty parlours. Women with larger families and living in joint families invested more in fertilizers and pesticides and poultry. Credit inputs into household expenses were also higher among families having larger size, joint families and Muslim women. The effect of economic accessibility was observed in women belonging to primary occupation and those who are unemployed or home makers had put their credit inputs in poultry and weaving and sewing. Also livelihood activities needing large area for functioning like poultry, animal husbandry, pisciculture and cultivating crops by using fertilizers and pesticides and farm tools and machineries had credit inputs put by women with access to larger landholdings.

Rural women with the aid of SHGs have diversified their livelihood options in both agriculture or farm-based activities and non-farm activities. However, due to various socio-economic differences among them women from different backgrounds tend to put their credit inputs according to what they are accessible to. Credits provide an opportunity to opt to start a living and accordingly choose a livelihood which caters within their reach or socio-economic background. It has given a push towards equality and agricultural and rural integration of women.

REFERENCES

- Baruah, S. L. (1992). Status of women in Assam. *OMSONS Publication. New Delhi.*
- Boserup E. (2008). Women's Role in Economic Development. *Earthscan. London.*
- Chauhan, N. M. (2012). Role performance of tribal farm women in agricultural and animal husbandry in Gujarat. *Karnataka Journal of Agricultural Sciences*, *24*(5).
- Ghosh, M., & Ghosh, A. (2014). Analysis of women participation in Indian agriculture. *IOSR Journal of Humanities and Social Science*, *19*(5), 1-6.
- Mishra D.K. (2012). Livelihoods Diversification: Farming, Forest-use and Gender in Northeastern India. *Agriculture and a Changing Environment in Northeastern India. Routledge, New Delhi. 137.*
- Saikia, P. D., Gogoi, K., & Lekharu, A. (1986). Indian Rural Women: A Study on Role and Status of Rural Women in Assam. *Mittal Publications. New Delhi.*
- Shandilya T.K. and Kumar A.(2012). Micro Finance and Rural Development. *Deep and Deep Publication. New Delhi.*

International Journal of Advance and Innovative Research
Volume 6, Issue 2 (XII): April - June, 2019
ISSN 2394 - 7780

THE IMPACT OF LABOUR MARKET IN INDIAN SCENARIO

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ABSTRACT
A labour market is the place where workers and employers interact with each other. In the labour market, employers compete to hire the best, and the workers compete for the best satisfying job. According to Bhagoliwal "a process by which supplies of particular type of labour and demand of that type of labour balance or seek to obtain a balance.

INTRODUCTION
Labour market policies refer to measures that influence labour demand and supply, and the interaction between the two. This category of policies typically consists of labour market integration measures available to un-employed or those threatened by unemployment, typically labeled as active labour market policies (ALMPs), along with interventions that provide income replacement, usually called passive labour market policies (PLMPs). The overall term "labour market policy" is used, most of the focus is on the first category (active labour market policies), while issues surrounding unemployment benefits are addressed in more detail. Firstly, advanced countries, particularly European nations, have turned to what has been called "mutual obligations": in return for receiving unemployment benefits, unemployed recipients are required to report to employment services to receive counseling and job search assistance.

LABOUR MARKET DEFINITIONS
While much of the terminology used to describe the labour market activities of individuals may seem familiar, official documents tend to use fairly precise definitions. One basic function of these surveys is to categorize the "eligible" population (see working-age population below) into one of three distinct labour market states: employed, unemployed, and not in the labour force. The Working-age Population (POP) refers to people 15 years of age and over who are potentially surveyed by Statistics Canada (in the LFS or Census) regarding their labour market activities. The Labour Force (LF) is the number of people 15 years of age and over who, during the survey reference week, were either employed or unemployed. Employment (E) refers, for the most part, to the number of people who, during the survey reference week, worked for pay or profit. Workers are labelled as Full-time when they usually work 30 hours or more per week at their main (or only) job. Otherwise, they are deemed to be Part-time workers. There are two broad categories of workers - those who work for themselves (Self-employed) and those who work for others (Employees). This distinction is important for income and payroll tax purposes.

LABOUR FORCE PARTICIPATION RATE AND WORKFORCE PARTICIPATION RATE BY Gender in 1983 to 2011-12

	LFPR			WFPR		
year	Male	Female	Persons	Male	Female	Persons
1983	55.1	30.0	42.9	53.9	29.6	42.0
1993-94	5506	29.0	42.8	54.5	28.6	42.0
2004-05	55.69	29.4	43.0	54.7	28.7	42.0
2011-12	55.6	22.5	39.5	54.4	21.9	38.6

Source: Computed from various NSSO rounds (India Labour and Employment report 2014)

Note: LFPR –Labour Force Participation Rate

WFPR –WORKFORCE PARTICIPATION RATE
One of the main characteristic features of India labour market is that low female participation rate that is visible in its poor labour sex ratio and also low in worker total population ratio. The table shows that Labour Force participation rate and Workforce participation rate by gender (Male/Female) for years 1983 to 2011-12. In the following table it is clearly visible that the overall Labour Force Participation Rate (LFPR) stands at 39.5 percent which for women is 22.5 percent in the year 2011-12. It is observed in the table the male Labour Force Participation Rate (LFPR) has been stable at 55.1 to 55.6 percent during three decades from 1983 to 2011-12 but there is declining trend is seen in the female LFPR that from 30.0 percent in 1983 to 22.5 percent in 2011-12. In the table almost same trend is exhibited in workforce participation rate. The latest data from the Labour

ISSN 2394 - 7780

Bureau indicates a further decline in the participation rate of women in 2015-16 (27.4 per cent). Participation rates are even lower in urban areas and among educated women, and when women work they tend to end up in marginal jobs, often in home-based work (as contributing family worker/unpaid worker) and the domestic work sector.

India is still home to 10.1 million working children in the age group of (5-14) years (Census, 2011). In addition, more than 42.7 million children in India are out of school. The five states with the highest incidence of working children are: Uttar Pradesh, Bihar, Rajasthan, Maharashtra, and Madhya Pradesh; these states constitute nearly 55 per cent of working children in India. Child labour has different ramifications in both rural and urban areas. In rural regions, the majority children are working as agricultural labourers and cultivators, whereas in urban areas, they are mostly engaged with household and informal industries..

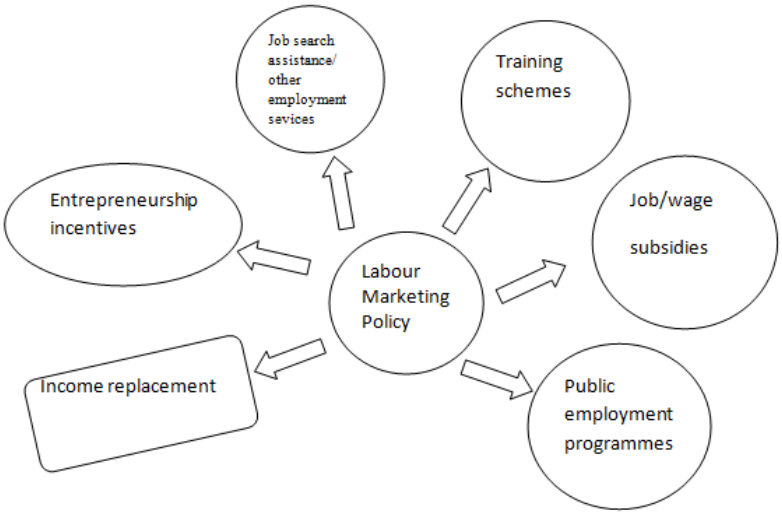
STRUCTURE OF INDIAN LABOUR MARKET

Labour market is a place where employee and workers come in direct contact with each other. In the labour market, the worker struggle for the best job satisfaction and employers take part to pick the best. In other words labour market is that place in which workers participate for jobs and employers contest for workers, so without competition there would be no market. In an economy labour market operates with demand and supply of labour. In a market worker‘s supply is supply of labour and labour demand is the firm’s demand for labour. It is only changes in the bargaining power which pulls the supply and demand of labour in the market. Globally Indian economy is considered as one of the fastest growing economy in the world Majority of the world’s economy and population are still established in traditional structures and activities. So, in India the labour market basically spread across the agriculture sector and the urban formal (organized) and informal (unorganised) sector.

TRENDS IN RURAL AGRICULTURAL WAGES

Though measuring wages is inherently difficult in a country where the majority of workers are self-employed and in agriculture, most trends show that rural agricultural wage growth has been robust. Agricultural operations –ploughing, sowing, weeding, transplanting and harvesting –show the rapid growth in rural agricultural wages in the 2000s. This was especially so during the period from 2004-05 to 2013-14. The fundamentals to sustain high rates of growth are in place in India: favourable demographics, high savings and investment rates (assuming the current rates will rise back to the longer term trend), and increased resources for infrastructure and skills development. The challenge is to ensure that these drivers of growth are associated with the creation of more decent jobs that are accessible to youth, women and all segments of society, particularly in rural areas.

EVALUATING LABOUR MARKET POLICIES



India has made encouraging progress in reducing its official poverty rate. But the nation has an opportunity to help more than half a billion people attain better living standards. India has made encouraging progress in reducing its official poverty rate. But the nation has an opportunity to help more than half a billion people attain better living standards. Randomized trials in developing countries have increased rapidly over recent years, particularly in areas like education and health. Results from these experiments have already influenced how policies and programmes are implemented. A labour market is the plave where workers and employers interact with each other. In the labour market, employers compete to hire the best, and the wokers compete for the best

ISSN 2394 - 7780

satisfying job. According to Bhagoliwal "a process by which supplies of particular type of labour and demand of that type of labour balance or seek to obtain a balance.

MIGRATION OF WORKERS ACROSS DIFFERENT STATES AND RURAL-URBAN AREAS

Migration has been a global phenomenon. It has become a part of worldwide process of industrialization and urbanization due to the expansion of transportation and communication. Migration is another significant feature of Indian labour market where workers across different states as well as from rural to urban areas migrate in search of new employment opportunities. In our economy the workers migrate from under-developed states to the developed ones to find proper jobs, better earning opportunities and to earn their livelihood. This mobility in the labour market may be across occupations, work statuses, location and sectors. Most complex form of worker mobility is the geographical migration is the one of the most important also. The one of the most common is the distress migration by the rural poor, which is due to the lack of local livelihood opportunities. The census and the NSSO mainly identify permanent or semi-permanent migration but fail to capture seasonal migration, the magnitude of which is both large and growing.

CONCLUSION

Job growth in transport and trade was significantly faster than average India employment growth. The construction sector added many lower-productivity jobs, however, so GDP growth for the sector was lower than average national growth. Indan labour system emphasizes the unfavourable independent work, flexible or part-time jobs, and supplementary income generation activities which are not captured by surveys and frameworks currently. The labour force participation rate is affected by multiple factors, such as age, education, income, job opportunities, and cultural attitudes. Recessionary conditions can lead the participation rate to dip, but even this may happen only over a longer time or under extreme economic stress. India has made encouraging progress in reducing its official poverty rate. But the nation has an opportunity to help more than half a billion people attain better living standards.

REFERENCE

- Rameez Abbas and Varma Abbas(2014), "Internal Migration in India Raises Integration Challenges for Migrants" Migration Policy Information Source. p.25.
- Economic Survey (2012-13).
- ILO (2003),"Statisticaldefinition of Informal Employment: Guidelines endorsed by seventeenth International Conference of Labour Statisticians."
- Bhalla, G. S.and Hazell(2003), "Rural Employment and Poverty Reduction", Economic and Political Weekly, Vol. 38, No. 33.
- This is Labour Bureau's data from the fifth annual employment-unemployment survey,2015-16 and is for aged 15 years and above

International Journal of Advance and Innovative Research
Volume 6, Issue 2 (XII): April - June, 2019
ISSN 2394 - 7780

A STUDY ON THE OUTLINE OF AGRICULTURAL EFFICIENCY IN TAMILNADU

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ABSTRACT
Productivity in agriculture is not a synonym of fertility. It is more commonly used to express the power of agriculture in an area to produce crops, irrespective of the fact whether that power is due to the bounty of nature or to the efforts of man. Agriculture is the core sector of Indian economy; it accounts for about 34.8 percent of the national income and provides livelihood to 66.7 percent of the working population of the country. Agriculture is commonly grouped with farming, mining, forestry and fisheries under the head of primary industries. The importance of agricultural sector of the economy, rich and poor, is borne out by the fact that it is primary sector of the economy which provides the basic ingredients necessary for the existence of mankind. Major part of the country's population earns its livelihood from agriculture.

INTRODUCTION

At present in terms of agricultural productivity India hold second position. The agricultural production in India comprises of field crop, fruit plantation crop, livestock, forestry, fishery etc. but the pace of productivity is low in recent years, even many initiatives has been led by the government. Many schemes like RKVY, NADP, were launched by government to cope up with the problem of slow pace of agricultural growth. India has wide capability to produce wide range of agricultural and allied products. Major crops of the area are paddy, wheat and maize. Manpower is also available in sufficient quantity which can be utilized properly for overall development of agricultural sector.

MEANING OF AGRICULTURAL PRODUCTIVITY:

Agricultural productivity means not only measuring the yield per acre of land but also the measurement of labor and capital. The factors determining agricultural productivity are rainfall, fertilizer, pesticides, climatic conditions, variety of seeds etc., and also there are other factors which reduce the agricultural productivity in Tamil Nadu.

Agriculture productivity may be defined as a ratio between the index of agricultural output and the index of total input used in farm production. It is therefore, a measure of efficiency of farming with reference to inputs applied in crop production other things being equal.

CAUSES OF LOW AGRICULTURAL PRODUCTIVITY IN TAMIL NADU:

The major causes of low agricultural productivity in Tamil Nadu are rising pressure of population on land, increasing construction both household and industry and fragmentation and subdivision of land. And also there are some technological causes which reduce the productivity. They are old production process, low yielding seeds, lack of irrigation facilities and lack of storage facilities. There are some other causes which reduce the agricultural productivity in Tamil Nadu. They are poor monsoon, high cost for laborers, and lack of power or irregular power supply.

SECTOR WISE COMPOSITION OF GDP IN INDIA

Indian economy is classified in three sectors — Agriculture and allied, Industry and Services. Agriculture sector includes Agriculture (Agriculture proper & Livestock), Forestry & Logging, Fishing and related activities. Industry includes 'Mining & quarrying', Manufacturing (Registered & Unregistered), Electricity, Gas, Water supply, and Construction. Services sector includes 'Trade, hotels, transport, communication and services related to broadcasting', 'Financial, real estate & Prof Servs', 'Public Administration, defence and other services'.

Services sector is the largest sector of India. Gross Value Added (GVA) at current prices for Services sector is estimated at 73.79 lakh crore INR in 2016-17. Services sector accounts for 53.66% of total India's GVA of 137.51 lakh crore Indian rupees. With GVA of Rs. 39.90 lakh crore, Industry sector contributes 29.02%. While, Agriculture and allied sector shares 17.32% and GVA is around of 23.82 lakh crore INR.

At 2011-12 prices, composition of Agriculture & allied, Industry, and Services sector are 15.11%, 31.12%, and 53.77%, respectively.

Sector wise Indian GDP compositions in 2014 are Agriculture (17.9%), Industry (24.2%) and Services (57.9%). Total production of agriculture sector is $366.92 billion. India is 2nd larger producer of agriculture product. India accounts for 7.68 percent of total global agricultural output. GDP of Industry sector is $495.62 billion and

ISSN 2394 - 7780

world rank is 12. In Services sector, India world rank is 11 and GDP is $1185.79 billion. Contribution of Agriculture sector in Indian economy is much higher than world's average (6.1%). Contribution of Industry and Services sector is lower than world's average 30.5% for Industry sector and 63.5% for Services sector.

At previous methedology, composition of Agriculture & allied, Industry, and Services sector was 51.81%, 14.16%, and 33.25%, respectively at current prices in 1950-51. Share of Agriculture & allied sector has declined at 18.20% in 2013-14. Share of Services sector has improved to 57.03%. Share of Industry sector has also increased to 24.77%

IMPORTANCE OF THE STUDY

India has made impressive strides on the agricultural front during the past three decades. Much of the credit for this success should go to the several million small farming families that form the backbone of Indian agriculture and Indian economy. Policy support, production strategies, public investment in infrastructure, research and extension for crop, livestock and fisheries have significantly helped in increasing the agricultural productivity, food production and its availability. Notwithstanding these achievements, producing additional food with limited land, and providing economic access to food at the household level for ensuring food security would continue to be a major challenge for the nation. India has experienced considerable changes in the crop mix, yield and production since the inception of the Green Revolution. The Green Revolution phase displayed a high yield growth per unit of input. The first post-Green Revolution phase (from late-1960s to mid-1980s) was marked by the continued growth in returns from land through the intensification in use of chemical inputs and machine labor. The second post Green Revolution phase (beginning the mid-1980s) was characterized by high input-use and decelerating productivity growth. It calls for an examination of the issues related to the trends in agricultural productivity, particularly with reference to the factors like fertilizer usage, pesticides use, Irrigation facility, etc., in recent years**.**

METHODOLOGY OF THE STUDY

The data is collected through the secondary sources. The different sources include Ministry of agriculture and farmers welfare, Government of India, Agriculture statistics at a glance, Government of India, Ministry of statistics and programme implementation, Basic statistical returns of scheduled commercial Banks in India, RBI, various issues , Central statistics office (CSO).

OBJECTIVES OF THE STUDY

1. To study the causes for low agricultural productivity in Tamil Nadu
2. To study the pattern of agricultural growth in Tamil Nadu
3. To find the level of agricultural productivity in Tamil Nadu.
4. To suggest the measures to disburse the obstacles of agricultural sectors.

HYPOTHESIS OF THE STUDY

1. There is no significant relationship between agricultural sector growth rate on the growth rate of capital formation, fertilizer consumption, irrigated area covered, total sown area, pesticides consumption and agricultural loan disbursed.
2. There is no correlation between the agricultural GDP on agriculture sector loan disbursed and fertilizer consumption.

LIMITATIONS OF THE STUDY

The major limitation is for the variables taken in this study the values given are different. There is no common value for those variables which have taken in this study. This study was made by the use of only secondary data so not possible to collect the opinions of the farmers.

Table: 1 tamilnadu pattern of land use (thousand hectares):

Year	Gross sown area	Growth rate of Gross sown area	Gross irrigated area	Growth rate of Gross irrigated area
2001-02	6226	Nil	3412	Nil
2002-03	5191	-16.62	2622	-23.15
2003-04	5316	2.41	2479	-5.45
2004-05	5889	10.78	3087	24.53
2005-06	6033	2.45	3397	10.04

ISSN 2394 - 7780

2006-07	5843	-3.15	3309	-2.59
2007-08	5815	-0.48	3252	-1.72
2008-09	5824	0.15	3393	4.34
2009-10	5572	-4.33	3238	-4.57
2010-11	5753	3.25	3348	3.4
2011-12	5890	2.38	3519	5.11
2012-13	5140	-12.73	2991	-15
2013-14	5897	14.73	3311	10.7
2014-15	5673.03	-3.8	3367.14	1.7
2015-16	5665.98	-0.12	3399.82	0.97
2016-17	5658.94	-0.12	3432.5	0.96
Average	5375.70	-0.33	3032.79	0.58
Cumulative	-9.11		0.60	

Source: Ministry of agriculture and farmers welfare, Government of India

The table 1 explains the pattern of land use in Tamil Nadu from the year 2001-02 to 2016-17.The table consists of agriculture Gross sown area and Gross irrigated area. For the period 2001-02 the Gross sown area was 6226 hectares and Gross irrigated area was 3412 hectares. The area was consistently decreased over the years; during 2012-13the gross sown and gross irrigated area was reached to the minimum level because of low rainfall after the years its increasing steadily. The Growth rate of Gross sown and gross irrigated area for the period 2002-03 was -16.62 and -23.15 percent. It was later increased to its maximum level of 10.78 and 24.53 percent. In 2016-17 the growth rate for Gross sown and gross irrigated area was decreased to -0.12 and 0.96 percent. The average gross sown area and gross irrigated area during the study period was 5375.70 and 3032.79 hectares respectively. The average growth rate of gross sown area and gross irrigated area is -0.33 percent and 0.58percent respectively. The cumulative value of gross sown and gross irrigated area in our study was -9.11 and 0.60 percent respectively.

Table: 2 Consumption Of Fertlizer Per Hectare: Tamilnadu

Year	Consumption of fertilizer(kg per hectare)	Growth rate on consumption of fertilizer	Consumption of pesticides	Growth rate on consumption of pesticides
2001-02	143.9	Nil	1986	Nil
2002-03	117.3	-18.49	2666.4	34.26
2003-04	114.5	-2.39	3346	25.49
2004-05	159.1	38.95	1434	-57.14
2005-06	183.7	15.46	2211	54.18
2006-07	186.5	1.52	2048	-7.37
2007-08	185	-0.8	3940	92.38
2008-09	217.6	17.62	2317	-41.19
2009-10	205.8	-5.42	2335	0.78
2010-11	220.6	7.19	2361	1.11
2011-12	214.8	-2.63	1968	-16.65
2012-13	184.2	-14.25	1766	-10.26
2013-14	143.1	-22.31	2142	21.29
2014-15	163.7	14.4	2096	-2.15
2015-16	178.4	8.98	2015.12	-3.86
2016-17	177.1	-0.73	1968.6	-2.31
Average	164.43	2.32	2287.508	3.62
Cumulative	23.07		-0.876	

Source: Agriculture statistics at a glance, ministry of agriculture and farmers' welfare, government of India.

The table 2 demonstrates the Fertilizer and Pesticides consumption in agriculture by the farmers in Tamil Nadu during the period 2001-02 to 2016-17. In the year 2001-02 the usage of fertilizer was 143.9 kg per hectare. The fertilizer consumption was highly fluctuated in the after the years in 2008-09 the fertilizer usage was increased to the maximum of 217.6 kg per hectare. But it was decreased in next year onwards and reached 177.1 kg per hectare in 2016-17. The growth rate of fertilizer consumption in 2002-03 was -18.49 percent. In 2004-05 the

ISSN 2394 - 7780

growth rate increased to the highest level of 38.95 percent. In 2016-17 the growth rate on fertilizer consumption was decreased to -0.73 percent. This shows that usage of fertilizer was decreased in recent years and the alternative plant booster has been used. The average consumption of fertilizer during the study period is 164.43kg per hectare. The average growth rate on fertilizer consumption 2.32% and the cumulative percentage of fertilizer consumption is 23.07 kg per hectare.

In the year 2001-02 the pesticides consumption was 2666.4tonnes. It was later on increased to 3940tonnes in 2007-08. And in 2016-17 the pesticides usage was decreased to 1968.6 tonnes due to awareness about the pesticides usage make health hazards. The growth rate of pesticides consumption in 2002-03 was 25.49 percent. And in 2007-08 the growth rate was reached to its maximum level of 92.38 percent. It was later decreased to -2.31percent. The average consumption of pesticides is 2036.12 tonnes during the study period. The average growth rate on pesticides usage is 3.39%. The cumulative value of pesticides consumption is -26.17 tonnes.

Table 3 Agriclture Credit (Loans), Capital Formation And Agriculture Gdp Of Tamil Nadu

YEAR	Agriculture loans (Billion)	Growth rate on agriculture loans	Gross Capital formation(Billion)	Growth rate on gross capital formation	GDP Agriculture (Lakhs)	Growth rate on agriculture gdp
2001-02	47	Nil	5711.46	Nil	2117318	Nil
2002-03	51	8.51	6277.43	9.91	1712699	-19.11
2003-04	62	21.57	7624.16	21.45	1755990	2.53
2004-05	91	46.77	10640.4	39.56	2277696	29.71
2005-06	124	36.26	12797.5	20.27	2731686	19.93
2006-07	167	34.68	15314.3	19.67	3398491	24.41
2007-08	231	38.32	19007.6	24.12	3872090	13.94
2008-09	266	15.15	19313.8	1.61	4325988	11.72
2009-10	339	27.44	23631.3	22.35	5884202	36.02
2010-11	440	29.79	28414.6	20.24	7437664	26.4
2011-12	566	28.64	32006.3	12.64	8425717	13.28
2012-13	748	32.16	36143.4	12.93	8088682	-4
2013-14	906	21.12	36791.1	1.79	9445772	16.78
2014-15	1092	20.53	40219.9	9.32	10887012	15.26
2015-16	1151	5.4	42319.4	5.22	10860495	-0.24
2016-17	1070.09	-7.03	45163	6.72	11274565	3.81
Average	432.42	22.46	22433.86	14.24	5558592.18	11.90
Cumulative	2176.79		690.74		432.49	

Source: Basic statistical returns of scheduled commercial Banks in India, RBI, various issues

The table 3.4 describes the level of agricultural loans, capital formation and GSDP in agricultural sector of Tamil Nadu during the period 2001-02 to 2016-17. For the year 2001-02 the agricultural loans given by the banks was Rs47 billion. And it was gradually increased to Rs1070.09 billion in 2016-17. This shows that the agricultural credit given to farmers in Tamil Nadu has been increasing in recent years because of simple banking activities and government subsidy programmes. The growth rate of agricultural loans in 2002-03 was 8.51percent and reached peak rate on 2004 – 05 after the years it's seemingly decreased and arrived negative value as 7.03 percent in 2016 – 17. On average the agricultural loan given to the farmers was Rs432.42billion over the study period. The average growth rate of agricultural loans was 22.46%. The cumulative value of agricultural loans is Rs2176.79billion.

In 2001-02 the gross capital formation was Rs5711.46billion. It was consistently increased in the following years and in 2016-17 the gross capital formation is reached maximum of Rs45162.96billion.from this table we come to know that the capital formation during the study period is gradually increased due to the government initiatives and food security issues. The growth rate of capital formation in agriculture in 2002-03 was 9.91 percent. And in 2004-05 growth rate was increased to its maximum level of 39.56 percent. In 2016-17 the capital formation in agriculture was decreased to 6.72 percent. The average gross capital formation is 22433.86 billion during the study period. The average growth rate of capital formation in Tamil Nadu is 14.24% in our study. The cumulative value of capital formation in agriculture is Rs690.74billion.

ISSN 2394 - 7780

In 2001-02 the GSDP from agriculture was Rs2117318lakhs after the year it was decline. Again the year 2004 – 05 onwards the agricultural GSDP start increasing and reached maximum of Rs. 11274565 lakhs in 2016 – 17. From the table we find that the GSDP from agricultural sector was increasing but the increasing rate is only marginal not in absolute. The growth rate of GDP in agriculture in2002-03 was -19.11 percent. And in 2009-10 it was increased to its maximum level of 36.02 percent. And in 2016-17 the GDP in agriculture was decreased to 3.81 percent. The average GDP from agriculture sector in Tamil Nadu was Rs5558592.18lakhs in our study period. And the growth rate of agricultural GDP is 11.90 percent. The cumulative value of GDP in agriculture is 432.49.

CORRELATION MATRIX

The covariance is a measure of how deviations in the returns of two portfolios move together. If returns of two portfolios move in the same directions consistently, the covariance would be positive and vice versa. If the movements of returns are independent of each other, covariance would be close to zero. Thus, the covariance indicates the direction and the interactive risk relationship between the two portfolios. The correlation matrix of the portfolios agricultural sector GDP, capital formation, sown area, irrigated area, fertilizer consumption, pesticides consumption and agricultural loan along with the benchmark indices was computed to understand the relationship between the portfolios. The following Table shows the correlation matrix of the performance of the agricultural sector of Tamil Nadu.

Variables	Agricultural GDP	Gross capital formation	Gross Sown area	Gross irrigated area	Fertilizer consumption	Pesticides consumption	Agricultural loan
Agricultural GDP	1.0000						
Gross capital formation	0.9897	1.0000					
Gross Sown area	-0.0820	-0.1226	1.0000				
Gross irrigated area	0.4943	0.4791	0.7348	1.0000			
Fertilizer consumption	0.3271	0.3698	0.2699	0.6791	1.0000		
Pesticides consumption	-0.3307	-0.3062	-0.2095	-0.3956	-0.1881	1.0000	
Agricultural loan	0.9753	0.9683	-0.1312	0.4079	0.1699	-0.3211	1.0000

From the table the correlation between the seven measures of agricultural GDP of Tamil Nadu ranges between -0.3956 and 0.9897 indicating that the various measures capture different dimensions of the behavioral framework. It is measures for agricultural productivity performance, pesticides consumption and gross area irrigated has the highest negative correlation about 0.3956, followed by pesticides consumption and agricultural GDP (-0.3307), agricultural loan and pesticides consumption (-3211). Gross capital formation and agricultural GDP has the highest positive correlation (0.9897) followed by agricultural loan and capital formation about 0.9683. From this result we find that the capital formation and agricultural GDP, agricultural loan disbursed had the high positive relationship whereas the pesticides consumption and sown area are negatively correlated.

SUMMARY OUTPUT

The following result can be obtained from statistical tools like regression analysis, which are follows.

Regression Statistics	
Multiple R	0.7747
R Square	0.6002
Adjusted R Square	0.3004
Standard Error	11.9905
Observations	15

ISSN 2394 - 7780

Variables	Coefficients	Standard Error	t Stat	P-value
Intercept	1.6335	6.7367	0.2425	0.8145
Capital formation	0.2745	0.5563	0.4935	0.6349
Sown area	-0.1825	1.4258	-0.1280	0.9013
Irrigated area	0.9138	1.3322	0.6860	0.5121
Fertilizer consumption	-0.1942	0.4792	-0.4053	0.6958
Pesticides consumption	-0.0370	0.1038	-0.3562	0.7309
Agricultural loan	0.2907	0.3862	0.7529	0.4731

To estimate the relationship between agricultural GDP and its determinants variables what we mentioned above of Tamil Nadu, the study applied regression techniques as explained above. To quantify the extent of the significant, each point on the regression line gives an estimate of the expected or mean value of Y (dependent variable here agricultural GDP) corresponding to the chosen X values (explanatory variables). The value of β_1 = 0.2745, β_2 = -0.1825, β_3 = 0.9138, β_4 = -0.1942, β_5 = -0.0370 and β_6 = 0.2907, which measures the slope coefficients of the line, shows that, within the sample ranges of all the explanatory variables between 2002 – 2003 to 2016 – 2017 annual growth rate as X variables increases, say by Re 1, the estimated increase in the mean or average annual growth rate of agricultural GDP rate to about due to capital formation is 2.75 percent, change in irrigated area influencing about 9.14 percent, and spread of agricultural loan induce the agricultural GDP by 2.91 percent, whereas the one percent change in sown area production, fertilizer and pesticides consumption reducing the agricultural GDP by 1.82 percent, 1.94 percent and 0.37 percent respectively because theses variable appears on the regression model as negative sign (which indicates inverse or negative relationship) which also implies when the over dosage of fertilizer and pesticides and sown area reduces the fertility of soil in this connection gross agricultural production declines and GDP from agriculture also decrease. The value of intercept 1.6335 indicates the average level of annual growth rate of agricultural GDP when all determinant variable what we included in the model here is zero. However, this is a mechanical interpretation of the intercept term. In regression analysis such literal interpretation of the intercept term may not always be meaningful, although in the present research model it can be argued that an agricultural GDP of the state without the above mentioned determinants might maintain minimum level of agricultural growth rate either by interest rate reduction, govt. polices, monsoon favor, subsides, loan discount etc.,. The value of R^2 of 0.6002 shows that about 60 percent of the variation in the agricultural GDP is explained by its determinants in the model and about 40 percent was captured by other factors which have substantial influence on agricultural GDP but were excluded from the model.

The statistical significance of the estimated coefficients, we see from estimated results that each of the estimated coefficients is individually statistically, say 5 percent level of significance the ratio of the estimated coefficients to thus calculated t values are 0.2425, 0.4935, 0.1280, 0.6860, 0.4053, 0.3562 and 0.7529 respectively using two tailed t test at 5 percent level of significance, we see that the critical t value is 2.306 with 8 df. So the calculated t values below this critical t value. Hence, individually we may accept the null hypothesis that the true population value of the relevant is zero. The results suggest that there is a strong and stable relationship between agricultural GDP and its determinants what we mentioned in the model.

HYPOTHESIS TESTING

ANOVA					
	df	*SS*	*MS*	*F*	*Significance F*
Regression	6	1726.7684	287.7947	2.0017	3.58
Residual	8	1150.1859	143.7732		
Total	14	2876.9544			

Hence we can be tested by the analysis of variance techniques and the attendant F test. The analysis of variance table is given above. Under the usual assumptions, we obtain the calculated value 2.0017 which is distributed as the F distribution with 6 and 8 d.f. The computed F value at 5 percent is obviously highly significant; we can accept the null hypothesis, that the agricultural GDP growth rate is significantly influenced by the growth rate of capital formation, sown area, irrigated area, fertilizer and pesticides consumption level and agricultural loan disbursed in Tamil Nadu.

ISSN 2394 - 7780

The F-statistic is essentially a ratio of the explained variability to the unexplained variability (taking into account the degrees of freedom). Thus, a larger F-statistic indicates that more of the total variability is accounted for by the model (this is a good thing). Note, however, that F-values should be interpreted with care in multiple linear regressions (Rejection of the null hypothesis using an F-test means that at least ONE of the coefficients is non-zero and thus the model is statistically useful. However, this does NOT mean that the model is the best (the other coefficients may be pathetic).

SUGGESTIONS

In the study we found that the agricultural GDP in Tamil Nadu was fluctuating over the years. There was no consistency in agricultural GDP over the years. The main reason for fluctuation in agricultural GDP was low agricultural productivity.

- To increase the agricultural productivity in Tamil Nadu the government has to raise the procurement prices and supportive prices for all crops. The government should encourage contract farming and collective farming. There should be guaranteed minimum prices for all crops in Tamil Nadu. By providing all these measures there will be consistent growth in the agricultural GDP of Tamil Nadu.
- Based on this study we identify that the gross sown area and gross irrigated area in Tamil Nadu was decreased in 2016 – 17 compared to the past 15 years. It is because the farmers depend too much on the Rainfall. Apart from this they have to use drop water irrigation system. It increases the productivity of crops and less usage of water. And the main thing is they have to cultivate various crops, and then only the mineral content in the soil will not be destroyed. Then the farmers are sowing main crops like Green chili they have to sow intermediate crops like onion, tomato, radish etc., This will create high yield and more profit for farmers. This will increase the agricultural growth of Tamil Nadu.
- The fertilizer usage was decreased in Tamil Nadu in recent years. The chemical fertilizer like potassium, urea, sulphate used in agriculture will make the crops into slow poison. And it affects the people who consume those crops. The only way to increase the yield and protect the crops is to make organic farming. In organic farming the fertilizers like plant waste, vegetables waste cow dung etc., were used by using this crop will be fertile and also it will increase the yield of crops.
- The pesticides consumption was also decreased in Tamil Nadu over the years. The pesticides used in agriculture will cause genetic disorder to the people to avoid the pesticide the organic pest controls like ash, neem leaves, seeds would be used. So there would not be any harm to the crop and also it safeguards the health of the people.
- Agriculture loans provided to farmers in Tamil Nadu has consistently grown over the years. The main thing is the loan provided to farmers should be reached them in the correct time the only it will benefit the farmers. When the crops are in the harvesting stage the loans should be provided to the farmers at that time. This will increase the livelihood of farmers.
- The gross capital formation in agriculture in Tamil Nadu was increased in recent years. This increase in capital Formation in agriculture which increases the level of productivity in Tamil Nadu.

CONCLUSION

Tamil Nadu agricultural sector is still very important to the Indian economy, although its share of the economy has decreased over the past 50 years. India has made significant advances in agricultural production in recent decades, including the introduction of high-yield seed varieties, increased use of fertilizers and improved water management systems. Reforms to land distribution, water management and food distribution systems will further enhance productivity and help India meet its growing demand for food. In Tamil Nadu farmers are facing lots of problems weather it would be created by nature or by man made. Every year in budget, government sanctions huge funds and formulates various policies and programs for the purpose of developing agriculture sector in India. It has been observed that the data is showing a slow trend of increase of production, fall in area under cultivation, low rate of yield per hectare. These are the issues that Tamil Nadu agriculture is facing these days most commonly low productivity of crops. These need to be sort out with the support of government by taking new initiatives as well as investments from private sector, cooperation of farmers, awareness campaign and last but not the least spread of education related to crops, seeds, fertilizers, irrigation, diversification, etc.

REFERENCE

- **Lopamudra LenkaSamantaray (2015)** A Study on the Current Trend of Agricultural Productivity in India and its Future Prospects Volume 2, Issue 4 PP 16-21 ISSN 2349-0373 (Print) & ISSN 2349-0381 (Online)

ISSN 2394 - 7780

- **P. N. R. Junankar, (2016)** Land Tenure and Indian Agricultural Productivity Development Economics pp 25-45.
- **Maitreesh Ghatak and Sanchari Roy (2007)** Land reform and agricultural productivity in India: a review of the evidence Oxford Review of Economic Policy, Volume 23, Number 2, 2007, pp.251–269.
- **K.Matusyama (1966)** "Agricultural productivity, comparative and economic growth," Journal of economic theory 58,317-334
- **Pandit.A.D (1965)** Application of productivity concept of Indian agriculture, special issue on productivity, vol.6 NO.2&3,P.187
- **Praduman Kumar and Surabhi Mittal(2006)** Agricultural Productivity Trends in India: Sustainability Issues Agricultural Economics Research Review Vol. 19 (Conference No.) 2006 pp 71-88
- **Maddina Sreekanth, AH Hakeem,(2017)** Low productivity of Indian agriculture with special reference on cereals, Journal of Pharmacognosy and Phytochemistry 2017; 6(5): 239-243
- **Ajit Kumar Ghose(2007)** Farm size and land productivity in Indian Agriculture: a reappraisal pg:27-49.
- **Gabriella Santangelo (2016)** Firms and Farms: The Impact of Agricultural Productivity on the Local Indian Economy job market paper.
- **Sharma, Bimal (2003)**: Changing Pattern of Agricultural Labour Productivity in Brahmaputra Valley, Unpublished M. Phil. Dissertation submitted to Department of Geography, North Eastern Hill University, Shillong, pp. 60-79.
- **Varun kumar das (2016)** Agricultural productivity growth in India: An analysis accounting for different land types, The Journal of Developing Areas,Number2 Volume pp. 349-366
- **Nasim Aktar (2015)** Agricultural Productivity and Productivity Regions in West Bengal ISSN. 0972 - 8406 The NEHU Journal, Vol XIII, No. 2, pp-49-61
- **Amarnath Tripathi(2008)** Agricultural productivity Growth in India, Journal of global economy, An International Journal ISSN 0975-3931.
- **Gilberto Llanto (2012) "**The Impact of Infrastructure on Agricultural Productivity" Philippine Institute for Development Studies Discussion Paper Series No. 2012-12 pg :1 -53
- **Carlos E. Ludena (2010)** Agricultural Productivity Growth, Efficiency Change and Technical Progress in Latin America and the Caribbean: IDB Working Paper Series No. IDB-WP-186

International Journal of Advance and Innovative Research
Volume 6, Issue 2 (XII): April - June, 2019

ISSN 2394 - 7780

DOES ECONOMIC GROWTH HAVE ANYTHING TO DO WITH AGRICULTURE? AN ECONOMETRIC ANALYSIS OF RELATIONSHIP BETWEEN LIBERALIZATION, WELL-BEING, AGRICULTURE AND ECONOMIC GROWTH IN MAHARASHTRA STATE OF INDIA.

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ABSTRACT

Economic growth in the form of increased GDP has, in fact been recognized as the most crucial pre-requisite for reducing poverty in poor countries by providing employment and income. The real increase in per capita income and changes in the social and political institutions are necessary to support an expansion of the national economy, which in turn accelerate growth and expand employment opportunities in an economy. While the two concepts of GDP growth and well-being represent different approaches to economic development, they are linked together by the fact that the broad-based concept of well-being provides the necessary conditions that enable to contribute to GDP growth and vice-versa. The measure of GDP has remained as the most widely accepted measure of a country's economic progress for more than a half century (Costanza, et al 2009). If, we study the negative link then, it could be argued that high economic growth in poor and developing countries may fail to bring about a commensurate rate of poverty reduction and economic well-being, if it is not accompanied by a rapid growth in productive remunerative employment in primary sector. While recognizing that any mono-causal explanation of this phenomenon would be totally inadequate, and keeping in view the above issues, Indian agriculture is currently passing through a period of severe crisis. Although some features of the crisis started manifesting themselves in certain parts of India during the late 1980s, the crisis has assumed a serious dimension since the middle of the 1990s. The structural adjustment programme and WTO trade regime in the decade of the 90s have brought about a new crisis of rural livelihoods. The new economic regime, in a way, has taken us back to the colonial era, where the process of surplus accumulation and utilisation is once again to be mediated by metropolitan capital. Trade liberalisation has taken place in the background of extremely unfavorable global market conditions for primary commodities. The prices of all primary commodities (including wheat and rice) have fallen dramatically since mid 90s. As a result of these changes, not only growth rates under agriculture sector declined, but also there is a steady decline in agriculture's share to the Gross Domestic Product (GDP). This has doubled the chances of agrarian crisis in several parts of the country posing a threat to national food security as well as the economic well being of the nation as a whole. The agrarian distress in the Indian countryside has become a subject of major policy concern in view of the recent spate of suicides by farmers in a number of states like Maharashtra, Karnataka, Andhra Pradesh and Punjab. Thus, we, in this paper estimate trends, contribution and patterns of economic growth in terms of NSDP, per capita NSDP of Maharashtra states of India. We also explore the impact and relationship between poverty, NSDP and agricultural growth of the state. The results of the study found that economy of Maharashtra is increasing in terms of NSDP, but this increase has actually decreased the share of farmers in NSDP which is problematic for the growth of this sector, because still now the share of NSDP remains same in the agriculture sector as it was earlier. The regression results show that economic growth is significant at a 1% level of significance in four models, and they all show that Growth does indeed reduce poverty; poverty is reduced when growth increases. The level of poverty is inversely correlated to a reduction in extreme poverty, as it is significant at a 1% level in all the models. The initial level of openness is significant at a 1% level in model 2 and 3; the impact on poverty change is very small. Coefficient is close to zero; its explanatory power to poverty reduction is quite weak. Therefore, it is not appropriate to draw any conclusions about whether it confirms the ideas about conditional convergence. The fact that the coefficient is positive may be interpreted as an indication that a high level of PCNSDP has an unbalanced distribution in a way that does not benefit the whole population of Maharashtra.

1. INTRODUCTION

The research problems in social sciences could be identified to be of two types. First are of empirical nature, which can be answered, based on relevant and adequate facts. The second type of problems is those that are theoretical and interpretative in nature. There may be lot of empirical data available but we do not know how to make sense of them and to establish the interrelationships. We in this paper are dealing with both types of problems. The first problem is whether increased economic growth in terms of Gross **domestic product (GDP)** has any degree of relevance in accelerating the overall growth of such economies beyond increasing agricultural productivity. The second one is the problem of the understanding the interrelationships between the two.

ISSN 2394 - 7780

In this section, we have focused on the first problem. The concept of economic development has undergone radical changes in the recent past and growth has come to acquire importance in development thinking. In fact, traditional economic analysis has often held that the process of development involves changes in per capita income caused by the achievements in high levels of economic growth. Economic growth in the form of increased GDP has, in fact been recognized as the most crucial pre-requisite for reducing poverty in poor countries by providing employment and income, particularly among poor nations where agriculture is still main occupation. The real increase in per capita income and changes in the social and political institutions are necessary to support an expansion of the national economy, which in turn accelerate growth and expand employment opportunities in an economy. The need to ensure adequate growth in employment opportunities for providing Productive employment for the continually growing labour force is widely regarded as one of the most important problems facing the state.

While the two concepts of GDP growth and well-being represent different approaches to economic development, they are linked together by the fact that the broad-based concept of well-being provides the necessary conditions that enable to contribute to GDP growth and vice-versa. To empirically prove the relationship between GDP and economic well-being, there are two approaches. First, there is an affirmative answer; increased economic growth in terms of gross domestic product of course has positive links. Researchers with this view are convinced that increased GDP growth creates opportunities that are advantageous for nations at an aggregate level, including people with small material resources. On the other hand, some believe that increased economic growth in terms of gross domestic product has many disadvantageous. , *Let us deal with former view first.* Contemporary research results, based on cross-country analysis and country case studies have provided evidences that growth in per capita GDP is the most powerful, if not the only, force for poverty-reduction thereby improving well-being of the masses. There is an argument that takes growth in agriculture as a precondition for industrialization. Among the earlier development economists, the works of R. Nurkse (1953) and that of W.W. Rostow (1960) are worth mentioning. Nurkse made agriculture as a prerequisite for industrialization by saying that "everyone knows that the spectacular industrial revolution would not have been possible without the agricultural revolution that p receded it," and similarly Rostow argued, "revolutionary changes in agricultural productivity are an essential condition for successful take-off." The idea behind this view is that as agricultural productivity increases countries are able to produce more food with less labor input, which allows them to feed their growing population while releasing labor for manufacturing sector. Moreover, the increase in income and the surplus created in the agriculture sector would create demand for the manufacturing products and serve as a means to finance the manufacturing sector, respectively. The measure of GDP has remained as the most widely accepted measure of a country's economic progress for more than a half century (Costanza, et al 2009). The idea for GDP first arose in the late 1930s amid the *great depression* years in an effort to respond to the after-effects of the depression and determine the overall economic welfare of the nation.

The onset of World War II reinforced the development of national income and product accounts of nations. These accounts were used to measure the total value of final goods and services produced in the country, because countries needed to evaluate the wartime spending and the requirement of new taxes to finance it. Subsequently, the GDP estimates provided governments the much-desired tool to estimate how much they could spend and by how much they could increase revenues without causing inflationary pressures in the economy. This has been the core issue in the studies conducted by Deininger and Squire (1997), Ravallion and Chen (1997), Rodrick (2007), Dollar et al (2013). The aspect of higher economic growth can also found to be widely linked with performance in overall economic development as well as individual human development indicators, like health, education and social inclusion. Various studies have addressed this, for e.g. Kakwani (1993), Osmani (2002), Barro, (2000) Aghion et al (2000), Ravallion and Chen (2010).

In a study Dollar and Kraay (2002), argue that "Growth is Good for the Poor," because, when they tried to find a statistical association between the growth of average income of the total population of the world's developing countries and the average income of the poorest quintile engaged in agriculture of the same population. The results had shown that there is a one-to-one relationship between the growth of income of the general population and the growth of income of the poor in agriculture. In other words, as the income of the overall population grows, so too does the income of the poor, due to increase in employment opportunities and development. Tsakok and Gardner (2007) conducted an analysis on four different countries during four different time-spans (England (1650-1850), the United States (1800-2000) and South-Korea and China after the Second World War) in order to study whether agricultural development has always been a necessary precondition for further economic transformation of a country. They conclude that countries are able to transform and develop their economies without the requirement of a modernized and developed agricultural sector.

ISSN 2394 - 7780

If we study the negative link then, it could be argued that high economic growth in poor and developing countries may fail to bring about a commensurate rate of poverty reduction and economic well-being, if it is not accompanied by a rapid growth in productive remunerative employment in primary sector. Here again, the works of Mokyr (1976), Field (1978), found that the agriculture sector has to compete with the manufacturing sector for each and everything. If we assume an open economy, they argues, "high productivity and output in the agricultural sector may, without offsetting changes in relative prices, squeeze out the manufacturing sector and the economy will de-industrialize over time, and, in some cases, achieve a lower welfare level." Further, it is argued that while the GDP remains as a useful measure of the output production, but has not been able to accommodate the roles of human capital or the environment and natural resources into the production base. In addition, it is pointed out that the original GDP estimation did not include domestic work, and the observation that that growth in per capita national income does not reveal anything about the distribution of income and inequality aspects is highlighted. As a result, development economists have maintained that growth in per capita GDP or income by themselves are not adequate indicators of development since the basic human needs or quality of lives are not represented in GDP measures. In a study Gaddis and Klasen (2012), note several shortcomings with the panel data applications as well as the empirical specifications used to test relationship between GDP and employment and well-being. They argue that rather than aggregate GDP, sector specific shifts in GDP should be investigated for its impact. This has also been proved by A. R. Khan (2001); in his study for example he found that, when output elasticity of demand for labour is low, then economic growth may have low employment intensity due to inappropriate economic policies, causing economic backwardness leading to low income and poverty. A simple bivariate analysis for the 2009-10 NSS data in India, by Kannan & Raveendran (2012) also does not support the GDP and well-being of peasentary hypothesis, Their study finds that majority of the people working and earning in various sectors are from rural areas and are largely from poorer households. The GDP growth may harm their employment opportunities in the form of hiring of labourers from developed sectors. Further, it is also possible that the income effect might be operating through increased household income for poorer households even though their relative status has not changed.

In this section, we are analyzing second problem in the form of theoretical framework. A theoretical framework is expected to perform two major functions, namely, explanation and prediction of a phenomenon. There is no specific theory explaining problems of peasants and the casual relationship between two. When the famous British historian Eric Hobsbawm declared in his Age of Extremes: '*The most dramatic change of the second half of this century and the one which cuts us forever, from the world of the past is the death of the peasantry*', he did not of course mean it literally. He was only referring to a spectacular decline world over in the proportion of workforce engaged in agriculture. Indian agriculture is currently passing through a period of severe crisis. Although some features of the crisis started manifesting themselves in certain parts of India during the late 1980s, the crisis has assumed a serious dimension since the middle of the 1990s. The structural adjustment programme and WTO trade regime in the decade of the 90s have brought about a new crisis of rural livelihoods. The new economic regime, in a way, has taken us back to the colonial era, where the process of surplus accumulation and utilisation is once again to be mediated by metropolitan capital. The state withdrew from its earlier declared role of intervening in the market processes to protect economic space of domestic producers and among them that of small producers and weaker sections. The elaborate structure of controls on domestic and international trade and on investment has been dismantled rapidly. The Essential Commodity Act, Agricultural Produce Marketing Act and Small Scale Industry Reservation Act, restricting movement, storage, marketing and processing of agricultural produce have been modified. The multinationals and big domestic units are now allowed to enter into these activities. Exim policy in the post-liberalisation period has removed import controls on agricultural commodities rapidly — sometimes much ahead of WTO stipulated phase out period.

Trade liberalisation has taken place in the background of extremely unfavorable global market conditions for primary commodities. The prices of all primary commodities (including wheat and rice) have fallen dramatically since mid 90s. As a result of these changes, not only growth rates under agriculture sector declined, but also there is a steady decline in agriculture's share to the Gross Domestic Product (GDP). This has doubled the chances of agrarian crisis in several parts of the country posing a threat to national food security as well as the economic well being of the nation as a whole. The agrarian distress in the Indian countryside has become a subject of major policy concern in view of the recent ***spate of suicides by farmers in a number of states like Maharashtra, Karnataka, Andhra Pradesh and Punjab.*** However, to dismiss the agrarian crisis as being a result of purely economic factors would oversimplify the complex scenario. While we do not propose to deal with the causes for these agrarian crises in this paper, we would like to put forward some preliminary observations on this matter. "Suicide is an individual phenomenon the causes of which are essentially social in nature" Durkheim (1952:13). What lends credence to the view that the suicides are an index

ISSN 2394 - 7780

of a deeper systemic crisis in rural India is the fact that they are not only committed as silent individual acts resorted to in privacy out of desperation but even assume explicit forms of conscious political action. The farmers' attempts to publicly burn themselves or consume poisonous pesticide in the official precincts in the presence of concerned officers or to burn their produce have to be seen as conscious political acts of protest by farmers at the apathy and inaction on the part of the state or perhaps to elicit moral response from the civil society at their distress. There are many factors at the micro level underlying farmers' suicides – like issues underlying any suicide – they would be extremely complex, involving socio-economic, cultural and psychological factors such as the class and caste system, and gender relations in a rural set-up.

While recognizing that any mono-causal explanation of this complex phenomenon would be totally inadequate, and keeping in view the above issues, we would like to point out a central role played by the present acute agrarian crisis in the country - and the growth of **GDP** - in this distressing phenomenon. Since this issue demands substantial amount of further work, the purpose of this paper, we reiterate, is a modest one: of collating and presenting the secondary set of data available on **NSDP** (Net State Domestic Product) and its relationships with agriculture. We are afraid of Why have claims been made in India about rapid growth of economy in terms of GDP growth rate and per capita income, while simultaneously suffering from extreme poverty, farmers suicide and mass migration of rural people towards cities.

Thus, the first objective of this paper is to estimates trends, contribution and patterns of economic growth in terms of NSDP, per capita NSDP of Maharashtra states of India. The second objective is to explore the impact and relationship between poverty, NSDP and agricultural growth of the state.

The study will investigate whether there is any relationship between agricultural development and NSDP of Maharashtra over a period of fifteen years (2001-2015). This state has been purposefully chosen because together it constitutes major chunk of farmer's suicide in India and suicides by farmers in these states have received an immense global and domestic media attention and brought political turmoil in this state.

The rest of the paper is organized as follows. Section-2 describes the framework for empirical analysis. Trends and patterns of NSDP and agricultural investment of state are discussed in section-3. Section-4 describes the econometric analysis used for this study. Empirical analysis and results are discussed in section-5. Section-6 includes the conclusion.

2. FRAME WORK FOR EMPIRICAL ANALYSIS

The Indian peasantry, the largest body of surviving small farmers in the world, as two thirds of India makes its living from the land. The earth is the most generous employer in this country of more than a billion that has farmed this land for more than 5000 years. The Indian agriculture has undergone significant changes since the last six decades particularly after late sixties when green revolution in the form of application of High yielding variety seeds (H.Y.V.), chemical fertilizers, pesticides, mechanization of agricultural operations etc. One of the significant developments of the green revolution is that, it encouraged the farmers to shift from subsistence to commercial crops. According to Ghosh and Paul (2008), economic reforms in the form of liberalization during 1990s aim to promote an economy's doors to the world, creating employment opportunities to growth. Contrary to this argument, it has been seen in the developing country liberalization has exposed all the industrial units to the inherent risk of free market competition which had adverse impact on agriculture. They are trying to reduce their cost of production.

In 1998, the World Bank's structural adjustment policies forced India to open up its seed sector to global corporations like Cargill, Monsanto, and Syhgenta. The global corporations changed the input economy overnight. Farm saved seeds were replaced by corporate seeds, which needed fertilizers and pesticides and could not be saved. As seed saving is prevented by patents as well as by the engineering of seed with non-renewable traits, seed has to be bought for every planting season by poor peasants. A free resource available on farm becomes a commodity which farmers are forced to by every year. This increases poverty and leads to indebtedness. That means growth has nothing to do with rural masses. Again the dramatic fall in prices of farm produce as a result of free trade policies of the WTO. The WTO rules for trade in agriculture are in essence rules for dumping. They have allowed an increase in agribusiness subsidies while preventing countries from protecting their farmers from the dumping of artificially cheap produce. The rigged prices of globally traded agriculture commodities are stealing incomes from poor peasants of the country. Modern capital intensive technology replaces the labour intensive technology. Therefore, there is large number of employment loss in this sector. The retrenched workers from the agriculture sector are not getting proper employment, as a result poverty increases. The s pressure Indian farmers are facing is the dramatic fall in prices of farm produce as a result of liberalisation. The WTO rules for trade in agriculture are in essence rules for dumping. They have

ISSN 2394 - 7780

allowed an increase in agribusiness subsidies while preventing countries from protecting their farmers from the dumping of artificially cheap produce.High subsidies of $ 400 billion combined with forced removal of import restrictions is a ready made recipe for farmers' suicides.

Two factors have transformed the positive economy of agriculture into a negative economy for peasants – the rising costs of production and the falling prices of farm commodities. Both these factors are rooted in the policies of trade liberalization and corporate globalisation. The shift from farm saved seed to corporate monopolies of the seed supply is also a shift from biodiversity to monocultures in agriculture. The District of Warangal in Andhra Pradesh used to grow diverse legumes, millets, oilseeds. Seed monopolies created crop monocultures of cotton, leading to disappearance of millions of nature's evolution and farmers breeding. Monocultures and uniformity increase the risks of crop failure as diverse seeds adapted to diverse ecosystems are replaced by rushed introduction of unadapted and often untested seeds into the market

2.1 Impact of growing income on peasantry

According to Professor Gunnar Myrdal *it is in the agricultural sector that the battle for long-term economic development will be won or lost'*. Because, the vast majority of poor in India is living in rural areas and engaged primarily in subsistence agriculture for survival, the economic progress, whatever, that has been allowed in India before and after independence, has bypassed millions of people. If development is to take place and become self-sustaining, really and substantially encompassing especially the poor, it will have to start in the rural areas in general and agriculture in particular. One alarming point of concern of investment pattern in agriculture is public investment. The public investment has been continuously decreasing and directly affecting agriculture negatively with less creation of infrastructure facilities. The public investment, which was 37 per cent in first plan on agriculture, has come down to 15.8 per cent in twelfth plan, recording a reduction of 50 per cent in 60 years. Undoubtedly, there has been a little positive impact of economic growth on agriculture sector in India and in some cases; it has been showing negative trends. Compared to international standards, Indian agriculture has been witnessing slow compound annual growth rates.

3. TRENDS AND PATTERNS

3.1 Agriculturel sectoral NSDP, per capita NSDP and share of farmers in NSDP

In this section, we have focused on trends and patterns of Agricultural sectoral NSDP, per capita NSDP and share of farmers in NSDP, of Maharashtra state in India. Reserve Bank of India's (2015-16) handbook of statistics on Indian states is the main data source for this analysis. Using the RBI data, we have analyzed the trends and patterns of NSDP. More over the agriculture sector has contributed to a greater extent to the Indian economy. For netting out inflation and for better results current price data are converted into constant prices (2004-05) using price indices for different base year. Table-1 presents the agricultural sectoral NSDP at constant prices in Maharashtra. The table shows that agricultural sectoral NSDP at constant prices has increases over time along with a compound annual growth rate (CAGR) of 3.36 per cent. The table also reveals that the per capita NSDP has increased from Rs 21892 in 2001 to Rs 72 200 in 2014-15 with a compound annual growth rate (CAGR) of 11.98 per cent, which is highest among other Indian states. At the same time, the share of farmers in NSDP from agriculture is negligible.

The above discussion clearly points at the negative developments of agriculture in the state of Maharashtra. The major share of NSDP comes from non-farmers .The non-farmers are enjoying almost six times more NSDP distribution as compared to farmers. This clearly indicates that the growth has been increasing rift between farmers and non-farmers.

3.2 Gross Capital Formation and Investment in Agriculture at constant Prices

It is generally argued that agriculture uses labour intensive technology and high labour intensity of production is the main cause of employment in this sector. To get an idea about this we have to understand the gross capital formation and investment made in agriculture sector. The investment in agriculture as per centage of NSDP has come to a situation of stagnation in Maharashtra (2.1 per cent in 2014-15) compared to 1.1 per cent in 2000-01 in Maharashtra. The per centage share of public sector in gross capital formation has come down in Maharashtra ,at the same time in private sector it has increased to greater extent.

ISSN 2394 - 7780

Table-1 Agricultural sectoral NSDP, per capita NSDP and share of farmers in NSDP in Maharashtra

Year	Agriculturel sectoral NSDP, per capita NSDP and share of farmers in NSDP			Gross Capital Formation and Investment in Agriculture at constant Prices		
	Agriculturel sectoral NSDP at constant prices	PCNSDP (constant prices)	Share of Farmers in NSDP constant prices) (agriculture)	Per cent share		Investment in agriculture as per cent of NSDP
				Public	private	
2000-01	3455054	21892	20%	23.4	76.6	2.1
2001-02	3287801	22258	21%	23.4	76.6	2.1
2002-03	3480299	23447	22%	24.4	75.6	2.2
2003-04	3580625	24859	20%	24.1	75.9	1.9
2004-05	3976855	26603	20%	25.1	74.9	1.6
2005-06	3715719	40671	21%	25.8	74.2	1.8
2006-07	4096642	45582	22%	24.1	75.9	1.9
2007-08	4819301	50138	19%	24.1	75.9	1.7
2008-09	3839824	50183	21%	23.5	76.5	1.2
2009-10	3985673	54246	20%	24.2	75.8	1.5
2010-11	5022122	59587	20%	23.0	77.0	1.2
2011-12	4782335	61276	22%	25.1	76.9	1.2
2012-13	4714184	65095	20%	24.1	76.9	1.1
2013-14	5096499	69097	22%	22.0	78.0	1.2
2014-15	4470907	72200	22%	21.3	78.7	1.1
CAGR(%)	**3.36**	**11.98**				

Source: Compiled from Reserve bank of India's, various issues of handbook of statistics on Indian states2000-2015)

Note**:** Agriculturel sectoral NSDP is in Rs lakhs and PCNSDP is in rupees.

4. MEASURING THE IMPACT AND RELATIONSHIPS: AN ECONOMETRIC ANALYSIS

4.1. Methodology

The prime objective of this paper is to explore the impact and measuring the relationship between well-being, NSDP and agricultural growth in the state of Maharashtra. The study will investigate whether there is any relationship between agricultural development and NSDP over a period of fifteen years (2001-2015). This state has been purposefully chosen because together it constitute major chunk of agricultural production in India and farmers committing suicide in this state is highest. Suicides by farmers in this state have received an immense global and domestic media attention and brought political turmoil in this state .The data are from the reserve bank of Indias' data sets. The data includes real per capita net state domestic product (PCNSDP), real agriculturel sectoral NSDP , real Share of Farmers in NSDP agriculture, real gross capital formation as a percentage of NSDP, real value of exports and imports as percentage of NSDP for Maharashtra. The data are annual and cover the period between 2001 and 2015.

The various variables are defined as follows. Economic growth is measured by the variable NSDP that measures the per capita net state domestic product. It measures how big the economy is and has been chosen as a favourable indicator in this case because it captures all the variables that concerns economic growth. Liberalization is captured by the openness variable, which measures the ratio of the sum of both imports and exports to NSDP. (Appendix table-4). Liberalization in our analysis is captured with the typical measure of trade openness- export plus import of agricultural commodities as a percent of NSDP (often referred as degree of openness). The average values of exports plus imports as a percent of NSDP is greater than 100 percent for the period between 2001and 2015 are chosen.

Agricultural growth is measured by two different variables. Agricultural sectoral NSDP and share of farmers in NSDP, is to measure the linkage between agricultural growth and economic well-being. We have used state wise poverty rates. But the information regarding poverty rates is not available for each year; we have used it for three periods (2004-05, 2009-10 and 2011-12). The details are shown in appendix table-1.

ISSN 2394 - 7780

The basic estimation model is

$$\mathbf{Agri}_{t} = ao + a1 + \text{Openness } t + a2 \text{ Agri NSDP } t + a3 + \text{Share of Farmers in NSDP } t + e\ t \ldots\ldots\ldots 1$$

$$\mathbf{Eco\ grow}_{t} = ao + a1 + \text{PCNSDP } t + a2 \text{ Openness } t * D + a3 \text{ pove } t\ a3 + \text{GCFA } t + \ldots\ldots\ldots\ldots 2$$

We have estimated two separate ordinary least squares regressions for two models of different dependent variables, (with linear and log-linear specifications). Using these estimated models, regressions are estimated for agricultural productivity and economic growth. These are shown in Table- appendix- 2 and Table appendix-3.

5. EMPIRICAL ANALYSIS AND FINDINGS

Equation 1 expresses the change in agricultural growth a function of the changes in openness, agricultural sectoral NSDP and share of farmers in NSDP. Furthermore, one period lagged is included to test whether the push of any other factors contributes to agricultural growth. Equations 2 in turn estimate the influence of changes in PCNSDP on two agricultural developments. Lagged log values of PCNSDP are now included in order to capture changes in economic well-being and measuring the relationship between poverty, NSDP and agricultural growth in the state of Maharashtra. Based on correlogram specification (autocorrelation and partial correlation) all the series of variable are non-stationary. The variables are stationary at the first differences i.e., all the series are integrated of order 1 [I (1)]. When all the series (both dependent and independent variables) are I (1), there is a chance of co-integration among the variables. In our model, we have run the regressions of all the variables as it is (i.e., nonsationary). Then, we have checked the correlogram of the residuals, which shows the variables are co-integrated. So, it is confirmed that there exist long run equilibrium relationship among the variables.

From the table-1, it is seen that coefficients of both the specifications of openness are positive and significant in all models. This implies that liberalization or country's openness increases the size of the economy in absolute terms. While model-3 and 4 show the coefficients of both the specifications of openness are negative and significant. This implies that as openness expands the relative share of NSDP in agriculture decreases. The coefficient of gross capital formation and investment in agriculture as a percent of NSDP is negative and significant. Moreover, in all the models Durbin-Watson statistic is greater than the R^2 values. This implies that gross capital formation and investment in agriculture increases the size of the agriculture sector increases in absolute terms, while the size decreases in relative terms.

To capture the relationship between agriculture and economic growth, we have estimated the equation 1.2 for economic growth. As we estimated regression in earlier equation, we have checked the stationary of all the variables through correlogram specification (autocorrelation and partial correlation) in this equation also. All the variables are stationary at the first differences i.e., all the series are integrated of order one [I (1)]. Thus, there is a chance of co- integration among all the variables. In this model, also we have run the regressions of all the variables as it is (i.e., nonsationary). Then, we have checked the correlogram of the residuals, which shows the variables are co-integrated. So, it is confirmed that there exist long run equilibrium relationship among the variables. The results are shown in table-3. The table 3 shows that economic growth is significant at a 1% level of significance in four models, and they all show that Growth does indeed reduce poverty; poverty is reduced when growth increases. Thus, the estimation gives us an affirmative answer to the research question. Nevertheless, this does not tell anything about if growth is sufficient to reduce extreme poverty. The level of poverty is inversely correlated to a reduction in extreme poverty, as it is significant at a 1% level in all the models. The initial level of openness is significant at a 1% level in model 2 and 3; the impact on poverty change is very small. Coefficient is close to zero; its explanatory power to poverty reduction is quite weak. Therefore, it is not appropriate to draw any conclusions about whether it confirms the ideas about conditional convergence. The fact that the coefficient is positive may be interpreted as an indication that a high level of PCNSDP has an unbalanced distribution in a way that does not benefit the whole population of Maharashtra.

The results of the Gross fixed capital formation in agriculture are somewhat surprising. When economic growth is first included, it does as assumed cause a negative change in investment but contrary to the theory, it is t shown significant, Which is the opposite direction as the prediction. This might be a reflection of the time-lagged effects from PCNSDP also; the effect might not be direct, but rather indirect via another variable. Economic growth decreases the level of extreme poverty.

6. CONCLUSION

The study finds that agricultural sectoral NSDP at constant prices has increases over time along with a compound annual growth rate (CAGR) of 3.36 per cent. At the same time, the share of farmers in NSDP from

ISSN 2394 - 7780

agriculture is negligible. It clearly points at the negative developments of agriculture in the state of Maharashtra. The major share of NSDP comes from non-farmers; non-farmers are enjoying almost six times more NSDP distribution as compared to farmers. This clearly indicates that the growth has been increasing rift between farmers and non-farmers. The investment in agriculture as percent of NSDP has come to a situation of stagnation in Maharashtra, so as the percent share of public sector in gross capital formation investment.

The results of the study found that economy of Maharashtra is increasing in terms of NSDP, but this increase has actually decreased the share of farmers in NSDP which is problematic for the growth of this sector, because still now the share of NSDP remains same in the agriculture sector as it was earlier.

This is a main conclusion drawn from the regression, which confirms theory and earlier studies. Economic growth does not appear to be sufficient a tool when the level of eradication of extreme poverty or increasing well-being in agriculture. The theory of the Dual Economy does indeed seem to contribute to the understanding of agriculture and poverty and its sources. It shows that the coexistence of a rural, low-productive sector and an urban, high- Productive one is dependent on one another, but the extent to which they benefit from development and outputs are completely different. The base is that it captures the structural features of the uneven distribution of economic development within India.

REFERENCES

- **Barro R. and J. Lee** (2010) "A new data set of educational attainment in the world, 1950–2010", Journal of Development Economics, Volume 104, Pages 184-198.
- **Chen, S., & Ravallion, M**. (2010). The developing world is poorer than we thought, but no less successful in the fight against poverty. Quarterly Journal of Economics, 125(4), 15771625.
- **Deininger, K., & Squire, L**. (1997). Measuring Income inequality: A new data base. World Bank Economic Review, 10(3), 565-591. http://dx.doi.org/10.1093/wber/10.3.565
- **Dollar, D., T. Kleinberg and Aart Kraay** [2013]: Growth Still is good for the Poor, Policy Research Working Paper No. 6568, and World Bank: Washington D.C.
- **G. Wright, C** (1979) cheap labour and Southern textiles before 1880, Journal of Economic History. 39 pp 655-680.
- **Ghosh, A. and S. Paul** (2008). "Opening the Pandora's Box? Trade Openness and
- Informal Sector Growth", Applied Economics, 40(18), 1991-2003. International Bank for Reconstruction and Development / World Bank: Washington,
- **J. Field,** (1978), Sectoral shifts in Antebellum Massachusetts: reconsideration, Exploration Journal of Economic History .15 pp 146-171.
- **J. Mokyr**, (1976). "Industrialization in the Low Countries, 1795-1850," Yale Univ. Press
- **K. Matsuy Ama**, (1992)"Agricultural Productivity, Comparative Advantage, and Economic Growth", Journal of Economic Theory 58, 317-334
- **Kannan, K P, and G Raveendran**. (2012). "Counting and Profiling the Missing Labour Force." *Economic and Political Weekly* VOL XLVII (No 6) pp. 43-53
- **Khan, A. R**. (2001): "Employment Policies for Poverty Reduction." Issues in Employment and Poverty Discussion Paper 1. Recovery and Reconstruction Department,
- **N. Gregory Mankiw; David Romer; David N. Weil**, (May, 1992) "A Contribution to the Empirics of Economic Growth", the Quarterly Journal of Economics, Vol. 107, No. 2. pp. 407-437.
- **R. Nurkse**, (1953) "Problems of Capital Formation in Underdeveloped Countries," Oxford Univ. Press, New York,
- **RBI:** various issues of handbook of statistics on Indian economy and state finances; at Web :(http://dbie.rbi.org.in).
- **Sirijit Mishra** - (2007) "Effectiveness of Farmers' Adjustment to Risk"; *Economic and Political Weekly*, Vol. 13, No. 25, pp. A38-A48.1
- **Tsakok, I. & Gardner, B.** (2007). Agriculture in Economic Development: Primary Engine USA.

ISSN 2394 - 7780

- W. W. Rostow, (1960). "The Stages of Economic Growth: A Non-Communist Manifesto, "Cambridge Univ. Press, Cambridge, UK,
- World Bank (2008). World Development Report: Agriculture for Development.

APPENDIX

Table APP-1 Poverty Rate of Maharashtra (Person in Million)

States	2004-05 (Based on MRP Consumption) #		2009-10 (Based on MRP Consumption) #		2011-12 (Based on MRP Consumption) #	
	No. of Persons	Percentage	No. of Persons	Percentage	No. of Persons	Percentage
Maharashtra	39.33	38.10	27.08	24.50	19.79	17.35
All India	407.61	37.20	354.68	29.80	269.78	21.92

MRP: Mixed Recall Period. *: Lakdawala Methodology. #: Tendulkar Methodology.

Source: Government of India.RBI,(2015-16) handbook of statistics on Indian states pp-19-20

Table –App-2 ; Estimation of regression results

Independent variable	Dependent variable agricultural growth							
	NSDP		LOG(NSDP)		Share of Farmers in NSDP agriculture		PER CAPITA NSDP	
	Model 1.1	Model 1.2	Model 2.1	Model 2.2	Model 3.1	Model 3.2	Model 4.1	Model 4.2
Openness	0.180** (0.0012)	----	0.159** (0.005)	--	-0.110** (0.002)	---	-0.002 (0.005)	-
Principal component Openness index	--	12132.2*** (1034.37)	---	0.163*** (0.022)		-1.018*** (0.001)		-1.245*** (0.002)
Gross Capital Formation and Investment in Agriculture	-1720.70 (232.37)	-4621.60*** (1247.54)	-0.002 (0.022)	0.061*** (0.013)	-0.210 (0.201)	-0.222*** (0.132)	-0.036* (0.020)	-0.038*** (0.008)
Intercept	-263.116 (1083.7)	-1845.6 (2826.4)	11.30*** (0.321)	10.811*** (0.251)	60.261*** (2.641)	32.932*** (2.607)	3.506*** (0.251)	1.534*** (0.302)
R^2	0.61	0.66	0.69	0.60	0.65	0.56	0.67	0.69
Durbin watson stat	1.0	0.96	1.1	0.98	1.21	1.11	0.99	0.92
No of observations	15	15	15	15	15	15	15	15

Note: Figures in the parenthesis represent standard errors. ***, and ** indicate statistical significance at 1%, 5% levels respectively.

Table –App.3; Estimation of regression results

Independent variable	Dependent variable Economic Growth				Dependent variable Log (Economic Growth)			
	Model 1.1	Model 1.2	Model 1.3	Model 1.4	Model 1.1	Model 1.2	Model 1.3	Model 1.4
Openness	307.05*** (25.39)		361.135*** (25.85		0.006*** (0.001)		0.007*** (0.001)	
Principal component Openness index		7558.07*** (996.09)		9595.36*** (1168.84)		0.174*** (0.027)		0.198*** (0.026)

ISSN 2394 - 7780

Gross fixed capital formation in agriculture	263.778*** (70.12)	539.13*** (79.13)	122.26 (72.94)	391.32*** (94.66)	0.008*** (0.003)	0.012*** (0.002)	0.007** (0.002)	0.010*** (0.002)
POVERTY	0.013***	0.011***	0.013***	0.043***	0.024***	0.152***	0.034***	0.034***
Intercept	11.550*** (3.441)	12.21* (6.011)	12.612** (5.619)	12.31 (8.036)	0.222 (0.221)	-0.048 (0.102)	0.039 (0.183)	-0.046 (0.161)
R^2	0.56	0.65	0.62	0.57	0.58	0.60	0.61	0.59
Durbin watson stat	1.0	0.81	0.91	0.90	0.91	0.89	0.88	0.91
No of observations	15	15	15	15	15	15	15	15

Note: Figures in the parenthesis represent standard errors. ***, and ** indicate statistical significance at 1%, 5% levels respectively.

Table App-4 Extracting of principal component score to find out openness

Year	PCA Scores analysis
2000-01	1.110923
2001-02	1.221312
2002-03	1.239810
2003-04	-2.22324
2004-05	-1.23415
2005-06	1.98723
2006-07	1.65234
2007-08	1.62534
2008-09	-2.12093
2009-10	-1.23654
2010-11	-1.98142
2011-12	1.34215
2012-13	1.86527
2013-14	1.98234
2014-15	1.98231

International Journal of Advance and Innovative Research
Volume 6, Issue 2 (XII): April - June, 2019
ISSN 2394 - 7780

FARMERS PREDILECTION FOR ORGANIC FERTILIZERS IN YETHAPPUR VILLAGE, ATTUR TALUK

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ABSTRACT
Now a day's organic farming is slowly gaining its fame all over the world, due to its capability of solving the present day's problems viz. food security, environmental degradation and rural development. Organic farming is the type of farming, utilizing organic materials as inputs especially by using organic fertilizers. Application of organic fertilizers has many inherent benefits like improving soil fertility, protecting environment, and maintaining crop nutrients. In spite of its gaining popularity and awareness about organic farming, yet many farmers are reluctant to adapt to organic farming due to the perceived high costs and risks involved in organic farming. At this outset this paper aimed to analyse the farmer's preference towards organic fertilizers in Yethappur village of Attur Taluk in Salem District, Tamil Nadu. A sample of 70 farmers has been selected using simple random sampling. A significant association (<0.001) was found between age, educational status, preference for soil testing and preference for organic fertilizers among the farmers. A significant difference (<0.001) was found between the size of farm holdings and preference for organic fertilizers. The factors viz. improvement in soil fertility, increase in crop yield, *and* avoidance of soil degradation were found to be greatly influencing the farmers to prefer for organic fertilizers. *The major problems encountered by farmers in preferring organic fertilizers were higher price of organic fertilizers and non availability of certified branded organic fertilizers on time, which should be solved through research and development.*

INTRODUCTION
Organic farming is gaining its popularity all over the world, since it is capable of providing effective solution to the present day's problems viz. food security, environmental degradation and rural development (Sonam Taneja, 2017). Organic farming is the type of farming utilizing organic materials as inputs especially by using organic fertilizers (Mahadeo S Deshmukh and Nittin Appasahed Babar, 2015). Application of organic fertilizers has many inherent benefits like improving soil fertility, protecting environment, and maintaining drop nutrients. In spite of its gaining popularity and awareness about organic farming, yet many farmers are reluctant to adapt to organic farming due to the perceived high costs and risks involved in organic farming (Ramesh P, Mohan Singh and A. Subba Rao 2005)**,**. At this outset this paper aimed to analyse the farmers' preference towards organic fertilizers with the following specific objectives.

OBJECTIVES
- To study the socio – economic conditions of the farmers.
- To analyze the factors influencing farmers to prefer the organic fertilizers.
- To identify the problems faced by the farmers in preferring organic fertilizers.

HYPOTHESIS
Socio economic conditions of the farmers determine their preference for organic fertilizers.

METHODOLOGY
The study area chosen for the present study is Yethappur Village, in Attur Taluk of Salem District. The study village is dominated by agricultural activities which was main source of occupation of the population. By adopting simple random sampling, a sample of 70 farmers have selected for the present study. The data was collected through pre tested structured schedule.

LIMITATIONS OF THE STUDY
Since the study is based on primary source, there may be a chance of inaccuracy. Since the study is limited to the Yethappur Village of Attur Taluk in Salem District, the findings may not be generalized to other areas. Hence, the findings of the study suits only to the situations similar to study area and additional care and precaution should be taken while generalizing the results.

SOCIO-ECONOMIC AND CHARACTERISTICS OF THE FARMERS
The socio-economic characteristics of the farmers like age, land holdings, education profile and soil testing is presented in the following table.

ISSN 2394 - 7780

Table 1: Socio Economic Profile of Famers

Socio – Economic Variables	Number	Percent
Age		
25 - 35	10	14
36 - 45	30	43
46 - 55	21	30
>55	09	13
Total	**70**	**100**
Education		
Illiterate	9	13
Primary	11	16
Secondary	19	27
Higher Secondary	18	26
Graduation and above	13	19
Total	**70**	**100**
Land Holdings		
Small Farmers (< 2.5 Acres)	30	43
Medium Farmers (2.5 to 5 Acres)	21	30
Large Farmers (> 5 Acres)	19	27
Total	**70**	**100**
Soil testing		
Done	28	40
Not Done	42	60
Total	**70**	**100**
Cattle Rearing		
Yes	41	59
No	29	41
Total	**70**	**100**

Source: Primary Data

Majority of the sample farmers were in the middle age group (36 - 45), implies the good sign of their preference for farming rather than occupying other forms of employment. The average age of the sample farmers was 43.23 years. Only few were illiterate and majority farmers have completed their primary and higher secondary level of education. A good number of farmers have also completed their graduation and above. It is welcoming that educated youth are preferring agriculture rather than other occupations. Majority of the sample farmers were small farmers having a land holding in the range of less than 2.5 acres. Majority of sample farmers failed to adopt the practice of soil testing, though they were educated.

FARMER'S PREFERENCE FOR ORGANIC FERTILIZERS

The attitude and preference of farmers towards the application of organic fertilizers were quite important to be analyzed, discussed in the following table

Table -2: Farmer's Preference for Organic Fertilizers

Preference for Organic Fertilizers	Number	Percent
Yes	47	67
No	23	33
Total	70	100

Source: Primary Data

Majority prefer organic fertilizers. It is a welcoming trend among the farmers. The role played by the Media, Government and other voluntary organizations is appreciable for having changed the mindset of the farmers towards organic farming. Not only farmers but also the attitude of public has changed towards the consumption of organic goods. The awareness towards the environmental protection has been bent among public and farmers. The ingress of educated youth into farming activity has also been the major factor motivating the others to prefer for organic farming.

ISSN 2394 - 7780

Relationship between Socio Economic Variables and Preference for Organic Fertilizers

H_0 = There is no significant association between age and the preference for organic fertilizers.

Table – 3: Cross tabulation between Age and Preference for Organic Fertilizers

Preference for Organic Farming	Age			Total
	Young Age	Middle Age	Upper Middle Age	
Preferred	10	34	3	47
Not Preferred	0	11	12	23
Total	10	45	15	70
Pearson Chi-Square			21.448	
Df			2	
P - Value			0.001	

Source: Compiled from Primary Data

The above table clarifies that young and middle aged farmers prefer organic particulars than old age farmers. The significance association was found between the age of the farmers and their preference for organic fertilizers. All the farmers who were in younger age group preferred organic fertilizers. Similarly among the middle age group, majority preferred organic fertilizers. Among the category of upper middle aged farmers only few were found to prefer organic fertilizers.

H_0 = There is no significant association between educational status and the preference for organic fertilizers.

Table – 4: Cross tabulation between Education and Preference for Organic Farming

Preference for Organic Farming	Educational Particulars					Total
	Illiterate	Primary	Secondary	Higher Secondary	Graduation and Above	
Preferred	0	4	13	17	13	47
Not Preferred	9	7	6	1	0	23
Total	9	11	19	18	13	70
Pearson Chi-Square				35.572		
Df				4		
P - Value				0.001		

Source: Compiled from Primary Data

Farmers who have qualified with higher secondary and graduation largely revealed their preference for organic fertilizers. The significant association was found between educational status and the preference towards organic fertilizers. The education played a major role in creating awareness among farmers towards organic nature of farming.

H_0 = There is no significant association between testing of soil and the preference for organic fertilizers.

Table – 5: Cross tabulation between Testing of Soil and Preference for Organic Farming

Preference for Organic Farming	Soil Testing		Total
	Tested	Not Tested	
Preferred	26	21	47
Not Preferred	2	21	23
Total	28	42	70
Pearson Chi-Square		13.987	
Df		1	
P - Value		0.001	

Source: Compiled from Primary Data

The above table clarifies that those who failed to prefer soil testing will also not preferred for organic fertilizers. It shows their lack of awareness about the benefits of doing their faming activities in scientific way. A significant association was found between preference for soil testing and organic farming.

ISSN 2394 - 7780

Table – 6: Cross tabulation between Size of Farm Holdings and Preference for Organic Farming

Preference for Organic Farming	Size of Farm Holdings			Total
	Small	Medium	Large	
Preferred	24	13	10	47
Not Preferred	6	8	9	23
Total	30	21	19	70

Source: Compiled from Primary Data

Of the farmers who preferred organic fertilizers, majority were small farmers. Among the farmers who failed to prefer organic fertilizers majority were large farmers. Thus small size of farm is not an impediment to prefer organic fertilizers. It's only the attitude and awareness that determines the preference of the farmers towards organic fertilizers.

H_0 = There is no significant difference between size of farm holdings and the preference for organic fertilizers.

Table –7: ANOVA

Preference for Organic Farming	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4.732	2	2.366	14.799	.000
Within Groups	10.711	67	.160		
Total	15.443	69			

Source: Compiled from Primary Data

The above ANOVA results clarifies that there is a significant difference between the preference of farmers towards organic fertilizers and the size of their land holdings.

Table – 8: Farmer's preference for different types of organic fertilizers

Type of Organic Fertilizer Preferred	Number	Percent
Compost	6	13
Bio fertilizer	10	21
Farmyard Manure	25	53
Press mud	6	13
Total	**47**	**100**

Source: Primary Data

Majority of the farmers preferred to apply farmyard manure as fertilizer since they had the culture of cattle rearing like goats, cows, hens and buffalos.

FACTORS INFLUENCING FARMER'S PREFERENCES FOR ORGANIC FERTILIZERS

The factors have been considered influencing farmers to prefer organic fertilizers.

1. Fellow farmer's opinion
2. Affordable Prices
3. Improves Soil Fertility
4. Avoids Soil Degradation
5. Increases Crop Yield
6. High Prices of Chemical Fertilizers

The farmers were asked to reveal their opinions regarding the above factors as strongly agree, agree, neither agree nor disagree, disagree and strongly disagree. By applying principal component analysis the following inferences were made.

Table – 9: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.604
Bartlett's Test of Sphericity	Approx. Chi-Square	33.057
	df	15
	Sig.	0.005

ISSN 2394 - 7780

Since the KMO measure exceeds the standard measure of 0.5, it can be concluded that the sample selected for the study has been adequate for the conduct of factor analysis.

Table – 10: Communalities

Factors	Initial	Extraction
Fellow Farmers Opinion	1	.620
Affordable Prices	1	.794
Improves Soil Fertility	1	.543
Avoids Soil Degradation	1	.850
Increase Crop Yield	1	.669
High Prices of Chemical Fertilizers	1	.569

Extraction Method: Principal Component Analysis.

The above table describes the values extracted for various factors influencing the farmer's discretion towards the application of organic fertilizers.

Table – 11: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.474	24.565	24.565	1.474	24.565	24.565	1.407	23.457	23.457
2	1.310	21.837	46.401	1.310	21.837	46.401	1.324	22.065	45.522
3	1.261	21.011	67.412	1.261	21.011	67.412	1.313	21.890	67.412
4	.789	13.147	80.559						
5	.739	12.312	92.871						
6	.428	7.129	100.00						

Extraction Method: Principal Component Analysis.

Out of 6 factors considered for the study, the factors with factor loadings in excess of 1.00 have been extracted. The three sets of factors have explained cumulatively 67.412 per cent of the total variance. The remaining variance of 32.588 per cent has been explained by the factors which have not been considered for the study.

Table – 12: Rotated Component Matrix

Factors	Components		
	1	2	3
Fellow Farmers Opinion	.552	.160	.123
Affordable Prices	-.165	.254	.574
Improves Soil Fertility	.469	-.175	-.063
Avoids Soil Degradation	.200	-.244	.635
Increase Crop Yield	-.056	.606	.035
High Prices of Chemical Fertilizers	-.346	-.459	.099

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization

The first component is most highly correlated with the factors viz. improvement in soil fertility and fellow farmers' opinion. Of the two factors improvement in soil fertility is found most influencing since it is less correlated with the other two components. The second component is highly correlated with increase in crop yield. The third component is most highly correlated with the avoidance of soil degradation. Thus it can be concluded that the factors viz. improvement in soil fertility, increase in crop yield, and avoidance of soil degradation were found to be greatly influencing the farmers to prefer for organic fertilizers.

Table – 13: Problems Encountered by Farmers in using Organic Fertilizers

Problems	Numbers	Percent
High prices	45	96
Poor quality of Organic Fertilizers	46	98

ISSN 2394 - 7780

Non availability of Organic fertilizer in time	47	100
Non-availability of water in required quantity for organic fertilizers	40	85
Non-availability of certified organic fertilizers	47	100

Source: Primary Data

All the farmers preferring organic fertilizers, revealed the problem of non – availability certified of organic fertilizers on time. Its high prices, poor quality and lack of water resources were the other major problems faced in the preference for organic fertilizers.

CONCLUSION

Organic farming, which was the original type of farming, is now regaining its popularity, since it is capable of providing solutions to the problems encountered by the modern farming systems. It has huge potentialities in terms of protecting the environment and soil fertility. Since its nutrient content is less, the huge quantity of fertilizers has to be applied to meet the nutrient requirements of the crops. Organic farming has been gaining popularity among famers nowadays due to the surfacing of educated young talents into farming activities. The high cost and non availability of organic fertilizers are the major impediments faced by organic farmers, which should be solved through research and development. With regard to organic fertilizers the new ideas, products and brands should be innovated to improve its usage.

REFERENCES

- Mahadeoa, S., Deshmukh and Nitin Appasaheb Babar 2015. Present Status and Prospects of Organic Farming in India. European Academic Research. 3(4): 4171 4287.
- Ramesh P, Mohan Singh and A. Subba Rao (2005), Organic farming: Its relevance to the Indian context. Current Science. 88(4): 561 568.
- Government Role in Promotion of Green Agriculture in India. http://www.fao.org/docrep/ARTICLE/ AGRIPPA/658_en-06.htm
- Sonam Taneja 2017. Sikkim is 100% organic Take a second look. https://www.downtoearth. .org.in/news/organic-trial-57517.

International Journal of Advance and Innovative Research
Volume 6, Issue 2 (XII): April - June, 2019
ISSN 2394 - 7780

FINANCIAL MANAGEMENT IN AGRICULTURE

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ABSTRACT
Finance is a life blood of every aspect in business. All farm operations start with an idea. There are several things you want to consider and explore before proceeding. Nowaday's agriculture business is more complicated than any other business because it depend not only finance, performance, knowledge farmer, technology advancement, scientific innovation and implementation and also seasons. Some formers have learnt and getting funds from their parents those who were in same field and others go for financial institutions, nationalized banks or private, commercial banks etc… Government takes more efforts to promote agriculture through special schemes. Agriculture Departments are running under our state government to guide the farmers to getting loan and financial support under government schemes. Some ideas, efforts and financial plan will lay the foundation of the farm business development process. Resources plan and time investment are more important as it determines where you are prepare for the journey ahead. This will also assist in deciding where the idea truly has potential and what will be required to make it successful.

INTRODUCTION
Finance is a life blood of every aspect in business. All farm operations start with an idea. There are several things you want to consider and explore before proceeding. Now a day's agriculture business is more complicated than any other business because it depends not only on finance, performance, knowledge farmer, technology advancement, scientific innovation and implementation and also seasons.

Some formers have learnt and getting funds from their parents those who were in same field and others go for financial institutions, nationalized banks or private, commercial banks etc… Government takes more efforts to promote agriculture through special schemes. Agriculture Departments are running under our state government to guide the farmers to getting loan and financial support under government schemes. Some ideas, efforts and financial plan will lay the foundation of the farm business development process. Resources plan and time investment are more important as it determines where you are prepare for the journey ahead. This will also assist in deciding where the idea truly has potential and what will be required to make it successful.

FINANCIAL PLAN
A farmer has 60% money and they can increase fund from outside sources but deft financing, you have to pay interest. Business plan is very important and necessary components of agriculture. Balance sheet –solvency, income statement – profitability, cash flow – liquidity, performance statement

(i) Income statement – profitability:

- ✓ Revenue and expenses from for a specific time period
- ✓ Income- receipt from sales, some other earning in agriculture business.
- ✓ Expense – seeding, planting, irrigation, harvesting
- ✓ Depreciation in agricultural instruments and machineries, capital adjustment
- ✓ Income-Expense= Net income

Main purpose is to determine how much income was generated by the farm operations.

INCOME	EXPENSES
➢ Sales of food grains ➢ Income from agriculture waste ➢ Commission gain from transformation of goods to needy people. ➢ Income from sales of vegetables ➢ Income from rent, land lease ➢ Account receivable ➢ Income from export of agriculture products ➢ Income from other resources ie farmer act	➢ Agriculture production expenses ➢ Daily wage ➢ Salary to supervisor ➢ Travelling expenses ➢ Fuel ➢ Tax dues, commodity dealers ➢ Account payable to commission shop ➢ Labor charge, broker charges

ISSN 2394 - 7780

as intermediate. ➢ Fund from government	➢ Equipment, Machines maintenance ➢ Repairs ➢ Insurance ➢ Manures and pesticides

Equitable inventory

You have to keep / maintain equipment inventory and keep record also. Some criterias are such as equipment name, model, size, year of purchase, age, condition, ownership, book value. This keeps valuable formation needed for financial statement. Agriculture activities deal two types of assets one is Biological assets such as living plants and animals another is agricultural products.

(i) Key issues: The key issues with account for agriculture are how to deal with assets which are growing and changing. Allocate cost between these different assets.

Guide lines for farm financial management

Develop goal that you are committed and will guide the management of farm and family. Prepare and analysis financial statement to determine your potential financial ability to pursue stated goals. Develop management plan to identify the activities and resources necessary to achieve your stated goals. Execution plays a vital role to perform well and attain expected output.

Record Keeping for Agriculture Business

Informative financial statement of farm required to develop complete set of farm financial records. It is day to day information related to the farm business including financial and planting, harvesting, marketing information. It will lead to know the financial performance and soundness of the total farm. This comprehensive statement shows the merit and demerits of farm business and serves as a starting point. Farmer can discuss with financial institution and it is important for the farmer to back up their regenerate for a loan with proper information. Different accounting systems available which are followed today in farm business are professional account firm. It is necessary to have a system that given you accurate information and you are able to monitor your financial soundness. You should not expect to manage effectively in today's farm business environment without financial plan, sources of finance, financial management, financial records etc…It is important that you understand what these records and statements are telling you. So you can make decisions and better manage your farm business.

Planning, Organising and directing the farm business

Select the geographical area and plan what you have to cultivate, what kind of craps, In which types of irrigation and plouging system, analysis the season after that organize your plan as per the predetermine the schedules, direct all the activities whenever it needed towards high yield .

Agriculture loan under Tamil Nadu Government

All the government and private banks, rural and urban banks, Co-operative societies offer agriculture loans at low interest rate compares to other loans. Tamil Nadu granted loans such as crop loan Kisan Credit card (KCC), Gold loan for SSTL (Mortgage free), Dairy loans, and poultry loans. The ICICI bank offers a variety of agricultural loans. The top selling products is the Kisan Cresit cards which is a convenient way for farmers to meet the dairy requirements. They also offer long term loans to purchase equipment's to cattle which can be repaid over a period of three to four years.

Agriculture and rural credit scheme such as Kisan Credit Cards scheme –Crop Loan: Kisan Survidha Schemes Krishi Mitra cars scheme. Kisan Talkal all purpose term loans.

Types of agriculture loan to farmers

- ✓ Loan for agriculture activities
- ✓ Loan for agriculture infrastructure
- ✓ Loan for agriculture allied activities

They also provide short term, medium and long term loans. This value is based on the yield and price of the crop. It's also depends on the basis of cost of cultivation and expenses. Loan amount mainly depends upon the gross value, more the gross value more loan you can get.

ISSN 2394 - 7780

Banks in India those offer agriculture loan to farmers

State Bank Of India , ICICI Bank, The HDFC Bank, The Andhra Bank, The Bank Of Baroda, The Bank of Maharastra, Indian Over Seas Bank, The Syndicate Bank, The Unit Bank of India, The Axis Bank, The Vijaya Bank, The UCO Bank, Oriented Bank Of Commerce. Farmer can approach the bank with necessary documents with aathar card. Procedures are very easy to access fund which is granted by it.

Steps taken by Government

Increase the availability of chemical fertilizers at subsidized rates, either through production or through imports. Develop and produce new hybrid verities of seeds rich will help in increasing the yield of various crops. The government would fix a minimum purchase price for various crops every year. Provide adequate and timely loan to farmers, on easy terms to buy farm machinery and others agriculture items. Educate and help the farmers through specially developed programme on radio and television. The government should provide adequate diesel, electricity, craps to the farmers to reduce expense in agriculture business.

CONCLUSION

The state government and central government of our country should take necessary steps to improve agriculture in India. It is essential to increase the productions of food grains and other cash crops. To achieve this aim, a programme was devised through the five year plan. The government has to develop various means of irrigation, so that more land could be brought under agriculture. Conduct sufficient awareness programme to get fund from government to bring the agriculture to the next level because most of the farmers are illiterate.

REFERENCES

1. Chinnasamy, P.; Agoramoorthy, G. Groundwater Storage and Depletion Trends in Tamil Nadu State, India, Water Resour. Manag. 2015, 29, 2139-2152.
2. Ratna Reddy, V.; Rout, S.K; Chiranjeevi, T. , Performance and Factors Influencing the Impact of Watershed Development Programme in Rajasthan. Ind. Jn. of Agri.Econ. Vol.67, No.1, Jan.- March 2012.
3. P.V.Rajagopalan studies on cost of production of major crops in Tamilnadu department of agricultural of agricultural Economics. Tamilnadu agricultural university, Coimbatore 2008, pp2-3.
4. Quazi M. Alarm and A.K.M Habibul Haque, “Wheat cultivation in Bangladesh: Economic profile Economic affairs, vol 43, Qr H December 2002 pp 215-217
5. Sunder Singh et al., “Energy and cost requirements for cultivation of Rice, Wheat and Maize” Indian journal of agricultural: sciences September, 2009, p.558

International Journal of Advance and Innovative Research
Volume 6, Issue 2 (XII): April - June, 2019
ISSN 2394 - 7780

SELF-SUSTAINED RURAL ECONOMY- MODELLING PPCP IN RAJASTHAN

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ABSTRACT
The Gandhian principle of development lays emphasis on the importance of self- sustaining village economy where village acts as a basic economic unit. This paper tries to identify the problems present in the current rural structure in Rajasthan which break an impasse in self-sustained development. It also proposes a theoretical solution to overhaul the rural economy by synergizing private sector, state, and the village individuals as cooperatives. Thus, it tries to add a third dimension in PPP (Public Private Partnership) model – of Cooperatives, thus, making it PPCP (Public Private Cooperative Partnership) Model. This paper explores the interaction mechanism between the three stakeholders and tries to answer the question, 'why the Trinity is better?'. It accentuates on the capacity of the PPCP model to dispel various rigidities in the agriculture system of the state which not only results in improved efficiency but also push towards a self-sustained rural economy. Lastly, this paper identifies various obstacles in the implementation of the PPCP model in Rajasthan.

Keywords: Self-Sustained Rural Economy, Public Private Cooperative Partnership, Public Private Partnership (PPP), Contract Farming, Cooperative Farming, Rajasthan, Agriculture

Self-Sustained Rural Economy – Modelling PPCP in Rajasthan

"Agriculture…is our wisest pursuit, because it will in the end contribute most of real wealth, good morals, and happiness." (President Thomas Jefferson)

1. INTRODUCTION

In the 21st century India, on one side we successfully entered the orbit of mars to explore the new dimension of existence of life and on the other side we are unable to provide basics to 68 percent of the lives which exist in our villages. The biggest challenge in front of Indian economy is to resurrect its agriculture sector which is an indispensable part. The same follows for Rajasthan, the largest state of the country with a huge population depending on this sector. This paper tries to give a model through which the rural economy can be made self-sustained and tests its applicability in Rajasthan. The proposed model tries to pool together the three stakeholders of the society – public sector, private sector and cooperatives of people. Thus, named as PPCP (Public Private Cooperative Partnership) model adding a third dimension to much talked PPP model, i.e., Cooperatives. Cooperation is not something unprecedented in our social system; in fact it has a long history from time immemorial. The focus of this paper is not to establish an egalitarian society but a resurgence of the good elements of this system in robes of contemporary time. It tries to pull together the better side of socialism which thrives for equality and cooperation, and capitalism which emphasize on efficiency, which is a prerequisite to satisfy the increasing demand, in the presence of democracy. It combines the cooperative and contract farming practices to deal with the drawbacks of implementing them individually, with government acting as an ancillary body. It discusses various benefits and features of the interaction of the model.

Section 2 discusses various features of agriculture in Rajasthan to understand the context where the model is placed. Section 3 explicitly discusses the contract farming practices and tries to understand what are the problems faced in its implementation. Section 4 streamline the model proposed in the paper and tries to explain how it can overcome various rigidities in implementation of other systems. Section 5 concludes by accentuating on the need of self-sustained economy, applicability of model in Rajasthan and prospectus problems in its implementation.

2. FEATURES OF AGRICULTURE IN RAJASTHAN

Before discussing the model in detail, it is important to discuss the various features of agriculture in the state. These are discussed under the following heads.

Huge dependence on agriculture: Rajasthan's economy is widely based on agriculture and pastoralism. The topography of Rajasthan is such that almost 60 percent of the area is not arable and is desert. In such area livestock rearing is the major source of livelihood. Agriculture contributes 24.61 percent to the GSVA of Rajasthan at constant price (Directorate of Economics & Statistics, 2018) and a large proportion of the population is engaged in this sector. People employed in industrial sector are very less as compared to agriculture sector. Thus, they are largely dependent on agriculture.

ISSN 2394 - 7780

Land holdings: As per the reports of Agriculture census 2015-16, 62 percent of the total operational landholdings are marginal and small. Data from various Agriculture census in Table 1 shows that from 1980 to 2015, the share of marginal and small land holdings in number of operational lands is increasing whereas the share of large landholdings are decreasing (Department of Agriculture, Cooperation and Farmer Welfare; Ministry of Agriculture and Farmers Welfare, 1980-81, 1985-86, 1990-91, 1995-96, 2000-01, 2005-06, 2010-11, 2015-16).

Table-1: Percentage Distribution of Number of Operational Holdings by Size for All Social Group

census year	marginal	small	semi- medium	medium	large
1980-81	29.4	19.6	20.4	19.7	10.9
1985-86	28.6	19.4	20.6	20.8	10.6
1990-91	29.7	20	20.8	19.8	9.7
1995-96	30	20.2	20.8	19.9	9.1
2000-01	31.8	20.8	20.6	18.9	7.9
2005-06	33.3	21.4	20.4	17.9	7
2010-11	36.46	21.94	19.38	16.36	5.86
2015-16	40.2	21.9	18.5	14.8	4.6

Source: Agriculture census Reports 1980-81, 1985-86, 1990-91, 1995-96, 2000-01, 2005-06, 2010-11, 2015-16

Low productivity: Rajasthan has 9 Agro-climatic zones and based on this it have 14 different types of soil, with varied nutrient content in 33 different districts. This results into a huge variation in productivity within the state. Almost 75 percent of the soils is not healthy for production (NITI Aayog). Among other reasons, this brings down the productivity. The data from Agriculture census emphasize that the average productivity (quintals per hectare) of crops in Rajasthan is less than that of All India average except for wheat, barley, oilseed and groundnut (Directorate of Economics and statistics, Ministry of Agriculture and farmer welfare, 2016). Wheat and Barley use more water, paucity of water in a desert state is no question thus there should be diversification of agriculture towards water efficient cropping system. In oilseeds the state has got the upper hand as it is the largest producer of rapeseeds and groundnuts in the country.

Scarcity of water and inconsistent irrigation system: the agriculture in the state is mostly monsoon driven. The average rainfall received by Rajasthan is not only much lower from All India average, but the monsoon period is also very short. From 1901 to 2003 (102 years), 48 years were drought years in Rajasthan. In fact, there are only 9 years out of 102 in which not a single district experienced drought and if we go deep into village analysis then there is not a single year when the state is not affected by drought (Rathore, 2005). It is being claimed that one out of three years in the state is a drought year. Adding to that, the soil of arid region has less capacity to hold water. Thus, condition of groundwater is pathetic not only because of the low water holding capacity but also due to overexploitation. Most of the irrigation and drinking needs are satisfied through this, thus, the level is very low. The dry climate and erratic rainfall necessitate a proper irrigation mechanism to ensure agriculture productivity in the state. In Rajasthan only the western districts in the proximity of the Indira Gandhi Canal have proper canal irrigation facility. In northern region agriculture land are mostly irrigated using well and that in hilly and plateau region tank irrigation is used. Thus, a major portion of the state lacks systematic irrigation. In recent years, various policy measures have been adopted and Rajasthan, though ranked low in the Composite Index of Water Management (CWMI) but was the most improved state, earning 9 points by strengthening participation, resuscitating 81% of identified water bodies and other policy measure (NITI Aayog, 2018). Still there is a need to trickle down these improvements to the roots of the agrarian economy to have desired effects.

Low consumption of fertilizers: modern techniques of agriculture demand use of varied inputs, like fertilizers and pesticides, for better productivity. Rajasthan is one amongst the lowest consumer of fertilizers in the country. A total consumption of fertilizers (N, P, and K) per hectare is 61.56 kg which is much lower than the All India average of 130.66 kg per hectare in 2015-16. The land use pattern of the state also indicates low use of fertilizers (Directorate of Economics and Statistics, 2016). More than 10 percent of the total land is fallow (Directorate of Economics & Statistics, 2018). This implies that the farmers are using traditional method to replenish the fertility of the land. Though it is the natural way to gain nutrients but the field visit shows that the farmers don't have access to costlier fertilizers, so they adopt this method (Chapter 4 Food-Population Relationship in Rajasthan). The state government has taken initiatives but the data of fertilizer consumption per hectare commensurate with the above observation that a lot of land don't enter into agriculture due to lack of inputs.

ISSN 2394 - 7780

Food Sufficiency: Medical science suggests that a person should intake certain amount of food to live a healthy life. Thus, a required dietary Allowances (RDA) is specified worldwide. The amount varies from region to region with climatic conditions and biological needs. In India, ICMR (Indian Council for Medical Research) gives the RDAs figure. In past, Rajasthan was able to fulfill its food grain requirement but with time the average food grain available per person started declining and in 2011 it was less than what is required per person. The standard food requirement per head per year was 158.4 kg and the mean available food (total production divided by population) was 157.72 (Chapter 4 Food-Population Relationship in Rajasthan). This is an alarming situation even if we neglect the distributional aspects of the production. The state is not able to produce the minimum required food grains.

Low income of farmers: Due to the above factors the income of the farmers is very low. The survey of agriculture household says that 78.4 percent of the rural household is agricultural households. The average monthly income per agriculture household is Rs. 7350 (Directorate of Economics and Statistics, 2016). Given this income of the household, most of the people are surviving in the state and not living a standard life and given it's an average, many of them are below survival level. To procure basic necessities is a big challenge; thinking of technological advancement in farming is beyond their scope.

All the features discussed above inhibit the growth of agriculture sector. The capacity is not fully utilized and thus there are inefficiencies. To tackle these problems many suggests alternative policy of contract farming. The importance of this policy has increased after the recent provision of FDI in multi-brand retail sector by Government of India. But there are some issues which reduces applicability and efficacy of the system in Rajasthan. The meaning and problems of contract farming are discussed in the section below.

3. CONTRACT FARMING

Concept of contract farming is not new to Indian farming system, it was implemented in the British Raj for Indigo cultivation but the only difference is that was exploitative in nature. Contract farming acts as a link between the firm and the farmer. On the one hand farmers are forced to throw their produce away due to lack of demand and on the other hand the firms need timely input to carry out their production. This creates a paradoxical situation (Ramsundar & Shubhabrata, 2014). The agri-food system in India is growing rapidly but the main concern in Indian agriculture is that while "front end" activities – including wholesaling, processing, logistics, and retailing – are rapidly expanding and consolidating, the "back end" activities of production agriculture have been continuously fragmenting. Farm-firm link can be made in many ways. One of them is direct procurement where firms directly buy from the farmers but for such an arrangement states must amend their Agricultural Produce marketing Committee (APMC) Act (Gulati, Joshi, & Maurice, 2019). The recommended amendments by the central government in Model APMC Act in 2003 are already made by Rajasthan government in 2005. Contract Farming was one among those amendments. Provision was made under 22-N but till now there is not a single registration. Contract farming is almost missing in the state. The problems in institutionalizing contract farming are:

I. *Organizational limitation due to small landholdings:* while discussing the features of Rajasthan it was indicated that 62 percent of the operational landholdings are marginal and small in nature. The firm has to deal with a great number of people to ensure quality input and to properly supervise the cultivation. A huge amount of resources is employed in managing larger number which is inefficient for the firm.

II. *Transfer of technical knowledge is difficult:* Firstly, because of the above factor the technological transfer is limited. Secondly, due to various social limitations, the individual farmers may not be able reciprocate to the manager's specification.

III. *Mechanization is limited on small landholdings:* mechanization on small landholdings has a very little scope. This results into diseconomies of scale which are not profitable.

IV. *Exploitation of small farmers:* In this type of arrangement benefits accrue to large farmers and the firms only. Small farmers don't gain much in the contract as they have limited bargaining power.

V. *Terms of contract are informal:* Most of the contracts are verbal in nature and even if they are written they have little enforceability. *Breach of contract* -Whenever there is a gap in the market prices and the contract prices, there is a high possibility of refusal to buy (firm) and refusal to sell (farmers).

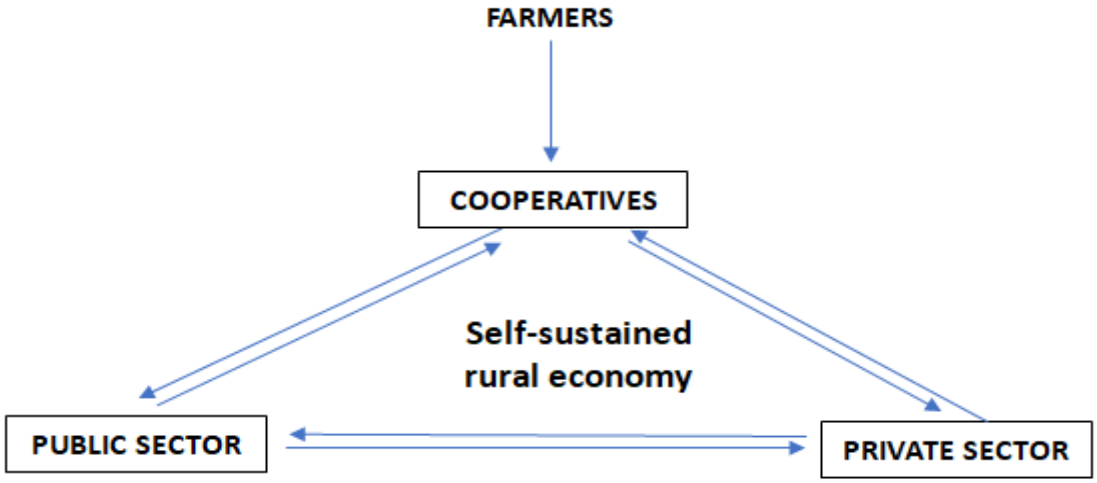
To overcome these obstacles there is a need for innovation in contract farming models. One of the suggested practices is clustering the small farmers for better farm-firm interaction. The theme of this paper is centred on this interaction. Thus, in the next section, the model is introduced and interaction between the stakeholders is discussed to attain a self-sustained rural economy.

ISSN 2394 - 7780

4. PUBLIC PRIVATE COOPERATIVE PARTNERSHIP (PPCP) MODEL

Delivering the 19th Vaikunth Bhai Mehta Memoria Lecture organized by National Cooperative Union of India (NCUI), Vice President Shri Venkaiah Naidu emphasised that "cooperatives have the potential to revive agriculture and make it sustainable" (2018). He said that the model of PPP should be extended to PPCP by adding a third dimension of cooperatives to it. Thus, this paper tries to explore theoretical working mechanism of this interaction. The public sector here comprises of government at all the levels – centre, state and local bodies, private sector includes all the private firms, MNCs, public cooperation and rich landlords, and cooperatives is a joint farming unit of the farmers. The interaction mechanism is shown in the figure below.

Figure-1: Public, Private and Cooperative Interaction Model



4.1 Formation of cooperatives

The model starts with the formation of farmers' cooperatives and then explores the various ways of interaction between public sector, private sector and cooperatives. The farmers at the village level come together to form a joint-farming cooperative. In this the ownership of the land is retained with the farmer. A fixed proportion of revenue is kept for the landowners and is distributed in proportion of land size and wages will be paid to the labour employed on the land. Clustering the land and having a proper institution give small farmers, who practice peasant farming; both scale effect and bargaining power.

Rich landlords, who are involved in tenant farming, with the formation of cooperatives can be given incentive to invest their capital in MSME and diversify the agriculture practices to increase employment and productivity in the agriculture sector.

Concept of cooperatives is not new to Rajasthan. In fact it is playing a vital role in the socio-economic development of the rural areas. Milk Cooperation of Saras is the best example to show its presence. Particularly in farming sector, it is prevalent in agriculture credit, agro-processing and agro- marketing. As high as 90% of institutional credit to farmers is extended by cooperatives and 70% of district credit plan is fulfilled by cooperative banks. Cooperative marketing society provides 30% of the total agricultural inputs (Cooperation, 2010). But all these intervention are limited to consolidating 'front end' (marketing, wholesaling etc.) Of the farming and doesn't cater to the problem of fragmentation at the 'back end' (production side). Thus, forming a joint farming cooperative solves the various issues associated with production side mainly by consolidating the lands.

After the formation of the cooperative, the ground is ready for the players to interact with each other and make the villages self-reliant. There is an in-built mechanism of checks and balance in the system which is discussed with the interaction mechanism in the next section.

4.2 Interaction between cooperatives and private sector

The interaction between the cooperatives and the private sector has the following dimensions:

4.2.1 Contract Farming

Cooperatives acts as a liaison between the individual farmers and the firm has the following benefit:

I. *The impediment of small landholdings is removed:* After the consolidation of lands under joint farming cooperatives, problems arising from fragmentation are mitigated. For instance, (i) *Operational difficulties evade* as the cooperatives link the farmers and the firms. (ii) *Economies of scale* are possible. (iii) Better utilization of collective resources can be made.

ISSN 2394 - 7780

II. *Transfer of technical know-how:* The technological assistance from the firm will improve the productivity of the farmer.

III. *Production and marketing risk is shared by farmers and the firm:* in contract farming the production and marketing risk doesn't fall fully on the farmers.

IV. *Credit Advancement:* this prevents indebtedness.

V. Bargaining power of the farmers increases due to increased scale effect through cooperatives.

VI. Income of the farmers increases and the produce is not wasted due to glut in market or due to poor storage capacity.

4.2.2 Rich Landlords – MSME

Cooperatives should incentivize the rich landlords with capital to invest their money in MSME which will improve the employment opportunity in the village.

4.2.3 Checks & balance: the farmers check the exploitative practices of private sector through the means of cooperatives as they have the leverage of unity. In turn the private sector ensures the quality of production by setting minimum quality standard in the terms of the contract and by supervising the process.

4.3 Interaction of cooperatives and the public sector

The interaction between the cooperatives and the public sector has the following benefits:

I. *Better policy implementation:* Since the cooperatives act as a link between government and the farmers the agriculture policies can be better targeted. Managers of cooperatives have better knowledge of various current policies of the government and thus they can reap the benefits appropriately.

II. *R & D Factor:* Government can hire experts to advice the cooperatives in the production. With the formation of cooperatives, the expertise can be personalised based on the soil type and agro-economic zone. With cooperatives the data collection process can be very easy and handy, which forms the corner stone of government's policy.

III. *Unused land under the government:* there is a huge land under the central and state government which are not used. Government should make such an institutional arrangement that the cooperatives can rent the government land for nominal fees to carry out agriculture practices.

IV. *Tax revenue:* A negligible amount of tax revenue is collected from agriculture sector currently. Government should give tax relaxation to the cooperatives for a certain period of time so that it can establish itself or when it is on test basis. Once the cooperatives start earning profit, a certain amount of tax should be imposed and appropriated by the government.

V. Burden of government is lessened because cooperatives promote education and skill development through various training programmes. Women empowerment is promoted as they are given jobs and opportunities through cooperatives.

4.3.1 Checks & balance: empowered cooperatives check the corruption in government bodies by demanding deliverance of the prescribed policies. The government in turn keep an eye on the cooperative institutions' legitimate working.

4.4 Interaction of public and private sector

The interaction between the public sector and the private sector has the following features:

I. The burden of public sector is lessened as the private sector intervenes to provide credit and technical knowledge.

II. Various supporting infrastructures can be built to facilitate agriculture by PPP ventures.

III. Give incentives to the potentially urban unemployed to set up MSME and organize the labour in productive way.

4.4.1 Checks and balance: there should be a legal framework by which government can check the environmentally exploitative practices of the private sector if they exceed the threshold. For this government should undertake Land Use Planning so that it can give exact report of soil's condition. Private sector motivates the targeted policy measures by public sector.

ISSN 2394 - 7780

4.5 Interaction of public, private and cooperatives

Government should bring a provision such that the three parties come together to form a special economic zone which is agriculture based. It will enhance employment not only in rural area but boast employment in urban sector also through linkage effects.

4.6 Environmental factor in PPCP model

Following are the environmental factors associated with PPCP model in Rajasthan:

I. *Renewable energy:* Rajasthan has huge scope of solar and wind energy. With cooperation and conducive government policy, the clean energy can be harnessed.

   Biomass energy can be tapped better when farmers cooperate with each other. With help of government this can become alternative source of energy.

II. *Agriculture waste management:* better use of agriculture waste can be made if cooperatives are formed since in aggregation the waste can be sold out to the industries which use it as raw material. This will earn some revenue also.

III. *Rainwater harvesting:* government of Rajasthan's community based water management scheme of Mukhiyan Mantri Jal Swalambhiyan Abhiyan (MJSA) can have better effects in such a model. The structure can be used to make village self-reliant in water.

4.7 Self-sustained village economy

The motivation of the whole model was to create a self-sustained rural economy. A self-sustained rural economy can be defined as a village economy, in a small geographical area, which is able to provide enough economic opportunities to its dwellers to sustain their lives with minimum standard of living. In our model when all the sectors interact with each other, the rural economy thrives to become a self-sustained rural economy.

5. CONCLUSION

The most important factor of this model is that it tries to provide a solution to one of the biggest challenges in front of Indian Economy, that is, migration. With the increasing problems of urbanization in the country it is important to promote policies which make our villages self-sufficient. This is because, if our villages will create enough job opportunities then migration will be less and this will solve most of the problems associated with urbanization. Not only will this it enhance the socio-economic development of the villages.

The proposed model is suitable for Rajasthan because of many reasons. Firstly, Rajasthan is having leverage in the production of oilseeds and spices which opens scope for contract farming as they are inputs for various agro-processing industries. Secondly, state laws are conducive to support this model. Thirdly, it has a huge scope of wind and solar energy. Next, as the state has rich heritage, every district of Rajasthan has some unique art and craft which can be developed and provides a huge scope to setup MSMEs. Then, labour is available who seek employment. But even after these there are some obstacles which narrow down the applicability of the model, like, corruption, time taken to set up a business is very long, lack of well-educated people who are willing to organize farmers to form cooperatives and other traditional ties (caste system).

REFERENCES

- Chapter 4 Food-Population Relationship in Rajasthan. From http://shodhganga.inflibnet.ac.in/bitstream/10603/107021/10/10_chapter%204.pdf
- *Cooperation.* (2010). From Government of Rajasthan Planning Portal: http://plan.rajasthan.gov.in/content/dam/planning-portal/Planning/AnnualPlan2009-10/Chapters/Chap_10_Cooperation.pdf
- Department of Agriculture, Cooperation and Farmer Welfare; Ministry of Agriculture and Farmers Welfare. (1980-81, 1985-86, 1990-91, 1995-96, 2000-01, 2005-06, 2010-11, 2015-16). *Agriculture census.* New Delhi: Government of India.
- Directorate of Economics & Statistics. (2018). *Economic Review 2017-18.* Jaipur: Department of Planning, Government of Rajasthan.
- Directorate of Economics and Statistics. (2016). *Agriculture statistics at glance 2016.* New Delhi : Government of India.
- Directorate of Economics and statistics, Ministry of Agriculture and farmer welfare. (2016). *Agriculture.*

ISSN 2394 - 7780

- Gulati, A., Joshi, P. K., & Maurice, L. (2019). Contract Farming in India: An Introduction.
- NITI Aayog. From NITI Aayog Government of India: https://niti.gov.in/writereaddata/files/Rajasthan-reports_0.pdf
- NITI Aayog. (2018). *Composite Water Management Index : A Tool For Water Management* . NITI Aayog.
- *Press Information Bureau.* (2018, June). From Cooperatives have the potential to revive agriculture and make it sustainable: http://www.pib.nic.in/Pressreleaseshare.aspx?PRID=1536474
- Ramsundar, B., & Shubhabrata, S. (2014, November-December). Problems and prospects of contract farming in India. *Global Journal Commerce and Management Perspectives, 3(6),* 12-17.
- Rathore, M. (2005). State Level Analysis of Drought Policies and Impact in Rajasthan, India. Colombo, Sri Lanka: IWMI.

International Journal of Advance and Innovative Research
Volume 6, Issue 2 (XII): April - June, 2019
ISSN 2394 - 7780

URBANIZATION AND ITS IMPACT ON HOUSING AND HUMAN HEALTH – A CASE STUDY OF CHENNAI CITY OF TAMIL NADU

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ABSTRACT
Cities are the major mode of dwelling, and the growth in towns is associated with the growth of areas which have concentrated drawback. The foreseeable fashion is for growing inequities across an extensive range of social and fitness dimensions. Although qualitatively unique, this trend exists in each the developed and developing worlds.Improving the fitness of human beings in slums would require new analytic frameworks. The social-determinants technique emphasizes the role of factors that function at more than one tier, which includes international, countrywide, municipal, and neighborhood stages, in shaping health. This method shows that enhancing dwelling conditions in such areas as housing, employment, and training, equality, pleasant of living environment, social assist, and fitness offerings is important to enhancing the health of city populations. While social determinant and multilevel perspectives aren't uniquely urban, they are transformed when regarded via the traits of cities which include length, density, variety, and complexity. Ameliorating the immediately residing situations within the cities wherein humans live gives the best promise for decreasing morbidity, mortality, and disparities in fitness and for enhancing first-rate of lifestyles and properly being.

Keywords: Urbanization, Housing Environment and Human Health

INTRODUCTION
Housing, a very important parameter for human health and well-being has been neglected/not given adequate importance, majority times over the recent decades. The home environment provides protection not only against physical, chemical and biological hazards but is also important for psychosocial reasons of people. It is this environment where people spend majority of their time. It is also important that spacious local environment around the home is necessary for protection against crimes and services accessibility which provides an opportunity to be physically active. Apart from safe, healthy home environment, it also becomes relevance that in a state of unstable economic conditions, housing affordability, and potential of individuals to lose their home because of debts has become an issue for majority of people.

Chennai city has the fourth highest population of slum dwellers as well among the major cities in India, with about 820,000 people (18.6 per cent of the city's population) living in slum conditions. According to Census 2011, Chennai district has 1.1 million households, with 51 per cent of them living in rented houses. There are about 1,240 slums in Chennai. As per Census 2011, the residential housing stock available is 1.15 million – a surplus of about 50,000 houses. Chennai has a diversified economic has anchored by the automobile, software services, hardware manufacturing, health care and financial services industries. According to the Confederation of Indian Industry, Chennai is estimated to grow to a 100 billion US dollars economy, 2.5 times its present size, by the year 2025. A study conducted by the National Housing Bank on the residential price index of Indian cities has shown that Chennai experienced the highest growth after the 2008-2012 global financial crises. According to a study by 99 acres.com in 2011, Chennai real estate saw an average price appreciation of 7 per cent with Tambaram, Chromepet and Thoraipakkam leading the way. Medical tourism is another important part of Chennai's economy with 45 per cent of the total medical tourists to India making their way to Chennai. The Tamil film industry and the Tamil television industry are also significant parts of Chennai's economy. The city also has a permanent exhibition complex in Nandambakkam called Chennai Trade Centre, besides the Lalithkala Academy. An estimated 100,000 people in the city have assets over Rs. 50 million. The city is the third largest market in India for luxury cars.

REVIEW OF LITERATURE
Aziza Mahamoud (2012), pointed out the existing relationship between housing environment and human health and he also pointed out that housing insecurity leads to poor health.

Shortt K.N (2013) revealed that poor housing conditions leads to health vulnerability among the people.

Owoeye J.O (2015), found that the housing environment is suffering from over congestion poor state of roads and buildings, poor infrastructure and public services. He suggested that improved sanitation for sustainable management of the housing environment is must.

ISSN 2394 - 7780

Zhang D (2016) argued that better housing conditions promote socio and cultural health and happiness of the residents.

STATEMENT OF THE PROBLEM

International steerage on "wholesome housing" has to be advanced to assist and save you a huge range of illnesses and accidental accidents that may be correctly addressed through higher housing. This was a key message rising from an international consultation of forty specialists from 18 nations hosted by using WHO in Geneva thirteen-15 October, 2010.

The scientific proof on the various links among housing and health has grown significantly in current decades. This evidence can be used to guide "number one preventive" measures associated with housing creation, upkeep, use and preservation, that may promote better typical health, stated Dr. Maria Neira, Director of WHO's Department of Public Health and Environment, that is overseeing the initiative.

"Housing enhancements are accelerating for plenty reasons – to conserve strength in the face of weather trade, address desires of a swiftly urbanizing global population, prevention of homelessness and slum growth, and other elements".

NEED FOR THE STUDY

The study is relevant inside the present scenario as the dwelling situations have an instantaneous impact on housing environment and human health.One of the most important demanding situations that face urban planners worldwide is the proliferation of slums in urban regions and the host of health hazards that they bring alongside in their wake. Though the prolific unfold of slums has been a rampant problem in urban areas international. There is a want of empirical data base upon which medical making plans can be made. With a view to bridge this statistics gap, the present take a look at tries to assess the impact of housing surroundings on the residing conditions of humans in Chennai, the Capital city of the State of Tamil Nadu in India.

OBJECTIVES OF THE STUDY

1. To examine the housing conditions of the sample respondents in Chennai city
2. To analyze the relationship between housing environment on health status of the sample respondents

HYPOTHESES OF THE STUDY

The following null hypotheses are framed in this study

H01: There is no relationship between Pollution and Human Health

H02: There is no relationship between House Construction related issues and Human Health

H03: There is no relationship between Natural Factors in the House and Human Health

H04: There is no relationship between Problems of Bugs in the House and Human Health

Model Framework

$$\text{Human Health} = \alpha + \beta 1\ \text{Pollution} + \beta 2\ \text{House construction related issues} + \beta 3\ \text{Natural Factors in the House} + \beta 4\ \text{Problems of Bugs in the House} + \varepsilon t.$$

Variables used in the Model

Table-1: Constructs used in the Model

Independent [Housing Environment]	Dependent [Human Health]
Pollution	Respiratory Problems
House Construction related issues	Gastro-Intestinal Problems
Natural Factors in the House	Immune System Problems
Problems of Bugs in the House	Cardio-Vascular Problems
	Psychological Disorders
	Nervous Disorders
	Ortho Disorders
	Dermatology Disorders
	Febrile Illness
	Anxiety Disorders

ISSN 2394 - 7780

Sampling Design and Size
This study is based on multi-stage proportionate random sampling method.

Table-2: Sample Size of the study

District	Zone	Wards	Total households	Sample households	Sample %
Chennai	ICE HOUSE	2	1527	153	10.02
	NUNGAMBAKKAM	2	1106	111	10.04
	BASINBRIDGE	2	1194	119	09.97
	MYLAPORE	2	1639	164	10.00
	Total		**5466**	**547**	

As shown above, from each sampling unit, around 10 per cent of the total households have been identified as the sample households. Thus, from the total of 5466 households, 547 households have been chosen as the sample respondents.

STATISTICAL TOOLS USED IN THE STUDY
Correlation: To ascertain the degree of relationship between housing environment and human health.

LIMITATIONS OF THE STUDY
i) This study is entirely based on the information provided by the sample respondents which may be minimally biased.

ii) Due to paucity of time and other factors, the number of sample households could not be extended beyond 547.

iii) The study is restricted to Chennai City only, it cannot be generalized.

iv) The study is also prone to common errors in survey analysis.

RESULTS AND DISCUSSIONS

Table-3: Results of Correlation Matrix showing the relationship between Pollution and Human Health

Human Health	Sig (2-tailed)	Pearson Correlation
Respiratory Problems	0.314	0.043
Gastro-Intestinal Problems	0.418	0.035
Immune System Problems	0.313	0.043
Cardio-Vascular Problems	0.750	0.014
Psychological Disorders	0.206	0.054
Nervous Disorders	0.837	-0.009
Ortho Disorders	0.108	0.069
Dermatology Disorders	0.532	0.027
Febrile Illness	0.464	-0.031
Anxiety Disorders	0.724	-0.015

Source: Primary Data, Computed using SPSS

Table 3 highlights the results of correlation analysis to understand the degree of relationship between pollution in the house and Human Health. At 5% level of significance, the 'p' value was found to be 0.314, 0.418, 0.313, 0.750, 0.206, 0.837, 0.108, 0.532, 0.464 and 0.724 for Respiratory problems, Gastro-Intestinal Problems, Immune system problems, Cardio-Vascular problems, Psychological disorders, Nervous disorders, Ortho disorders, Dermatology disorders, Febrile Illness and Anxiety disorders. As the 'p' value is greater than 0.05, the degree of relationship is meaningless. Hence we conclude to accept the **H01: "There is no relationship between Pollution and Human Health"**.

Table-4: Results of Correlation Matrix showing the relationship between House Construction Related Issues and Human Health

Human Health	Sig (2-tailed)	Pearson Correlation
Respiratory Problems	**0.054***	**-0.082***
Gastro-Intestinal Problems	**0.004***	**-0.124***
Immune System Problems	**0.008***	**-0.114***
Cardio-Vascular Problems	0.199	-0.055
Psychological Disorders	0.893	-0.006
Nervous Disorders	0.137	-0.064

ISSN 2394 - 7780

Ortho Disorders	0.2680	-0.046
Dermatology Disorders	0.651	-0.019
Febrile Illness	0.189	-0.056
Anxiety Disorders	0.445	-0.033

Source: Primary Data, Computed using SPSS
*indicates significant at 5% level

The results of Pearson Correlation Analysis explaining the relationship between House Construction related issues and Human Health are presented in **Table 4.** It is to be noted that the relationship between house construction related issues Smoke around house, Ventilation facility, Salt content in ground, water Sun light receiving and Human Health factors which includes Cold, Cough, Fever, Headache and Sneezing (Respiratory Problems) was significant at 5% level as the 'p' value was 0.054 where the degree of relationship was found to be negative (-0.082). Similarly, the relationship between House Construction related issues and Gastro-Intestinal Problems (Dengue, Diarrhoea) exhibited negative relationship where the 'p' value was found to be 0.004 and the Pearson correlation was -0.124. Further, the relationship between house constructions related issues and Immune system problems witnessed negative relationship ('p' value 0.008 and Pearson correlation -0.114). All other dependent variables did not witness significant relationship. Out of 10 dependent variables, three showed negative relationship. Therefore, the H02: **"There is no relationship between House Construction related issues and Human Health"** is rejected.

Table-5: Results of Correlation Matrix showing the relationship between Natural Factors in the House and Human Health

Human Health	Sig (2-tailed)	Pearson Correlation
Respiratory Problems	0.562	-0.025
Gastro-Intestinal Problems	0.235	-0.051
Immune System Problems	0.539	-0.026
Cardio-Vascular Problems	0.348	-0.040
Psychological Disorders	0.324	-0.042
Nervous Disorders	0.761	0.013
Ortho Disorders	0.789	0.011
Dermatology Disorders	0.214	-0.053
Febrile Illness	0.571	-0.024
Anxiety Disorders	0.568	0.024

Source: Primary Data, Computed using SPSS

The correlation Matrix showing the relationship between independent variable namely Natural Factors in the House (Dampness, Moisture) and dependent variable namely Human Health (Respiratory problems, Gastro-Intestinal Problems, Immune System Problems, Cardio-Vascular Problems, Psychological Disorders, Nervous Disorders, Ortho Disorders, Dermatology Disorders, Febrile Illness, Anxiety Disorders**)** is presented in **Table 5.** While observing the results, it can be inferred that no significant relationship was noticed between natural factors in the house and human health. The sig (2-tailed) was found to be 0.562 for respiratory problems, 0.235 for gastro-intestinal problems, 0.539 for immune system problems, 0.348 for cardio-vascular problems, 0.324 for psychological disorder, 0.761 for nervous disorder, 0.789 for ortho disorders, 0.214 for Dermatology disorder, 0.571 for Febrile Illness and 0.568 for Anxiety disorders. The evidence of dampness, moisture in the housing environment has no relationship with Human Health. Therefore the H03: **"There is no relationship between Natural Factors in the House and Human Health"** is accepted.

Table-6: Results of Correlation Matrix showing the relationship between Problems of Bugs in the House and Human Health

Human Health	Sig (2-tailed)	Pearson Correlation
Respiratory Problems	0.554	-0.025
Gastro-Intestinal Problems	0.183	-0.057
Immune System Problems	0.365	-0.039
Cardio-Vascular Problems	0.980	-0.001
Psychological Disorders	0.557	0.025
Nervous Disorders	0.368	-0.039
Ortho Disorders	0.409	0.035
Dermatology Disorders	0.240	0.050

ISSN 2394 - 7780

Febrile Illness	0.817	0.010
Anxiety Disorders	0.476	0.031

Source: Primary Data, Computed using SPSS

The problems of bugs in the house and its relationship with various factors (problems) of human health were examined using Pearson correlation and **Table 6** summarizes the results. The results evidenced that Pearson correlation was found to be negative for Respiratory problems, Gastro-intestinal problems, Immune system problem, Cardio-vascular problems and Nervous disorders namely -0.025, -0.057, -0.039, 0.001 and -0.039 respectively. However, the 'p' value was found to be greater than 0.05. Therefore, it can be concluded that no relationship was noticed between Problems of Bugs in the house and Human Health. Similarly, other dependent variables namely psychological disorder, ortho disorder, dermatology disorder, febrile illness and anxiety disorder witnessed no relationship with problem of bugs in the house as the 'p' value was found to be insignificant. Hence it becomes evident to accept the H04: **"There is no relationship between Problems of Bugs in the House and Human Health"**

MAJOR FINDINGS OF THE STUDY

Correlation Analysis

1. It is interesting to note that pollution had no relationship with frequency of human health disorders.
2. House construction related factors exhibited relationship with Respiratory problems, Gastro-Intestinal problems and Immune system problems.

SUGGESTIONS OF THE STUDY

1. Pollution had no relation with human health disorders and citizens have started realizing/using alternative sources of energy which resulted in reduced pollution in turn improved human health.
2. While constructing houses, adequate attention should paid to ventilation, dust removal etc., which enhances health of the respondents.

CONCLUSION

The study evaluated the Urbanization and its Impact on Housing and Human Health and its effects on housing pattern of respondents in Chennai city. The results evidenced that house construction related issues had its impact on Respiratory problems, Gastro-Intestinal problems and Immune system problems. Home is the place which giver ultimate peace to individual. After having worked for 7-8 hours, sitting in a home and having a coffee or tea provides thousand mile satisfaction to any individual. The home environment and human health serve as two eyes for enhanced life style of individuals. However, the outcome will be fruitful if everyone becomes aware of it. It is also necessary that for good health, adopting sustainable housing practices is necessary.

REFERENCES

1. Aziza Mahamoud (2012), "Housing and health: Examining the links", Wellesley Institute advancing urban health, Canada.
2. Bell JE and Rubin V. *Why Place Matters: Building a Movement for Healthy Communities*. Oakland, CA: PolicyLink; Los Angeles, CA: California Endowment, 2007.
3. Bonnefoy X, Annesi-Maesano I, Moreno Aznar L, et al. *Review of Evidence on Housing and Health. Fourth Ministerial Conference on Environment and Health.* Budapest, Hungary: World Health Organization, 2004.
4. Centre for Comparative Housing Research and Health Policy Research Unit at De Montfort University Leicester. *The Impact of Overcrowding on Health and Education: A Review of the Evidence and Literature.* London: Office of the Deputy Prime Minister May 2004.
5. Donia Zhang (2016), "Courtyard housing in North America: Chinese design for health and happiness", URBAN DESIGN International, Volume 21, Issue 4, pp 281–297.
6. Krieger J and Higgins DL. "Housing and Health: Time Again for Public Health Action." *Am J Public Health*, 92(5): 758-68, 2002.
7. Lanphear BP, Aligne CA, Auinger P, et al. "Residential Exposures Associated with Asthma in U.S. Children." *Pediatrics*, 107(3): 505-11, 2001.
8. Lanphear BP, Kahn RS, Berger O, et al. "Contribution of Residential Exposures to Asthma in U.S. Children and Adolescents." *Pediatrics*, 107(6): E98, 2001.

ISSN 2394 - 7780

9. Niamh K. Shortt and Daniel Hammett (2013), "Housing and health in an informal settlement upgrade in Cape Town, South Africa", Journal of Housing and the Built Environment, Volume 28, Issue 4, pp 615–627.

10. Owoeye, j.o and Ogundiran, a.o (2015), "A Study on Housing and Environmental Quality of Moniya community in Ibadan, Nigeria", *International Journal of Physical and Human Geography*, Vol.3, No.1, pp.31-45.

International Journal of Advance and Innovative Research
Volume 6, Issue 2 (XII): April - June, 2019
ISSN 2394 - 7780

CHANGING TRENDS IN CROPPING PATTERN OF KARNATAKA: AN OVERVIEW

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ABSTRACT
Agriculture plays a very important role in the economic development of our country where 58 % of the India's population depends on this sector for the livelihood. Development of agricultural sector is a pre-requisite for poverty alleviation and to achieving overall development of the country. Agriculture and allied sector contribute significantly to the GDP, accounting for nearly 17.4 % of the total GDP in 2016-17 and 12.46 % of total export during 2015-16. During post green revolution period dynamic changes have been occurring in agriculture scenario in India. One of such major change in Indian agriculture is changes in cropping pattern. Number of factors has influenced the behavior of farmers which got reflected in changing cropping pattern from cultivation of low value to high value crops in most of the regions of the country in general and Karnataka in particular. Cropping pattern is a dynamic concept which changes over space and time due to the influence of geographical, climatic, socio-economic, cultural, and political factors. Systematic understanding of cropping pattern changes over the years is very important. Hence, this paper is an attempt for analysis of changing cropping pattern in Karnataka.

Keywords: Agriculture, Land-use, Cropping pattern, Karnataka, Farmer

1. INTRODUCTION

The performance of agriculture sector influences the growth of Indian Economy. Agriculture has been a way of life and continues to be the single most livelihoods of the masses by providing employment to nearly 58% of the total workforce of the country. Agriculture policy has focus in India across decades has been on self-sufficiency and self-reliance in food grains production. Considerable progress has been made on this front. Food grain production rose from 52 mn tones in 1951-52 to 277.00 mn tones in 2018-19. The pattern of cropping is a major feature of the agricultural land use in an area. Understanding of cropping pattern changes in systematic way is very crucial to the farming community to get better possible returns. Entrepreneurs can also get inputs from the cropping pattern to decide the ideal locations with best capacities while setting new agro-based plants and factories. The proper understanding of cropping pattern of a region helpful to government in policy making process such as, setting Minimum Support Price, input subsidies, public distribution system etc.

At one time the many believed that cropping pattern in India could not be changed. S.N.Sinha, opines that "In tradition – ridden country with a very low level of knowledge, the peasants are unwilling to make experiments. They accept everything with a spirit of resignation and a sense of fatalism. For them, agriculture is a way of life rather than a commercial proposition". In a farming community where the peasants are illiterate, orthodox and superstitious it is very hard to shift in cropping pattern. This opinion is not correct any more as is clear from the changing cropping pattern in Indian states. It is widely accepted that the cropping pattern of a country like India can be changed. After green revolution era dynamic changes have been occurring in Indian agriculture. Number of factors has influenced the behavior of farmers which are resulting in changing cropping pattern from food crops to cash crops in most of the regions of the country.

2. RELEVANCE OF THE STUDY

Introduction of the short duration HYV seeds coupled with increased area under irrigation has brought about dynamic changes in agricultural sector in Karnataka. The farmers of the state are allocating the area for cultivation of crops based on the changes in agro -climatic conditions and market forces. They are switching over from food crops to cash crops. It is very important to understand the temporal changes in cropping pattern, cropping intensities and influencing socio economic factors for such changes. The information on these issues facilitates the policy makers to manipulate the socio economic factors to bring the desired changes in the cropping patterns. Hence the study of this kind would be helpful to the researchers, administrators and academicians. Keeping these things in view this paper is an attempt made to find out the changing trends in cropping pattern of the state.

3. REVIEW OF LITERATURE

1) **Vivekananda and Sathyapriya (1994)** conducted a research study to analyze the changes in cropping pattern of the Karnataka. The study revealed that the share of area under all cereal crops declined from 55% to 47% between 1956-57 and 1989-90.The decline was in the area under jowar, bajra and wheat with

ISSN 2394 - 7780

an increase in the share of area under rice and ragi among the cereal crops. Maize, a new entrant in the cropping pattern of the state,however,registered an increase in its share from a mere 0.10% to 2.10% .The increase had been quite considerable in the case of oil seeds (12.23% to 19.77%) and sugarcane (0.52% to 2.16%).

2) **Mahesh (1999)** studied the causes and consequences of changes in cropping pattern of Kerala state. The study emphasized that cropping the pattern of Kerala agriculture was in earlier years influenced by agronomic considerations and consumption needs of the farming community. But during study period the cropping pattern was mainly determined by the market forces. This study conducted by the author based on the secondary data. Author opines that, there was a steady growth in farm income up to mid-seventies and started to decline and showed fluctuating trends in eighties. During the study period farm income was high due the contribution of cash crops. The analysis of changes in cropping pattern revealed that the area under cultivation of paddy had halved during the past twenty years.

3) **Thomas (1999)** conducted a study on agricultural on performance of agriculture sector in Kerala. The study showed that the changes in cropping pattern and low growth rate in crop productivity were the two factors in the pattern of agricultural development in Kerala since beginning of 1980s. A detailed examination of the major factors responsible for cropping pattern changes was analyzed based on the secondary data of 80s and 90s. Study revealed that low growth rate of the price of rice, scarcity of agricultural laborers and rapid increase in their daily wages, low price of food crops, migration of people to urban areas, rational course of profit maximization were the main reasons for the conversion of land from cultivating food crops to other crops.

4) **Reddy and Achoth (2000)** conducted a study to analyze the determinants of changing cropping pattern in dry land agriculture of the Karnataka. The research study showed that dry land food crops such as ragi, jowar, Bengal gram were non-responsive to own price and oil seeds crop such as sunflower and groundnut are largely responsive to prices. Most of the crops responded positively to the rainfall except ground nut area. Increase in gross cropped area had a positive impact on major dry land food crops.

5) **Singh and Sidhu (2004)** these authors were carried out a case study to analyze the factors in declining in crop diversification in Punjab. Agricultural yield of Punjab had been characterized by a rapid decline in diversified cropping pattern and the emergence of wheat-rice specialization over the past few decades. Due to the improved yield and increased area under cultivation of wheat and rice experienced the highest growth in output.

6) **Subrata Kumar Ray (2007)** carried out a study in West Bengal to explore the impact of credit availability on the changes in cropping pattern of the state. In his article author find out that credit availability from both institutional and non-institutional sources has made a major contribution on the change in cropping pattern but the impact of credit availability on cropping pattern has been more significant in case of smaller size of land holdings and the profitability is also higher in case of the small and marginal farmers.

7) **Shivalingappa and Mahesha (2012**) the study showed that during the period of 1998-99 and 2008-09, the irrigated land increased from 26.31 lakhs hectares to 33.33 lakhs hectares, despite, many irrigational projects in Karnataka still continued to irrigate 48.29% of its land by well, 31.65% by canals only 6.6% by tanks and 13.42% by other sources. During the entire period of one decade from 1998-99 to 2008-09 the average gross cropped area increased. The first rank crop in Karnataka was paddy, second rank crop was jowar. Maize and ragi were in the third and fourth ranks respectively. Physical as well as socio-economic factors have influenced for cropping pattern of the state.

8) **Dr.Uma.H.R, Madhu.G.R and Pushpa Nanaiah.K (2013**) in their study authors were trying to analyze the impact of changing cropping pattern on food security. Finally authors opines that agricultural labourers are showing less interest in producing food crops which demands their complete attention and changing their cropping pattern to commercial crops. So that they can work both in urban area and on land to a limited extent. All marginal farmers are slowly depending on other sector for higher wages without fully neglecting the agriculture. This trend is threatening to overall production of food crops.

9) **M Sabesh, M Ramesh, A H Prakash, and G Bhaskaran (2014)** The authors were found that there was a marginal shift in cotton cultivation from Vidarbha region to Marathawada and Khandesh regions where these have better irrigation facility. The trade-off of oil seeds and pulses with cotton cultivation was well established in Maharashtra in the last decade and a sizable area under cotton in Vidarbha region, converted to these crops. They were also found that there was an enhancement in cotton production in Maharashtra,

ISSN 2394 - 7780

due to introduction of advanced production and protection technologies, increase in gross irrigated area and sufficient use of yield enhancing inputs for the cotton cultivation.

10) **Dr. Khalid Anwar and Dr. Shagufta Hussain (2015)** conducted a study to analyze the relationship between agricultural development and changing cropping pattern in Uttar Pradesh state. The study reveals that in 1950-51, 76.7% area was put under food grains and only 23.3% was under non-food grains. In 1970-71,the area under food grains declined to 75.4% while the area under non-food grains went up to 24.6%.Furthe the area under food grains declined to 64.9% in 1995-96 and that non-food grain crops went up to 35.1%.Furter in 2001-02,area under food grains was 60.3% while 39.75% for non-food grains. This shift in the allocation of land from food crops to non-food crops reflect a change from subsistence cropping to commercial cropping.

11) **Geetha Mohan (2017)** the study found there is a tremendous change in the cropping pattern during past three decades in the Andhra Pradesh. The change in cropping pattern varies across various regions and across districts within a region. This shift towards cultivation of total pulses (except horse gram), fruits and vegetables, spices, drugs and narcotics, maize and sugarcane. These changes have been driven by sub-division of landholdings, mechanization of agriculture, irrigation facilities, technological change, availability of institutional credit to the farmers, infrastructure and most importantly farmers changed attitude towards agriculture.

12) **V.Pavankalyan and N.Vasudev (2017)** research result reveals that the cropping intensity in 118.21,125.72, 124.26 and 123.79 in respect of small, medium ,large and pooled farmers in Khammam district, where as in Warangal district cropping intensity was 130.15,139.02, 134.53 and 134.19 in respect of small, medium ,large and pooled farmers of tribals. Compared to Khammam district cropping intensity was more in Warangal district. Anlysis of cropping pattern revealed that cotton (51.00%) was major crop followed by other crops in Khammam district under ITDA area, whereas in Warangal district paddy ((32.91%) was major crop followed by other crops under ITDA area.

4. OBJECTIVES OF THE STUDY

The present study is an attempt to analyze the changes in the cropping pattern in Karnataka with the following objectives.

1. To study the temporal changes in cropping pattern in Karnataka.

2. To analyze the factors determining changes in cropping pattern.

5. METHODOLOGY OF THE STUDY

The present paper is a macro level and descriptive study in nature, based on secondary data collected from the published and unpublished records, reports and contributions of several institutions, organizations and individuals in India. Specifically, the secondary sources include Economic Survey reports and other journals, books and websites. As these secondary sources have obvious limitations of sampling and dimensional studies, the present study could only be a macro analysis of the changing cropping pattern and its impact on the Karnataka economy.

6. RESULTS AND DISCUSSIONS

The cropping pattern of the state is influenced not only by agro-climatic conditions like rainfall, soil, temperature, etc., but also by government policies and programmes for crop production in the form of subsidies, support prices, tariffs and speed of infrastructure development. The overall trends in area allotted for various crops during five decades show that cropping pattern in Karnataka is dominated by food crops, with a share of more than 60 per cent of the gross cropped area in the state. Rice, sorghum and finger millet were the major cereals till 2000-03. However, the share of maize crop went up substantially after 2005 due to improved productivity and prices.

The area under food crops declined from 79.1 per cent in the 1960-63 trienniums to 59.4 per cent of the GCA in 1990-93. The area under cereals declined from 60 per cent in 1960-63 to 43 per cent of the GCA in 2007-08. Acreages of millet crops like sorghum and pearl millet and minor millets declined consistently. The reduction in the share of cereals was due to shrinkage in the area devoted to millets. Area under pulses which stood at 11 per cent during the early seventies increased to 18 per cent in 2007-10.

ISSN 2394 - 7780

Cropping Pattern (Triennium Averages)

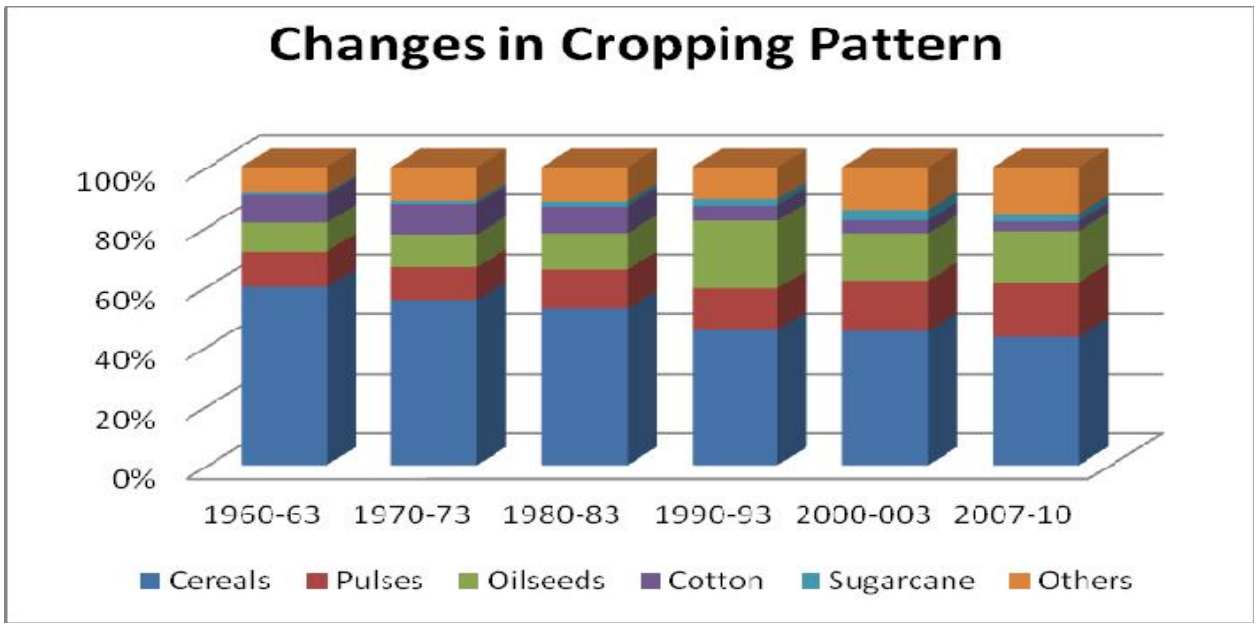
Percent share in GCA

Crop	1960-63	1970-73	1980-83	1990-93	2000-03	2007-10
Rice	9.9	10.7	10.3	10.3	11.4	11.6
Sorghum	28.0	21.8	19.2	18.0	15.1	10.9
Pearl Millet	4.8	4.6	5.4	3.3	2.7	2.6
Maize	0.1	0.7	1.4	2.3	5.3	9.0
Finger Millet	9.6	9.8	9.8	8.8	7.7	6.4
Wheat	2.9	2.9	3.0	1.7	2.2	2.2
Small Millets	4.2	4.1	3.2	1.1	0.6	0.3
Total Cereals	59.7	55.4	52.4	45.5	45.0	43.1
Pigeon Pea	2.7	2.5	3.3	3.9	4.4	5.0
Chick Pea	2.5	1.4	1.3	1.7	3.7	6.1
Total Pulses	11.9	11.0	13.2	13.8	16.9	18.3
Food Grains	71.9	68.3	66.6	59.4	61.9	61.4
Groundnut	8.4	9.2	7.6	10.5	7.8	6.8
Sunflower	N A	N A	1.0	8.6	5.5	7.4
Total oilseeds	9.7	11.0	12.2	22.7	15.9	17.0
Cotton	9.3	10.2	9.0	5.0	4.4	3.3
Sugarcane	0.7	1.0	1.6	2.2	3.4	2.4
Others*	8.7	11.4	11.6	10.8	14.4	15.8
GCA	100	100	100	100	100	100

Note: Include tobacco, fruits and nuts, vegetables, coconut, arecanut, chillies and coffee

Source: Statistcal Abstracts of Karnataka (various issues), Government of Karnataka.

Oilseeds grew in their share from around 10 to 11 per cent during the sixties and seventies to more than 20 per cent in early 1990s and it was 17 per cent of the GCA in 2007-10. The Technology Mission on Oilseeds introduced in the mid-eighties conditioned the expansion of area under oilseeds. Cotton occupied 9 per cent of the GCA in early 1980s but came down gradually to little more than 3 per cent of the GCA in 2007-10. Area under chickpea hovered around 1.5 per cent of the GCA between 1970s and 1990s, but rose to 6.1 per cent in 2007-10. Similarly area under pigeon pea increased from 2.5 per cent in 1970-73 to 5 per cent in 2007-10. The area under other crops, which include fruits, vegetables and plantation crops, increased gradually from 11.4 per cent of GCA in the early seventies to 15.8 per cent in 2007-10.



7. FACTORS AFFECTING CROPPING PATTERN

The cropping pattern of the region is influenced not only by agro-climatic conditions like rainfall, soil, temperature, etc., but also by government policies and programmes for crop production in the form of subsidies, support prices, tariffs and speed of infrastructure development. Following are the major determinants of cropping pattern of the state.

ISSN 2394 - 7780

i. **Physical Factors:** The major factor that influences on crop pattern of any area is physical characteristics as the soil, climate, rainfall, etc. In a dry area where the rainfall is scanty and highly uncertain, there will be a much dependence on jawar and bajra crops which require less water. Besides soil and climatic conditions, availability of irrigation facility is another major influencing factor of the cropping pattern of an area. With an adequate irrigational facility, different and superior crop can be grown and multiple crop will be possible.

ii. Technical Factors: Cropping pattern of a region can change due to the availability of new equipments, machines, improved high yielding seeds, fertilizers and pesticides which makes the agriculture more productive and profitable occupation. Availability of such advanced inputs makes the farmer most profit oriented instead of subsistence farming.

iii. Economic Factors: Economic motivations are the most important in deciding upon the crop pattern, whatever may have been the position in our country in the past, there are very clear indications that our farmers are being clearly influenced by economic factors now. Among economic factors, the following are important.

a. Prices of the Agricultural Produce: Many statistical studies have brought out clearly the relation between price movements and crop pattern. According to some experts income maximisation mainly influences in altering the crop pattern i.e., the farmer would choose that combination of crops which would give him maximum of income.

b. Insurance against Risk: The need to minimise the risk of crop failures not only explains diversification but also some specific features of crop patterns. For example, the persistence of millets in many areas which puzzles many authorities can be understood mainly as insurance against bad seasons in dry areas.

c. Farm Size: There is a friendship between farm size and the crop pattern. Small farmers devote a smaller relative acreage to cash crops than large farmers. This may be because the small farmers are first interested in producing food grains for their needs. They would produce cash crops only after they have met their needs of food grains. It is a fact that the need for subsistence has traditionally dominated the crop pattern of the small farmers. But his marginal requirement for money income cannot be less than that of the large farmer. And, as the economy grows, we should expect the small farmer to make very significant marginal adjustments in his crop pattern in order to maximise his income.

d. Availability of Inputs: Crop pattern depends on the availability of such inputs as fertilisers, seed, water, storage and marketing, transport, etc. On the additional facilities, the most rewarding would be irrigation.

e. Tenure: Under the share cropping system, the landlord has a dominant voice in the choice of the crops pattern and he will decide what crop should be grown on the agricultural landholdings where he has control over the land and share cropper. This leads to the adoption of income-maximising crop adjustments as the landlord expect more income from their agricultural land.

iv. Govt. Initiatives: Government can exert influence on crop pattern through legislative and administrative measures. Steps may be taken by the State to subsidies the supplies of the farm inputs and knowledge. The State may attach the provision of some service or facility with a particular crop pattern. The provision of irrigational facilities or the supply of seed and fertilisers, etc., may be related to the adoption of a given crop pattern by the farmers. Food crops Acts, Land-use Acts, intensive schemes for paddy, cotton, oilseeds, the use of excise duties, export duties etc., all these bring sharply into focus the possibility that while each individual measure may push the crop pattern in the direction intended in that measure. But the overall effect of all the measures taken together on the entire crop pattern may not be in accordance with national needs.

8. CONCLUSION

Agro-climatic Regional Planning of Planning Commission divided Karnataka state into 10 agro-climatic zones based on the distribution and percentage of rain fall, soil quality, height from the sea and major crops. Due to such different agro-climatic characteristics most of the cereals, pulses, oilseeds and cash crops are cultivated in all the regions of the State. Cropping pattern of the state is dominated by food crops as 60% of the Gross Cropped Area devoted for food crops during last five decades. As farmers in Karnataka are very innovative and take lead in diversification as per the market trends, such profit motive attitude of the farmers is resulting in declined share of area under food grains in terms of GCA from 79.1 per cent in the 1960-63 trienniums to 61.4 per cent of the GCA in 2007-10. In spite of present GCA devoted to food grains it is a worth mentioning that all the stakeholders of agriculture as consumers of food grains must think about the changing attitude of the Karnataka farmer towards cash crops from food grains. Because these trends results in high prices of food grains due to inadequate production and supply of necessary articles like cereals, pulses, fruits and vegetables,

ISSN 2394 - 7780

which adversely affects on the food security and malnutrition among the mass of the state in particular and country in general.

REFERENCES

1. Ahmad Fahim Rahimi, 2012, An *Economic Analysis of Changes in Cropping Pattern in Karnataka*, M.Sc (Agri)Department of Agricultural Economics College of Agriculture, Dharwad University of Agricultural Sciences, Dharwad.
2. Basavaraj.R.Jamakhandi- (2014) *"Economic Analysis of Agricultural Transformation Process in Karnataka towards Inclusive Growth"* – Dept of Agricultural Economics, University of Agricultural Sciences, GKVK, Bangalore.
3. Bhende.M.J,2013, *Agricultural Profile of Karnataka*, Agricultural Development and Rural Transformation Centre,Institute for Social and Economic Change, Bangalore.
4. Geetha Mohan , 2017, *Determinants of Cropping Pattern Changes in Andhra Pradesh, India, 20(3): 1-15, 2017; Article no.AJAEES.36892,ISSN: 2320-702.*
5. Hazara, C. R., 2001, Diversification in Indian agriculture. *Agric. Situ. India*, 48(9) : 409 – 522.
6. Jayalalitha Y and Masthanaiah T, *Major Crop Farming Pattern and Spatial Distribution: A Study of Anantapuramu District, International Journal of Recent Scientific Research* Research *Vol. 8, Issue, 11, pp. 21327-21332, November, 2017.*
7. Khalid Anwar and Shagufta Hussain (2015), *A Study on the Development of Agriculture and Changing Cropping Pattern*,Journal of Commerce & Trade, Vol. X No. 1 ISSN (PRINT) : 0973-4503 ISSN (ONLINE) : 2454-1702 RNI : UPENG 2006/17831.
8. Mahesh, R., *1999, Causes and consequences of change in cropping pattern: Location- specific study*, Discussion Paper, Kerala Research Programme on Local Level Development, Centre for Development Studies, Thiruvananthapuram.
9. Pavankalyan, V. and Vasudev, N., *Cropping Pattern and Cropping Intensity of Tribal Agriculture*, *Int. J. Pure App. Biosci.* 5(4): 1185-1188 (2017). doi: http://dx.doi.org/10.18782/2320-7051.
10. Punithavati J and Baskaran R (2010) *"Changes in Cropping Pattern, Crop Concentration, Agricultural Efficiency in PapanasamTaluk, Thanjavur District, Tamil Nadu, India"* in "Recent Research in Science and Techonology" 2(5), Pp-01-07.
11. Reddy,. 8. B. D. R. and Achoth L., 2000, *Determinants of cropping pattern changes in dryland agriculture of Karnataka. Mysore J. Agric. Sci.,* 35(1) : 169-173.
12. Sabesh M, M.Ramesh , Prakash A.H and Bhaskaran G (2014*) "Is There any Shift in Cropping Pattern in Maharashtra after the Introduction of Bt Cotton?* in "Cotton Research Journal" Vol-6, No-1.Pp-63-70.
13. Shivalingappa, B. N. and Mahesha, D., 2012, *"Changes of cropping pattern in Karnataka- A geographical study"*. Golden Res. Thoughts., 1(7): 1 – 4.
14. Subrata Kumar Roy (2007) *"Economics of Change in Cropping Pattern in Relation to Credit – A Micro Level Study in West Bengal"* in "Indian Journal of Agricultural Economics" – Vol-62, No-2.Pp-216-231.
15. Thomas P.M., 1999, *"Agricultural Performance in Kerala, in Kerala"s Economic Development- Issues and Problems,"* Edited by B.A. Prakash, Sage Publications, New Deihi, pp.167.
16. Uma.H.R, Madhu.G.R and PushpaNanaiah K (2013*)- "Changing Cropping Pattern: A Boon or Bane to Food Security?"* in "International Journal of Humanities and Social Sciences Invention" Vol-2, Issue-8.Pp-07-11.
17. Vivekananda, M. and Sathyapriya, V. S., 1994, "*Karnataka changing cropping pattern"*. Agri Situ. India, 49(6): 441 – 444.
18. Pratiyogita Darpan- General Studies- *Indian Economy*- 2013.
19. K.P.M Sundharam and RuddarDatt- *Indian Economy*, New Delhi- S Chand and Company Ltd-2007.

WEBSITES

1. https://en.wikipedia.org/wiki/Case_study

ISSN 2394 - 7780

2. www.businessdictionary.com/definition/economic-analysis.html
3. www.investorwords.com/16379/economic_analysis.html
4. www.economicsdiscussion.net/india/agriculture-india/...cropping-pattern in.../19059

International Journal of Advance and Innovative Research
Volume 6, Issue 2 (XII): April - June, 2019
ISSN 2394 - 7780

THE GREEN GOLD OF INDIA - AN EMPIRICAL STUDY WITH SPECIAL REFERENCE TO PURI DISTRICT, ODISHA

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ABSTRACT
Odisha is one of the states of the Indian Union whose performance in the contemporary world has been very weak. The state, which occupies 4.7 percent of India's total area and houses 3.47 percent of the population, contributes a little above 2 percent to the country's national income. In fact, 32.6 percent of its people live below poverty line, making Odisha one of the poorest states of the country. If we view her agricultural side, we come across a sorry state of very low output. Being a coastal state, production is often hit by cyclones. It is also prone to droughts and floods. Despite all these odds, there seems to be hope in the cultivation of the traditional betel leaves where Odisha is the second largest producer in India. Betel vine cultivation is a source of livelihood for the rural Odia farmers where they get income throughout the year from a small piece of land, thereby reducing poverty & unemployment level in the state. This research paper makes an attempt to do a SWOT analysis of betel leaves cultivation in Puri district of Odisha. It also makes a regression analysis to find out the impact of various factors on the yield of the crop with an idea to strengthen the weak factors and increase the profit margin in betel leaves cultivation to make it an important source of livelihood. This study is a gender sensitive one where the all the 100 samples happen to be women farmers from Satyabadi block in Puri district. The study has been undertaken with the help of SWAD, an NGO, which is fighting against all odds to bring about women empowerment in the district.

Keywords: Betel leaves, NGO, SWAD, Women empowerment, Livelihood

INTRODUCTION
The deep green heart shaped leaves of betel vine are popularly known as Paan in India. The scientific name of betel vine is (Piper – betel Linn). It belongs to the family of Piperaceae i.e. the black pepper family. Betel vine (*Piper betel L)* is known by its many names across the country and abroad. In Indian subcontinent it is known as pan in Hindi, Tambula in Sanskrit, Villayadela in Kannada, Vettilakkoti in Malayalam, Vettilai in Tamil, Tamalapaku in Telugu, Videch-pan in Marathi, Nagarbel in Gujarati and pan in Bangala, paana in Odia. In foreign languages it is known as Tanbol in Arabic and Burg-e-Tanbol in Persian. It is a perennial climber cultivated for its leaf. It is a shed loving plant and originated from Malaysia according to De Cando. Historically, the word pan in Hindi and other Indian languages is probably a derivative of the Sanskrit word 'pan' meaning leaf. It has been very intimately connected with the ancient Indian history, religion and culture as is evident by many references in the early Sanskrit literature (3000 BC), like Vedas, Ramayana, Mahabharata, Mahavansha, etc. Marco polo (1295 AD) took notice of the pan chewing habit of the people in south India. Over the centuries, pan chewing had become so prevalent that serving and chewing of pan had been raised to the level of a fine art at the Mughal Darbar, particularly during the Akbar's regime. In course of time, offering the 'bida' of betel vine has become a symbol of offering and acceptance of mutual love and friendship. Betel vine has been under cultivation in India for centuries. In fact, no Hindu religious ceremony is complete without pan. It is also offered after lunch and dinner and also during other social get together.

Betel leaves is an important horticultural crop of commercial importance. It adequately justifies its nomenclature as the "GREEN GOLD OF INDIA". It has tremendous economic potential, there are about 20-30 million people consume betel leaves in India on a regular basis in India, apart from another 2 million consumers worldwide. Its cultivation is highly laboured intensive and very apt for a poverty ridden state like Odisha. It offers employment to many unemployed people in the state, especially women.

Considering the scope and importance of betelvine in Odisha a study was carried out at with women farmers in seven villages of Satyabadi block of Puri district of Odisha.

BETEL VINE CULTIVATION IN ODISHA
In Odisha, the betel leaf is cultivated in mainly 4 districts- Puri, Khurdha, Balasore and Jagatsinghpur. There are numerous varieties grown in Odisha. The interior districts produce a variety called "Kala Mahata' and 'Dhoba Mahata' depending on their shade of light or dark. "Bilhari" is a scenty variety grown in some areas. The local/deshi variety is grown in a small scale in the coastal belt under the name of 'Kapoori', 'Meetha', 'Sanchi', and 'Alupatria'. However, the main varirty for commercial cropping is "Bangla" grown in the coastal districts. It is named as 'Godi Bangla', 'Nua Bangla', 'Bhainchigodi'. 'Jagannati', 'Balipan', 'Chandrakana' and 'Birikoli' etc.

ISSN 2394 - 7780

The farming of betel leaves in Odisha is done looking into the agronomical conditions necessary for its cultivation. The farm yard is fenced with bamboo sticks and coconut leaves. The plant being a creeper, it is given a long pole for support. It is planted in well-drained, fertile soil, rich in humus. Generally clay soil is avoided. While preparing the soil, the bed is raised from place to place by 30 cm to 50 cm to facilitate drainage from the field. The creeper cuttings are planted, in parallel rows about 2" apart, at the beginning of the monsoon season (May-June beginning). Normally, dibbling method is used for planting. Planting is done with the help of khurpi (a hand operated implement). For planting, a hole is made with khurpi, so that the internodes below the bud point is dipped in soil, but must be touching with surface soil. In Odisha betel leaves are grown in closed conservatories called "barejas" which look like marriage madaps. They are built in rectangular shape (normally 40 sq metres) to protect the leaves from heat and cold. They are constructed with locally available materials like sticks, straws, bamboos and grasses. Watering is essential and done in summer taking care to avoid water logging. The first harvest is got after 4 months. Since this is a perennial plant, it continues to yield for several years. The major concern in betel leaves cultivation is control of diseases. The most common found in the study area, were marginal blight, Anthracnose and leaf spot affecting both leaves and vines. Pathogens also affect roof, stem and leaf roof to a large extent. The affected plant dies suddenly. So timely control measures are undertaken. The farmers receive subsidies for cultivation of betel leaves in various districts of Odisha, for boosting production as well as income of the farming communities Various government and non government national level organisations like National Horticulture Mission, National Horticulture Board, RKVY State Departments, NGOs are providing the same.

BETEL LEAVES: The leaves of an evergreen perennial plant with glossy heart-shaped leaves having multiple uses.

NGOS: With the declining role of the state in social welfare and social services, NGOs (Non – Governmental organizations) are increasingly gaining importance and are looked upon as alternative agencies in promoting awareness, change and development in society. Informal structure & function and closeness to the people at the grassroots level are the distinct characteristics. NGOs approach to development is based on the important principle of peoples' participation.

SHGS: SHGs are a homogeneous group of rural poor, voluntarily formed to save small amounts, which is convenient to all the members and agreed upon by all to form a common fund corpus of the group from which lending to a needy member can be provided for meeting their productive and emergency credit needs. As observed by Goplakrishnan (1998), "all for all" is the principles behind a SHG. They act as a catalyst in facilitating project formulation and its effective implementation among the beneficiaries.

SWAD: One among the various NGOs and its SHGs who are doing good work by improving their women members happens to be SWAD (Society for Women Action Development) located at Nuagaon Puri, District, and Odisha. The work done by SWAD has made Nuagaon "The Ideal Village" in Orissa. SWAD emerged from the humanitarian and women empowerment activities by some dedicated women in the rural area (Nuagaon Village) of Puri district, Odisha, in the year 1989. It got its legal entity in the year 1992. Since its inception, it has been working in the fields of socio-economic development of the marginalized programs, livelihood promotion and gender equity. This has been possible due to a charismatic lady, Mrs.Binapani Mishra, who is the secretary of SWAD. SWAD has gone a long way due to her dynamic leadership. SWAD aims at an equitable, egalitarian and harmonious society with holistic development of women and marginalized community. The operational area of SWAD covers 13 Gram Panchayats and 98 villages of Satyabadi Block and 2 Gram Panchayats of Puri Sadar Block.

The mission statement of SWAD is

(i) To facilitate the process of development of women, marginalized and vulnerable community with focus on gender equity;

(ii) Reducing poverty as well as improving quality of life through capacity building, improvement of livelihood option, greater access to self governance and basic rights, series and needs; and

(iii) Ensuring environmental sustainability through local level initiative withstanding vulnerability and response to emergency.

The strategic objectives of SWAD are

(i) To sustain the livelihood options of the poorest of the poor and marginalized community.

(ii) To withstand disaster & respond to emergency through its community based preparedness and management.

ISSN 2394 - 7780

(iii) To build the capacity of the community for spearheading the process of development.

(iv) To develop effective mechanism for greater participation and ownership of women in the development process and reduce gender disparity and social victimization.

(v) To enhance quality of life through provision of reproductive child health, safe drinking water and sanitation.

(vi) To ensure environment sustainability through promotion and protection of natural resource base.

In order to achieve these objectives, the focus areas of intervention are

(i) Women Empowerment.

(ii) Community Capacity Building.

(iii) Livelihood promotion focusing on sustainable agriculture and allied activities.

(iv) Community based disaster preparedness and management.

(v) Micro – finance and entrepreneurship development.

(vi) Bio – diversity conservation and Environment protection.

The values of SWAD are

(i) Judicious use of natural resources that can sustain the eco-system and livelihood;

(ii) The process involving community that will lead to development; and

(iii) Empowering women for establishing an equitable society.

WOMEN EMPOWERMENT: The process by which a girl child is strengthened to be strong and confident at the social, political and economic arena.

LIVELIHOOD: Means of securing the basic necessaries of life-food, clothing and shelter.

REVIEW OF LITERATURE

A comparative study conducted by Saniyapan & Maimu Thu (1982) says that cultivating betel vine earns six times more revenue compared to sugarcane or banana, despite the intital cost being more for betel vine. Meenakshi Sundaram et. al. (1987) research work says that betel vine farming both capital as well as labour intensive in nature. The input-output ration was calculated by Grade & Galgalikar (1982) as 1:2:10 the first figure is cost of establishment, second labour cost and the thirds output. However, betel vine production varies amongst regions depending on soil & climate as observed by Sen & Roy (1982). Acharjee & Sen Gupta (1991) in their study says that the yield is not stable throughout the year; it is very high in summer while in winter it is very low. Sen (1982) in his study says that there is surplus production of betel leaves whereas the market is only the underdeveloped local market. Singh, R P (1986), goes a step further to reveal that there are a lot of constraints in this local market too, staring from malpractices, existence of monopoly structure, problems with pricing and transportation, and so on. Several middle men also make things worse (Acharjee & Sengupta, 1991). Grade & Galgalikar (1987) who worked on the price spread in betel leaf said that the producer's share in the consumer's rupee was 45% as the supply chain had the producer, trader, agents, wholesaler, and 11 retailers. Acharjee & Sengupta (1991) support the fact that the betel leaves growers face real hardship as they do not have knowledge of scientific techniques of production but carry on cultivation through indigenous knowledge and skill.

BACKGROUND OF THE AREA SELECTED FOR STUDY

Odisha, located on the eastern coast of India, is a rich state (with its bountiful natural resources) inhabited by the poor (some still continuing with their way of life since the Stone Age having very little contact with modern life) making her one of the poorest state of the Indian Union. Odisha has 30 districts and Puri district is one of them. The holy city, Puri, attracts a large number of tourists from all over the world, which contributes significantly to the economy of the district. It has 11 community development blocks. The total geographical area of the district is 3051 Sq. Km with a population of 1,698,730 (according to 2011 census). The main occupation of the district is cultivation (45.85%), followed by agricultural labor, and about 45.08 percent of the main workers are engaged in livestock, forestry, fishing, plantation, orchards, etc. Betel vine plantation is an important feature of the district. This district, which comes under the coastal belt, is prone to natural disasters like floods, cyclones and droughts. The poor socio -economic condition and the thatched dwelling houses makes the poorest of the poor more vulnerable at the time of disaster. Quality of life is also at threat due to shortage of

ISSN 2394 - 7780

safe drinking ground water arising from the fact that the government has banned bore point for lift irritation in agriculture. Frequent loss of crops leads to the low income of the farmers as well as the daily laborers. Crop failure, unemployment and under employment all end up in area desertification. The women and the children have been the silent sufferers of the situation.

IMPORTANCE OF THE STUDY

The betelvine is called as 'green gold of india' as about 20 million people derive their livelihood directly or indirectly from production, processing, handling, transportation and marketing of betel leaves in India. The important constituents of *P. betle* have become a good source of income and mode of foreign exchange for the country. The betel leaves have medicinal properties and are mainly used as mouth freshener and is also well known for curing many communicable and non-communicable diseases like cold, cough, bronchial asthma, rheumatism, stomachalgia and used to treat other diseases like bad breath, boils and abscesses, conjunctivitis, constipation, swelling of gums, cuts and injuries. They also contain a lot of minerals & vitamins as showed in the table below.

Table No-1: Constituents of betel leaves

Sl. No.	Constituents	Approximate composition	
1	Water	85-90%	
2	Protein	3-3.5%	
3	Fat	0.4-1.0%	
4	Minerals	2.3-3.3%	
5	Fibre	2.30%	
6	Chlorophyll	0.01-0.25%	
7	Carbohydrate	0.5-6.10%	
8	Nicotinic acid	0.63-0.89	mg/100g
9	Vitamin C	0.005-0.01%	
10	Vitamin A	1.9-2.9	mg/100g
11	Thiamine	Oct-70	µg/100g
12	Riboflavin	1.9-30	µg/100g
13	Tannin	0.1-1.3%	
14	Nitrogen	2.0-7.0%	
15	Phosphorus	0.05-0.6%	
16	Potassium	1.1-4.6%	
17	Calcium	0.2-0.5%	
18	Iron	0.005-0.007%	µg/100g

Source: OUAT bulletin, Bhubaneswar

OBJECTIVES

1. To examine the demographic profile of women entrepreneurs in Puri district, Odisha.
2. To identify the production and productivity of betel vive growers.
3. To study the factors affecting the yield of betel vine cultivation in Odisha.
4. To study the impact of help offered by SWAD.
5. To do the SWOT analysis of betel vine cultivation.

ASSUMPTIONS

1. Households are sites for co-operation and women development.
2. Markets are neutral (to gender and other social relations) and are about efficient allocation of resources.
3. State is about national interest and welfare of citizens including women.
4. Community is about service provision and promotion of a moral society.
5. NGOs are institutions which act as pillars for welfare of society.

RESEARCH METHODOLOGY

SCOPE OF STUDY: The present study has been planned to answer the following questions:

i. Does the betel vine production offer economic possibilities of the sample growers??

ii. Do NGOs play a role in the solving problems of women farmers?

ISSN 2394 - 7780

iii. What are the factors that have an impact on betel leaves yield?

AREA OF STUDY: For the present study, Puri district has been selected purposefully as it occupied larger areas of betel vine cultivation among major growing districts of the state. The study was conducted in seven villages of Puri district, Orissa. They are Nuagaon, Uttan Sahi, Basudeipur, Dubuduba, Panivandar, Jaypur-Sethisahi and Balpur – Pandasahi. The logic of studying these seven villages is that these are the villages which have made some progress and could give a clear idea about the work participation of women and their changing status as well as the role of SWAD in bringing about the change. The stake holders who have been included in the study are women farmers. 14 SHGs have been covered.

COLLECTION OF DATA: This study was carried out on the basis of collection of both primary as well as secondary data. The major tool used for data collection was a structured schedule. A few members of the SHGs were chosen randomly and interviewed which was recorded in the "Schedule for members of SHGs". Personal interviews were used to interview and get information from the members of SWAD. The administrative personnel were also interviewed to know about the various aspects of the working of the NGO. The above primary data will be further reinforced by secondary data elicited from newspapers, books, journals, magazines, and internet and government agencies.

SAMPLING UNIT: For this survey, the sampling unit consisted of women farmers who are members of SHGs organized by SWAD and are involved in betel leaves cultivation.

SAMPLING DESIGN: A simple random technique was adopted to select the representative sample from the sampling unit. 118 women farmers were chosen for the study out of which 18 questionnaires were edited because of insufficient information. So the sample size for the present study was 100.

TOOLS OF ANALYSIS: The data which was collected was analyzed using appropriate statistical techniques. The statistical tools used for analyzing the study data include Simple Averages, Percentages and Regression analysis.

LIMITATIONS

1. The findings of the study are based on the assumption that the respondents divulged correct information.
2. Bias and unwillingness of certain respondents to answering some questions may hinder the study.
3. The study is relevant only to Puri district and also to the present situation and not to future.
4. Due to paucity of time only limited data is being presented in this study.
5. Because of distance and transportation problem, only limited areas were selected.

FINDINGS OF THE STUDY

Table No-2: Profile of the women farmers

SL.NO.	PARTICULARS	CLASSIFICATION	%
1	Age	20-30 years	18
		31-40 years	42
		41-50 years	29
		>51 years	11
2	Marital status	Married	47
		Unmarried	33
		Widow	18
		Divorced	2
3	Literacy level	Illiterate	42
		SSLC	49
		Degree	8
		Technical	1
4	Family type	Nuclear	8
		Joint family	92
5	Experience	Yes	46
		No	54
6	Mode of sales	Cash	12
		Both cash & credit	88

Source: Author's computed data

ISSN 2394 - 7780

The above table shows that the maximum number of women farmers belonged to the age group id 31-40 years (42%0 while the minimum number was from above 51 years category. Majority (47%) of the sample women were married. Looking into their educational level we see 42% were illiterates while another 49% were just SSLC pass. Majorities (92%) were from joint families, 46% has experience in betelvine cultivation earlier and 88% sold both on cash & credit.

Table No-3: Calculation of cost

A.	Variable cost (for 20 decibel)	Material (Rs.)	Labour (Rs.)
1	Cost of vines transplantation		655
2	Land Preparation	5824	2792
3	Fertilizer Application	2398	38
4	Pesticides Application	3371	0
5	Irrigation Charge	11007	0
6	Manure & oil cake	12092	1298
7	Harvesting of the Crop	-	3000
8	Packing, Marketing (not done by them)	-	-
9	Annual Maintenance /repair cost of Bareja	26000	12600
	All Variable Cost	**60692**	**20383**
	(Sub Total)- Material Labour	**81075**	
B.	**Fixed Cost (for 20 decibel)**		
10	Rental Value of Land	2192	-
11	Interest on working capital @ 10%	8202	-
12	Risk on working capital @ 10%	8202	-
	Total Fixed Cost	**18596**	-
	Sub-Total	**18596**	
	Sum of Cost A + B	**99671**	

Source: Author's computed data

The above table reveals that the total cost is Rs 99,671 per year. It was arrived at by adding the Variable cost (Rs 81,075) with the Fixed cost (Rs 18,596).

Table No-4: Calculation of Production and productivity

Output (Basket/20 decibel)	672
Total Cost (Rs/ 20 decibel)	99671
Cost of production (Rs/basket)	148.3199
Revenue	217457
Profit	117786

Source: Author's computed data

From the above table we get the information that the cost of production per basket is Rs 148.32. The profit which comes to the farmer is Rs 1, 17,786.

The Cobb-Douglas type production function was fitted to test the relationship between the yield of income and the independent variables for yield of 20 decibel category of growers. The results are presented in the below table

Table No-5: Estimated Cobb-Douglas Type Production Function

VARIABLE	BETA	S.E	T-VALUE	SIG
Constant				
Land Preparation	2.374	0.442	4.382	NS
Harvesting of the Crop	-0.003	0.074	-0.062	NS
Packing, Marketing (not done by them)	-0.018	0.003	-0.118	NS
Manure & oil cake	-0.024	0.019	-0.201	NS
Fertilizer/Pesticide Application	0.732	0.037	2.001	***
Irrigation Charge	0.527	0.182	6.971	***
Annual Maintenance /repair cost of Bareja	0.063	0.115	4.993	***

Source: Computed by author

ISSN 2394 - 7780

R^2: 0.863

F-Test: 155.81

No. of observations: 100

The above table clearly shows that the factors like land preparation, harvesting of the crop, Packing & Marketing and manure & oil cakes were not significant. Fertilizer & pesticide application was significant indicating that a 1% increase in it would lead to increase of yield by 73.2%. Similarly proper irrigation was also significant. A1% increase in irrigation would lead to an increase in yield by 52.7%. Proper maintenance of the bareja would increase yield by 6.3% also.

Table No-5: Areas of support offered by SWAD

Type of help	No of women	Benefitted by			
		< 5%	5-10%	10-20%	> 20%
Credit	98	13	39	28	18
Transportation	73	23	18	26	6
Negotiation	88	11	34	28	15
Storage facilities	46	5	12	23	6
Capacity building	100	0	16	45	39

Source: Computed by author

We can interpret the above table thus: SWAD gives capacity building training to all farmers, 98 of them have got credit support, 88 have been helped in finalizing price negotiations and 46 of them who had surplus output took help for storage. On an average all the women have benefitted from the support, some have increased their yield by more than 20%.

Table No-5: SWOT analysis of betel leaves cultivation

Strength	Weakness
Odisha is the 2nd largest producer of betel vine in India and Puri district ranks 2nd in Odisha.	Faulty counting i.e. farmers don't count their produce as intermediaries send their person.
Betel is good for health as it contains vitamins and minerals.	Severe shortage of betel leaves in peak season i.e. (during winter)
A multi usability product which has high market value.	No sorting and grading methods adopted by the farmers.
Betel leaves are considered as religious leaves and so it used in every religious festival.	Decrease in productivity as soil fertility is decreasing because of excess use of fertilizer.
Employment Generation occupation.	Very labour intensive and costly to grow and maintain its Bareja.
Is used for the treatment of common diseases like high cholesterol, diabetes, asthma, depression & oral health.	Highly perishable in nature.
Opportunities	**Threats**
Betel Vine can be processed into essence ,oil, etc.	Uncontrollable pest and disease attack
Different recipes can be developed like sherbet, candy, ice cream etc from betel vine by which consumption will increase leading to increase in demand.	Destruction of crop by abotic factors such as cyclone, hud-hud, phailin weather change and wind as it is very sensitive
Increase in awareness about scientific agricultural practices.	Lack of transportation facility.
Farmer producer organization is established by which farmers can get a good price for their produce.	No proper storage facilities.
Numerous schemes to promote betel leaves cultivation.	Lack of processing & value addition.
Women can be trained for cultivation of betel leaves.	Strong competitors in Sri Lanka, Thailand and Bangladesh.

Source: Primary data

The major strength of this horticulture crop is that it gives high amount of profit and suitable for cultivation in Puri district's soil. His chief weakness is the illiteracy of the farmers whereby they don't count the leaves not do any grading. But however, great opportunities are there as the leaves have multiple uses and the government is gearing up to increase its cultivation on a larger scale. Care needs to be taken for disease control and storage because of its perishable nature.

ISSN 2394 - 7780

CONCLUSION

Development of sustainable agriculture is very important for the farmers, especially from the point of view of economic benefits. But, however, the involvement of women in this activity is as important as men. Together they can work for the development of self, family as well as the economy. Betel vine cultivation has proved to be a viable source of income to the rural population and should be taken up by women where the soil and climate favors its growth. It is perhaps one of the agricultural outputs which give quite a sizeable profit but still care needs to be taken in its cultivation as a lot of constraints are there. To exploit this opportunity, a co-ordinated efforts needs to be taken up by all the important stakeholder, starting from the Government, banks, NGOs, traders as well as the scientists. Perhaps with this, the neglected green gold of India will be able to get the desired result of uplifting the standard of the rural population.

REFERENCES

1. R. B.Bhattacharya, S. K. Mondal, Ray and D. C. Khatua1, "A Study on Bacterial Disease of Betel Vine in West Bengal, India", International Journal of Bio-resource and Stress Management, Vol. 3, No. 2.
2. G Chandra and R. L. Sagar, "Harvesting Green Gold: Cultivation of Betelvine in Sundarban", Indian Farmers Digest, Vol. 37, No. 3.
3. Economic Survey of Odisha (2015-16). Planning and Coordination Department, Directorate of Economic and Statistic, Government of Odisha.
4. P. Guha, "Betel Leaf: The Neglected Green Gold of India",Journal of Human Ecology, Vol. 19, No. 2, pp.87 -93 , 2006.
5. P.Guha and R. K.Jain, "Status report on production, processing and marketing of Betel leaf (Piper betle L.)". Agricultural and Food Engineering Department. IIT, Kharagpur, India. 1997.
6. agriinfo.in
7. www.nrcw.org

International Journal of Advance and Innovative Research
Volume 6, Issue 2 (XII): April - June, 2019
ISSN 2394 - 7780

ECONOMIC IMPACT OF AGRICULTURAL TOURISM WITH SPECIAL REFERENCE TO RURAL DEVELOPMENT AT KOLAR

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ABSTRACT
Agriculture was the life and blood of Indian economy, but in the recent decades the trends have been changed and the economy rely more on service and industrial sector. According to 2011 Agricultural Census of India, an estimated record of 61.5% of the 1300 million Indian populations is dependent on agriculture. In the meanwhile, tourism is one of the fastest growing industries in the world and in India as well. Agro-Tourism is a form of niche tourism may pitch a substantial growth in many corners of the world including India, Australia, Canada, US and Philippines. This study focuses on how rural population can be developed through agriculture by marketing it as a tourism product. It also examines the potentials of Agro-Tourism and try to study how this model is going to benefit them monetarily. Agricultural tourism often helps the rural community to attain self-sufficiency as well as it transfers knowledge from both the ends visitors to cultivators and cultivators to visitors. Agricultural Tourism always provides remarkable feelings to the expeditors from the green arena where the visitors might gain exemplary psychological satisfaction.

Kolar is a place well-known for its Gold Fields, Cultural Diversity, and Pilgrimage Tourism. As a potential tourism destination 'Kolar' has the capacity to incorporate Agricultural Tourism as a new tourism product that creates an open platform for the farmers to find an alternative source of income for improving their standard of living. The major factors which limit the studies are the lack of interest in interaction by the village people and their poor understanding level especially the difficulties regarding to language proficiency. The outcome of the study anticipates that Agro-Tourism can be a unique model to revive and preserve the majestic legacy of Indian Agriculture as well as it increases the contribution of tourism towards the national income. The methodology which is used for the study is an explorative research approach.

Keywords: Agro-Tourism, Niche Tourism, Rural Development, Rural Community, Kolar District, Bangalore.

INTRODUCTION
Tourism is a potential cradle of income for many regions and even entire countries. The Manila Declaration on World Tourism of 1980 revealed its importance as an activity essential to the life of a nations that includes direct effects on the cultural, social economic and educational sectors of national societies and on their international relations.

Tourism made significant contribution towards the development of local economy in the form of payment received for goods and services needed by tourists and about 6% of overall exports of goods and services. There is enough opportunity in this potential sector to accelerate the economic growth.

Tourism in India is substantially growing at a great pace. The World Travel & Tourism Council calculated that tourism generated Rs.15.24 lakh crore (US$220 billion) or 9.4% of the nation's GDP in 2017 and supported 41.622 million jobs, 8% of its total employment. The sector is predicted to grow at an annual rate of 6.9% to Rs.32.05 lakh crore (US$470 billion) by 2028 (9.9% of GDP).In October 2015, India's medical tourism sector was estimated to be worth US$3 billion. The anticipated growth is about $7–8 billion by 2020.

TOURISM IN KARNATAKA
Karnataka has a renowned number of nationally protected monuments in India, second only to Uttar Pradesh,in addition to 752 monuments protected by the State Directorate of Archaeology and Museums. The geographical portions of Western Ghats and the southern districts of the state have popular eco-tourism locations including Kudremukh, Madikeri and Agumbe. Karnataka owns 25 wildlife sanctuaries and five national parks. Among the whole parks the most prominent sites are follows: Bandipur National Park, Bannerghatta National Park and Nagarhole National Park. The pitfall of the Vijayanagara Empire at Kolar and the monuments of Pattadakal are on the list of UNESCO's World Heritage Sites. The cave temples at Badami and the rock-cut temples at Aihole highlight the Badami Chalukyan style of architecture are prominent tourist destinations. Temples at Belur and Halebidu such as Hoysala which were built with Chloritic schist (soap stone) are suggested by UNESCO World Heritage sites. The Gol Gumbaz and Ibrahim Rauza are one of the remarkable pieces of the Deccan Sultanate style of architecture. The monolith of Gomateshwara at Shravanabelagola is the loftiest carved monolith in the world, capturing attentions of thousands of pilgrims during the Mahamastakabhisheka festival.

ISSN 2394 - 7780

AGRICULTURAL PROFILE OF KOLAR

Kolar has a vibrant agricultural base, it can be an ideal destination for food processing and agro based industries. Kolar is ranked no.1 in production of horticultural crops by the government. Cocoon productivity in Kolar is 900 kg/hectare e this is higher than the state average of 601 kg/hectare

Average annual income produced by sericulture in Kolar is US $ 33.40 million. Kolar is an embryonic center for Agro and food processing industries- vibrant agricultural base in the district. The average milk production of the district is about 7.65 liters/day as compared to state average of 5.83 liters/day. Expansion of Mulberry cultivated area and introduction of varieties like V1 and S36 has boosted its production and yield. Kolar has a well-known horticulture college to improve knowledge and provide support to horticulture farmers.

REVIEW OF LITERATURE

D Karthik and Plave Gajanand (Sep 9, 2017) explains that Kolar agriculture is passing through difficult times due to two consecutive drought situations in several parts of the district, there by resulting into wide spread distress among farmers. The rural areas in these parts are facing food and livelihood and crisis, more specially the shortage of fodder and drinking water. Government needs to proactively address the situation and makes more long term farmers centric policies related to irrigation, farm diversification, farm profitability and community support programs so as to socially and economically empower farmers. Since the agriculture is the main occupation in Kolar there is a need to think of allied income generation strategies with agriculture, one of which is Agro-Tourism

Agro-Tourism is increasingly recognized as a mean of enterprise diversification for agricultural producers, especially for its ability to increase cash flows to farms and ranch operations and in addition to their surrounding communities. Agro-Tourism can contribute to the overall income, cash flow and profitability of a farm by providing alternative income via farm by providing alternative income via farm products and farming activities.

Sukanta Sarkar (2010) attempts to asses the impact of Agro-Tourism on economic life of farmers in rural areas. The result indicates that Agro-Tourism may be a source of additional income for farmers. Farmers are now-a-days facing more problems for maintaining their livelihood because agriculture productions in India are fluctuating for monsoon. Therefore, they need source of additional income and in this case Agri-tourism may be the possible alternative. Agri-tourism helps in increasing interaction between rural and urban peoples.

Agri-tourism involvement in agricultural operations creates joyful experience to the tourist. Agri-tourism involvement in agricultural operations creates awareness among about the rural life and knowledge about agriculture science among the urban school children. Thus, the paper suggests that Agri-tourism has the capacity for creating income opportunity for farmers and shows net profit for the farmers annually.

A universal understanding if agro-tourism is needed for the clear communication ,reliable and consistent measurement ,informed policies , and their communities .To that end ,the authors present a conceptual framework that incorporates core and peripheral tiers ,as well as five categories of activities put forward by Nagendra .G (2018) which includes direct sales ,education ,hospitality ,outdoor recreation ,and entertainment .the goal of this viewpoint is to stimulate commentary and debate that furthers our collective understanding of Agro-Tourism as it becomes an increasingly important industry in India.

According to Damir Demonja &Turizam (2012) Agri tourism is a relatively new tourist movement that humans of postindustrial society return to traditional values and nature. Primarily is strongly associated with farms and production of traditional agricultural products. The real motive behind Agro-Tourism is the ideal exploitation of all existing resources of one farm regardless of whether it is following traditional or modern techniques of production but it presents the rural way of life. In addition,

Agro-Tourism is a generator of additional revenue and achieves full employment of the farm which enables to integrate all the potentials and diversification of activities. The organization of the farm, in terms of taking some tourism activities, is a complex activity that requires certain procedures and steps for successful business. Therefore, this paper proposes and explains steps necessary for successful implementation of tourism services in Agro-Tourism in Kolar. Special emphasis will be on the types of tourism services in rural tourism through the typology of farms and connecting with the market.

According to Nadina Ayer, farm tourism is increasingly popular (Arroyo, Barbieri & Rich, 2013) and studies of travel behavior (eg, Pesonen, Komppula, Kronenberg, & Peters, 2011) endure to recommend the essentials of research on tourists' underlying motives in general. The study dimension is to explore "sleeping in the hay" as one of the experiences of tourists visiting. The study intends to understand farm tourists' reasons for "sleeping

ISSN 2394 - 7780

in the hay" and how these might differ from the conventional hotel stay. Although authenticity is a widely researched topic in tourism (eg, Di Domenico & Miller, 2012); this research thoroughly focuses on the roles, experiential validity, evasion, pursuing, and most probably, sensible play put forwarded for reasoning farm tourist's visitations.

This study is basically a multi-dimensional latent construct model and includes the four motivational latent constructs of resistance escaping, experiential authenticity, and seeking. The model anticipates revisit from the tourist end towards farm tourism. Thoughts of creating experiential authenticity have been explored in business strategies of farm families (Di Domenico & Miller, 2012), but the extent to which this preference is a form of resisting mass tourism ruins. It ends up like people may prefer farm experiences as a substitute to mass tourism.

Kumbhar Vijay Maruti February (2010) describes the importance and need for setting up of agro- tourism centers in the view of marginal and small farmers. In his study he examines the potentials as well as threat facing by agro-tourism in Maharashtra. The study propounds that there is ample potential to the development of agro-tourism, because of natural conditions and different types of Agri products as well as variety of rural traditions, festivals. More than 45 percent of population is live in the urban areas and they may prefer rural tourism for enjoying rural life is probably common in Maharashtra from the assessment Vijay Maruti figure out that lack of awareness and poor marketing is the major factor which keeps the farmer's standard remains low. The study thoroughly focuses on the impact of agro-tourism centers and how it benefits the rural community. According to his view these centers will improve employment opportunities to the farmers including farm family members and youth, it provides additional income source for the farmers to protest against income fluctuation. Moreover, cultural transformation between urban and rural peoples including social moral values it helps the farmers to improve their standard of living due to the contacts with urban peoples.

Mohamed Aslam, Malcolm J. M (2016) interprets that the value of experience is recognized as central feature in the service industries, especially tourism. Experiential value plays an important role in determining tourist motivations to revisit a destination. A lack of studies pertaining to experiential value perception and revisit intention in the context of Agri- tourism has been discovered. Therefore, this study fills in this gap by examining the relationships between experiential value and intention to revisit a Agri- tourism destination. The present study provides an understanding of the significance of experiential value in Agri- tourism. Additionally, the study contributes to the understanding of tourist behavior in relation to settings, along with implications for the experiential marketing of Agri- tourism. Thus, the objectives of this particular study were to evaluate the roles of experiential value perception in Agri- tourism; as well as to investigate the relationship of experiential value perception, revisit intention, role of satisfaction as the mediator in the relationship between experiential value perceptions and revisit intention.

METHODOLOGY

Objectives

To asses the possibilities of implementing agro-tourism in Kolar.

To identify whether agricultural tourism can improve the earning capacity of the agrarian community.

To identify the challenges, regard to the implementation of agro-tourism concept at Kolar.

Statement of problem

Agro-tourism can play a key role in the regional socio-economic development of the agrarian community if it is implemented in an effective and an authentic way. Rural people are not being benefited due to various reasons like lack of education, limited land holdings, lack of awareness poor marketing access and so on. At present agriculture produce is considered only for subsistence and not as a marketing product, this is mainly because of the ineffective and poor functioning of the respective authorities.

Research Question

How agro- tourism going to benefit the community monetarily?

What measures can be initiated in order to address the issues faced by Agro Tourism?

Research Methodology

An explorative study with a quantitative approach was carried out. Current study is based on primary site-seeking observations.

Tool

Structured Questionnaire is used for the study. Random sampling is the sampling technique adopted. Sample size is: 274

ISSN 2394 - 7780

Target population
This study focused on farmers and cultivators who are residing at Kolar.

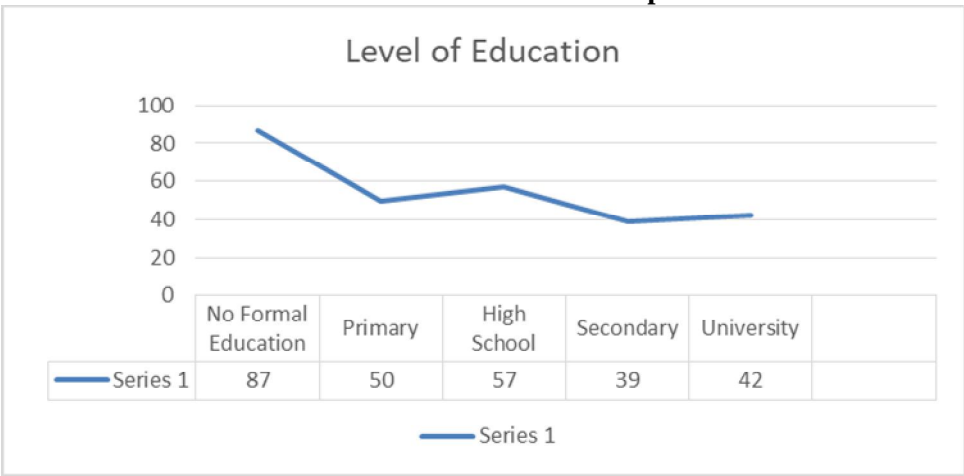
ANALYSIS AND DISCUSSION

Table no-01: Analysis of income and occupation

The analyzed data interprets that 75% of the working population are engaged in agriculture and unorganized sectors. The level of income of these people is always remaining low as compared to the people who are engaged in the existing tourism activities at Kolar. The data demonstrates almost 17% of the people are earning from tourism which usually higher than what they actually receiving from agriculture. Rest of the population belongs to running shops and restaurants and mainly in coal mines. It is clear from the analysis that agriculture sprouts almost all the corners of Kolar.

Though agriculture is the main source of income for the people but still the monetary benefit they reap out of the productivity is not satisfactory for them to lead a quality life. This is mainly because of the poor marketing of agriculture; firstly, it is considering only for subsistence secondly it is not at all being thought about that it can be marketed as a tourism product. If they are ready to put effort on promoting agriculture in different perspective rather than mere subsistence, then definitely the output must be notable and it results in the wholesome development of the rural community at Kolar.

Table no-02: Level of education and its impact on tourism

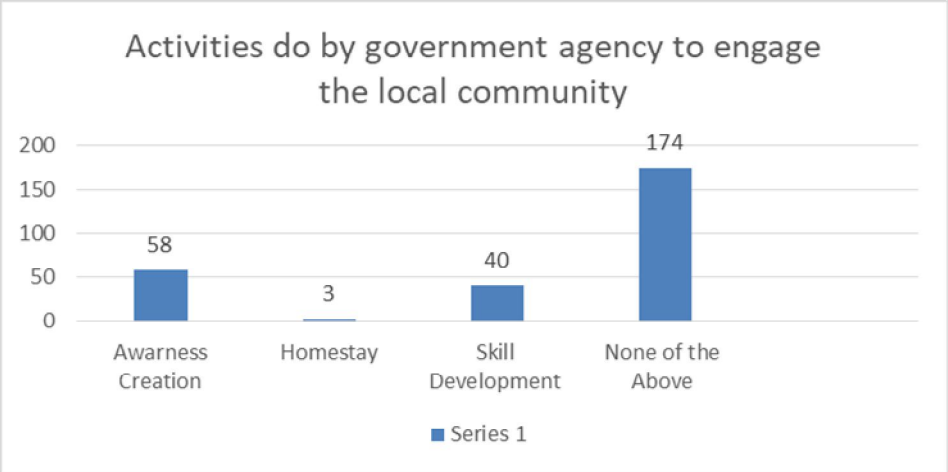


As per the analyzed data it depicts a transparent image of the level of education of the people at Kolar. Major proportion of the population is unable to acquire proper education and most probably these people are least bothered about the need of education in their life. They were just aiming at how they can meet their subsistent needs by giving their labor. Most of the people are belong to the category of no formal education and few of them are having primary education. People who are attained university education may usually do jobs in tourism sector at Kolar. The people may ignore schooling usually because of the tradition they may follow from their forefather's as well as due to the poor family conditions and poverty.

Usually the males will prefer mines in the region where they easily get unprofessional jobs and women may prefer for daily wage jobs in agricultural fields which helps them to meet their food requirements and they may force themselves to satisfy with that. This is the core reason behind the poor quality of education status revealed in Andar Ganga region of Kolar.

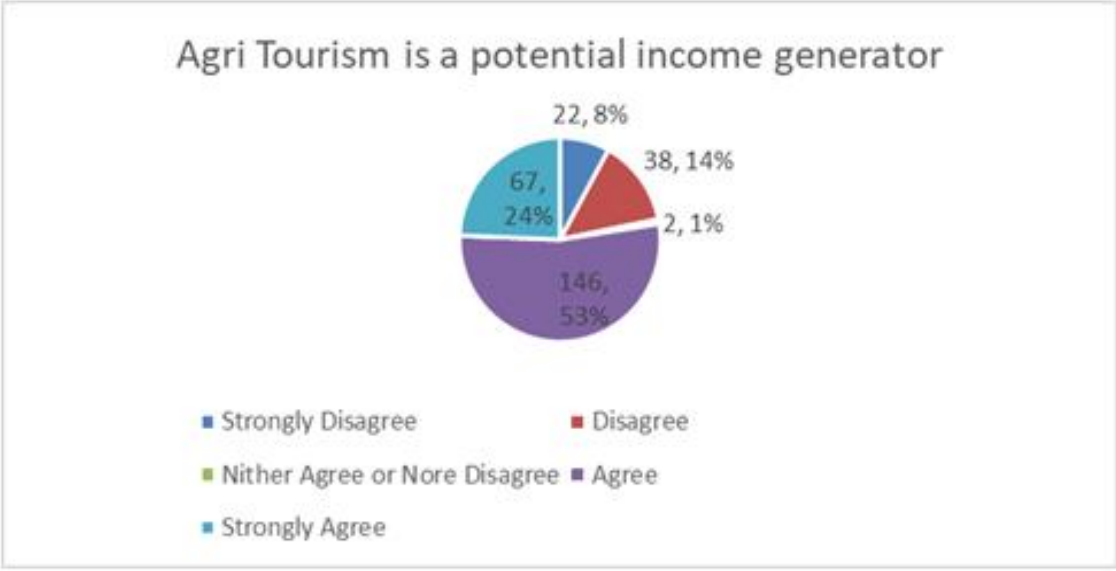
ISSN 2394 - 7780

Table no-03: Measures taken by government for assuring CBT



The activities done by government at Kolar for community development are relatively as per the analysis. Only things done by the government at Kolar were the awareness creation program regarding child welfare and some sort of skill development given to people who are working in the mine fields. Rather than this there is no financial support or measures introduced at Kolar. People were anticipating more skill development program along with income generating employments. But unfortunately the data demonstrates that the community is not at all receiving any kind of government help for their overall development. As it is a potential tourism destination people were not at all aware about the potential of homestays and the government and the respective authorities never take any measures to impart this idea into local community. If it was done, it so then it will turn out to an ancillary income source for the rural community at Kolar.

Table no-04: Potential of Agri tourism

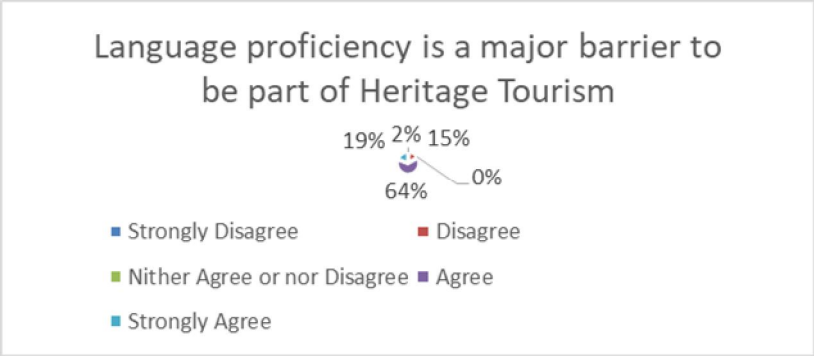


From the inference it indicates that people have strong positive opinion about agricultural tourism. Already it is the mainstream for their livelihood but the only problem they were facing is that it's marketing perspective. While undergoing the study we clearly gave them all the possible benefits that they may receive from agricultural tourism and the attitude of the population was impressive and they are agreeing that this existing sector can be developed further more productive if they get all the supports from the respective wings. They accept it mainly because of the following reasons; if they are doing normal agriculture practices that they may get products for self-requirements and some for sale also.

But if it is marketing as a tourism product they may get income by showing the visitors about the traditional farming methods which are outdated in the present era but it is unique and special for the visitors. There they can market their methods of production.so even if it is not the harvesting period also people can make benefit out of it. If it is harvesting time, then they can make some special kits of the farm products which can be directly sold from the field itself to the visitors all these possible sources of income generation for the agrarian community.

ISSN 2394 - 7780

Table no-05: Language proficiency and community involvement



The above analysis interprets that language proficiency is a major barrier for entering into the existing tourism wings at Kolar especially the pilgrimage tourism and other prominent tourism arena in Kolar requires effective communication skills to explain the importance of the destinations. The poor quality of the educational standards and poor communication skills hamper the proper interaction with potential visitors. This reflects as a poor service providing from the resident's part towards the visitors. But the scenario is entirely different in agro-tourism because it does not require much of interaction even if it is needed the existing guide himself can explain the farm activities. By such a way they will improve the earning capacity and it will push them to send their children to school so gradually the coming generations will become better off with education.

CONCLUSION

Kolar has ample areas for promoting agriculture tourism so by the incorporation of agro tourism with the existing tourism packages will bring out a significant improvement in the earning capacity of the local residents. There is nothing to construct from the bottom, Kolar already possess a good base for agro tourism start up. Still challenges were there like water scarcity, lack of support from the authorities and even land holding capacity. The major highlight of agricultural tourism from farm tourism is that it does not require extensive areas for cultivation. Even if the land is fragmented or limited for consumption farming then again marketing is possible not through the direct sale of agricultural produce marketing but through the authentic methods of cultivation can be marketed.

As of now Kolar doesn't face the problem of shortage of land holding or ownership. The major things that have to take in consideration were the educational quality has to be improved in the coming generations. For the present population what can be given is regular awareness program should promote about the potential areas where they can earn this will empower their income capacity and this will gradually turn their behavioral pattern and slowly they will start to invest in human capital. Unless they get proper education they may never be free from the chains of exploitation. There is very huge scope for CBT which may increase the community participation into the mainstream which may often help to upgrade the standard of living of the rural agrarian community at Kolar.

REFERENCE

- Aslam, M., & J. M, M. (2016), Sustainable Tourism in the Global South: Communities, Environments and Management,
- Pandurang, M. (2009). Agro Tourism Innovative Supplementary Income Generating Activity for Enterprising Farmers.
- Okazaki, E. (2008). A Community-Based Tourism Model: Its Conception and Use. Journal of Sustainable Tourism,
- Blackstock, K. (2005). A critical look at community-based tourism. Community Development Journal,
- Harwood, S. (2010). Planning for Community Based Tourism in a Remote Location. Sustainability,
- Nagaraju. L. & Chandrashekara. B. (2014). Rural Tourism and Rural Development in India. International Journal of Interdisciplinary and Multidisciplinary Studies (IJIMS),

International Journal of Advance and Innovative Research
Volume 6, Issue 2 (XII): April - June, 2019
ISSN 2394 - 7780

MODERN AGRICULTURAL LAWS AND POLICIES FOR THE 21ST CENTURY

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ABSTRACT

Agriculture is the bed rock of Indian economy. The total geographical area of India is 327 million hectares. The net area under cultivation is 173 million hectares. Agriculture contributes Rs. 570,660 million. Farmers and Agricultural labours who constitute 60 percent of labour force contribute 34.7 % of the total national product.

Agriculture, which forms the primary sector, is the main backbone of the Indian economy. Most of the secondary and tertiary sector purely depends on this sector for vast development and growth. At present, almost all of the agricultural production is free from tax. So it makes no compulsion to maintain book of accounts for agricultural sector. There is no system of compulsory maintenance of records of inputs and outputs neither income and expenditure statement for a particular crop nor a plant nor an herb nor a shrub nor a tree. Agriculture is a private occupation so the statistics or data on agricultural production and productivity is not purely maintained as per government laws, stipulations, rules and regulations.

The agricultural statistics at present is only approximate or an average, based on prediction, observation and analysis. It doesn't give a clear picture about the profit and loss of any cultivation in a particular period of production.

Hence, agriculture is being considered as an inferior business and young energetic people lose interest in agricultural production and sell the agricultural land to other secondary and tertiary sector for survival.

Hence the study focuses the pros and cons of non maintenance of agricultural statistics by the individual land lord or by agricultural cultivators.

Hence the present study focuses about the present modern reforms laws and policy changes to be implemented and modified in the agricultural sector according to the current scenario of 21st century.

It also underlines pinpoints the steps to be taken and remedies and suggestion should be enforced to strengthen the agricultural sector as per the government rules and regulations.

INTRODUCTION

Agriculture, a purely self owned private occupation with less coordination and interference from the government leads to certain aggressive deterioration of the economic systems. Even though it plays an active significant and supportive role in the growth and development it has its own limitations and drawbacks. It stimulates certain malpractices and reduces the normal functioning of the administrative setup. It is due to the adoption of old traditional laws and policies framed and formulated in the initial period of agricultural development. Government has a soft corner about this sector since food is very essential and to be provided to sustain life. As of today agriculture is controlled and managed by big multinational companies, big landlords and industrialists rather than by small and marginal farmers. So it paves the way to adopt new modern agricultural laws and polices according to the present modern scenario. Hence the study focuses on the modern reforms to be implemented in the agricultural sector to boost and strengthen the growth and development of this sector.

TRADITIONAL AGRICULTURE - AN HISTORICAL OVERVIEW

In India, there are over 20,000 plant species in a total geographical area of 329 million hectares, a number that is more than that found in countries with larger land masses. It is because of great diversity in our soils and climates. Of the 20,000 species, 500 are used in one form or another, and about 250 species are under cultivation excluding ornamentals, shrubs and herbs. About 35 of these cultivated species were first domesticated in India and adjoining countries. Not all the plants that we use here in our country are the natives of this place. Some of them were brought from different parts of the globe. A large number of economic plants have been introduced from east and west. These plants once they reached our land quickly established themselves in our diverse climate and soils. Indeed some of them thrive much better in our country than in the native lands. Traditional agriculture is purely dependent on nature and monsoons but as of today due to advancement of technology, agricultural production is made artificial and controlled my human mind and machines.

ISSN 2394 - 7780

Government's soft corner over the agricultural sector

Food clothing and shelter is very essential to sustain life. To meet the situation, government consider and grant more autonomy freedom and power to agricultural landlords to sustain this agricultural development. But more privilege and subsidies given to the sector, creates speculative ideas in the minds of agricultural landlords to earn more through malpractices in production process, etc. Hence originality of the land lords and farmers is diminished and declined. Agriculture has become a gambling game. Modern agriculture is business oriented rather than service oriented. So government should change its stand according to the present modern situation.

Modern agriculture - An observational view

In the 21st century, agriculture is made competitive and technology oriented. Agriculture is controlled and manipulated through man and machines. Due to population explosion, agriculture seems to be centrally mediated towards, quantity rather than quality. Agriculture lies in the hands of few big land lords who reap the enormous profit in each crop and plant and tree. They capture the market and take full control of the area and state. They venture the earned money is other areas of interest and business and strongly control the economy. It leads to disturbance of the economic system as a whole.

Insight of performance of agricultural sector

Agriculture contributes Rs. 570,660 million, forestry contributes Rs. 15970 million, and fishing contributes Rs.14000 million. Our famers and agricultural labourers constitute 60.5 percent of work force, and share 34.74 percent of total net national product. Out of the 245 million working people in India, about 93 million are cultivators and 56 million are agriculture landlords. It constitutes 60 percent of total labour force in agriculture. To these 149 million people, agriculture is not only the chief occupation, but a way of life. In a total geographical area of 329 million hectares, total cropped area amounts to 173 million hectares, and the land under forest is 67 million hectare. In the export sector agriculture contributes 25 - 30 percent to its total exports. In spite of all these development and significant role it also a play a negative role in creating a disturbance and ruin the economy as a whole.

Interdependence between agricultural sector and deterioration of economic systems

Enormous profit earned by big agricultural industrialist and landlords tends to create some unwanted disturbance like origination of black money, corruption and hoarding, etc since they control and capture the market. Agriculture at the primary level is exempted from tax so its leads to non maintenance of records of inputs and outputs and income and expenditure statement, profit and loss accounts for a particular crop / plant / tree / herbs / shrubs and year / seasons. Many disturbances are created because of the adoption of old traditional laws that is followed since independence which automatically leads to decline in the administrative setup at all levels.

Modern agricultural laws and policies for 21st century

Government has to adhere to the new agricultural reforms for the present century. It can be summarised as follows:

1. Agricultural production can be taxed at the primary land level.
2. Inputs and outputs of agricultural production should be recorded compulsorily.
3. Income and expenditure statement for each crop season year to be calculated and maintained.
4. Profit and loss account to be analysed and reflected for each year and crop and season.
5. Agricultural job to be made formal and regularised according to the govt rules and regulation.

SUGGESTIONS TO IMPLEMENT NEW LAWS AND POLICES

1. Each agricultural producer reflecting more profit continuously over the years to be given more loans, more subsides, more benefits for further growth and development of this sector.
2. Regressive tax system can be applied and followed in the agricultural sector. More income earned in agricultural sector should pay less tax. So that agricultural landlords will reflect true accounts and show correct estimation.

CONCLUSION

Agricultural sector which play a major share in production, consumption and distribution of economic system has to be revolutionised and modernised according to situation and circumstances. Hence the whole traditional laws and policies are to be modified and altered. Hence this study focuses on new agricultural reforms especially in agricultural laws and policies to be framed and implemented for the smooth functioning of the economy.

ISSN 2394 - 7780

REFERENCES

- Berkes, F., & Adhikari, T. (2006). Development and conservation: Indigenous businesses and the UNDP Equator Initiative. *International journal of entrepreneurship and small business.*
- Bhati, A., & Manimala, M. J. (2011). Talent acquisition and retention in social enterprises. *Journal of Security and Sustainability Issues, 1*(1).
- Lasprogata, G.A., Cotton, M.N. (2003). Contemplating enterprise: the business and legal challenges of social entrepreneurship. *American Business Law Journal 41*(1).
- Lukkarinen, M. (2005). Community development, local economic development and the social economy. *Community Development Journal, 40*(4).
- Mair, J., & Martí, I. (2006). Social entrepreneurship research: Asource of explanation, prediction, and delight. *Journal of World Business, 41*(1).

International Journal of Advance and Innovative Research
Volume 6, Issue 2 (XII): April - June, 2019

ISSN 2394 - 7780

ROLE OF SOCIAL ENTERPRISES IN AGRICULTURE SECTOR: INFERENCES FROM TWO SOCIAL ENTERPRISES

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ABSTRACT
Social enterprises are not-for-profit or for-profit organization that works for the development of the community in different ways and are sustainable through their products or services. One such initiative is supporting and promoting agriculture and agricultural products. This paper focuses on two social enterprises Uravu and Buffalo Back who are working with farm products and their role in promoting sustainable agriculture practices. The primary data is collected through personal interview with top-level managers and secondary data is collected from the websites and other published documents. These two case studies show how social enterprises promote the development of agriculture. The former focuses on the farming support, upgrading local knowledge, technologies and skill development in order to ensure that the traditional communities are having their livelihood and market for their commodities. The latter focused on promoting farmers to focus on sustainable organic farming techniques and selling their products to the customers. This study can help wannabee entrepreneurs to understand different models they can use for developing the agricultural sector through their social action.

Keywords: Social Enterprise, Agriculture, Organic Farming, Sustainability.

Agriculture plays a major role in the economic growth of the country (Johnston, & Mellor, 1961). The sustainability of agriculture is based on various factors such as the weather condition, economic stability of the country, innovation, and globalization. In Indian scenario 23% of GDP (Gross Domestic Product) is generated from the agricultural sector but the importance of agriculture among the rural population has reduced due to various issues such as labour shortage, weather condition and lack of reasonable pricing for their agricultural products, globalization, transition to commercial agriculture and problem in identifying the right markets (Dwivedy, 2011). In most of the cases, identifying the right market for their product is a major concern. Many social enterprises have taken initiative for supporting such farmers who face these crises. Uravu and Buffalo Back are two such social enterprises that have taken initiatives to address these issues. Therefore, the present study focused on these two social enterprises for understanding their role in promoting agricultural sector. The former organization supports the farmers by buying their commodity as a resource for their production and engaged in training the local people for making bamboo products, which in turn act as a sustainable practice for the industry. The latter helps farming sector for helping the farmers for promoting and selling their organic products. Therefore, a study on the role of social enterprises in the promotion of agriculture is relevant in this scenario. Social enterprises will always have a higher social motive than economic motive. These enterprises can act as model for other social enterprises who work in similar activities.

Social enterprises are organizations who are socially responsible for the upliftment of the community and for them social mission is explicit and central (Dees, 2017). They focus on the social contexts of change (Johnston, & Mellor, 1961). According to Lasprogata and Cotton (2003) social enterprises can be a for-profit organization, non-profit organization, the public sector or a combination of three. It is a "process of involving the innovative use and combination of resources to pursue opportunities to promote social change and/or address social needs" (Mair & Martí, 2006, p. 37). These enterprises serve the community through innovative business approaches (Pomerantz, 2003; Thompson and Doherty, 2006). In few cases a social enterprise is a for-profit company operated by non-profit organizations (Wallace, 1999). Dees (2001) considers social enterprise as having both the characteristics of profitable commercial organizations and non-profit organizations (philanthropic). There are still many arguments on the definition of social enterprises. In an Indian scenario, a social enterprise is primarily a Non- Government Organization (NGO) or Non-Profit Organization (NPO), where they raise funds by organizing events, or through donations, grants, community activities and some commercial activities (Bhatti and Manimala, 2011). If a major part of the funds comes from income generating activities it can be a social enterprise, else if the funds come from donations from individuals or organizations it will be considered as volunteer or community organizations. According to Berkes and Davidson-Hunt (2007) social enterprises act as a mediator between local and global markets. This helps them to mobilize both local and non-local resources. Social enterprises have social, economic and political goals (Somerville and McElwee, 2011). Social enterprises working in the agriculture sector can help the farmers in their trade aspects and farming activities.

ISSN 2394 - 7780

RESEARCH METHODOLOGY

An in-depth interview is conducted after visiting the places with the senior level managers and employees. The discussion with different stakeholders had taken approximately three hours. This study was a part of the major research project conducted in CHRIST (Deemed to be University). The study is based on two social enterprises which are working in the field of agricultural products. This study focuses on the role of social enterprises in promoting agricultural sector.

Researchers used open-ended questions to collect data such as the growth of social enterprises, their activities, their involvement with farmers, issues faced by the organization and talent management practices. For this study, only the relevant information related to agricultural sector is taken. The primary data was recorded with the permission of the interviewee and later transcribed into word document. Secondary data is also used for understanding the organization. The relevant information is selected for the analysis.

Uravu

Uravu is a social enterprise started with the objective of uplifting the community living in rural Wayanad, Kerala. The organization is situated in a place where there is a favorable climate for bamboos, which is referred as "Green Gold". When the organization started in the year 1998 the trust members found that there is huge scope for bamboo products and wanted to support the bamboo farmers. Uravu's operations focused on Bamboo Blinds Production, Art and Crafts, Training and Development, Bamboo Nursery, Group Visits and Interns, Independent and Collaborated Projects. They focused on promoting bamboo as a strategic raw material that can bring multiple benefits to rural areas and communities. It is one of the fastest growing plants in the world. The primary thrust of activities of the organization is in upgrading the bamboo sector in Kerala. The core idea was sustaining the bamboo sector, upgrading the productive skills of rural people and building a market for selling their products.

A predominantly agricultural district, Wayanad was the least developed within Kerala during 1990s in terms of several growth indices including industrialization, food security, healthcare and education. When the organization started its operation in 1998, more than 90 percent of tribal families in Wayanad were landless and majority of them were living below the poverty line. Access to and control over natural resources was key to the well-being of traditional communities and indigenous people. However, deforestation, environmental degradation and emphasis on cash cropping at the cost of food farming have adversely affected the livelihood of most of the traditional communities. The substitution of traditional small-scale commodity production based on local agro-based raw materials with the factory system of production has largely wiped out several occupations as well as skills of artisan communities. The inequities underlying the existing development model were most evident in the miserable living conditions of the tribal population in the district. Re-establishing the control of traditional communities over raw materials, production technologies and market processes are of critical importance in an effort to bring back these marginalized groups to the mainstream of the society. The activities of Uravu were interventions aimed at improving the quality of life of traditional labour groups, especially women among them, in hilly Wayanad. The organization strives to ensure that the rural resource base is enhanced, the processors and producers get fair and adequate returns and their skill levels, as well as economic and social status, are continuously upgraded. Over sixty percent of participant beneficiaries in the programmes taken up by Uravu are women. It is also essential that the efforts should be truly participatory and based on effective upgrading local knowledge, technologies and skills. It is with this vision that Uravu decided to initiate activities in commodity production using bamboo.

Uravu offers a plethora of services with their focus on supporting producers who supply bamboo and other raw products, self-help groups who come together ensure that there is economic sustainability at home and micro enterprises who effectively build up the local economy by providing new job opportunities and improving the local economy. They work with people, governments and businesses organizations. They implement programmes for sustainable development and enhance local skills and adopting various technologies, assisting in value addition of multiple resources and marketing of environment-friendly rural products.

Uravu implements multiple programs, which includes skill training in bamboo processing, establishing micro-enterprises, marketing bamboo handicraft, cultivation of bamboo and promoting of eco-tourism. Uravu conducts diverse programs in the Thrikkaipetta village including the Bamboo Village Program for demonstrating bamboo products community-led eco-tourism, annual Jackfruit Festival, Travellers' Forest Program etc. Uravu also promotes farmers and floriculturists.

The focus of Uravu is on developing bamboo processing skills among rural women through training programs and introduction of appropriate tools, technologies and processes to conduct design development and product

ISSN 2394 - 7780

diversification programs for artisans and runs a Common Facilities Centre for bamboo processing. Uravu focuses on promoting BAMBOO as a strategic raw material that can bring multiple benefits to rural areas and communities.

The major strategies followed by Uravu in meeting its core objectives is reliant on the training and development programmes for improving the skills of local artisans and generating their employment and livelihoods. In fact, they are potential enough to train a layman into a skilled artisan according their area of interest. Uravu is a premier agency in the country providing skill training in bamboo processing.

To support the local resource base of bamboos and to enrich the environment, a bamboo nursery was established by Uravu and they supply the sapling to the villagers who have land (Use a subsidized rate for poor farmers). They organize bamboo planting programs to support the farmers who grow bamboo trees. The advantage of bamboo is that, there is almost no care needed to ensure their growth as they are resilient and when they grow, they can be harvested to be the raw material used by Uravu to produce products that revolve around bamboo and its various utilities. It is a win-win situation for both farmers as well as the organization. Farmers get money after selling the bamboo and organization get the right resources (raw material) required for their production process. These types of initiatives increase the loyalty of farmers.

Uravu was the first organization started jack fruit (chakka in Malayalam) festival which helped farmers to promote and sell their jackfruit-made products. During this festival more than hundred different Jackfruit recipes and items were presented to demonstrate the fantastic potential of jackfruits. Uravu thus promotes and works with the local population and adapts their activities to suit the local resources available and in doing so support the eco-system that is in place at Thrikkaipetta village in Kerala.

Uravu is the Implementing Agency for Kalpetta Bamboo Cluster program under the Scheme of Fund for Regeneration of Traditional Industries (SFURTI) and Khadi and Village Industries Commission (KVIC). The National Bank for Agriculture and Rural Development (NABARD) is the Technical Agency for the cluster. The Kalpetta Bamboo Cluster is a network of a series of employment like artisans, micro enterprises, Self-Help groups, farmers, bamboo cutters and other stakeholders who rely extensively on bamboo and other local resources for livelihood and income generation.

Uravu tied up with Centre for Appropriate Rural Technologies (CART), located within the National Institute of Engineering (NIE) at Mysore. CART transferred technologies for making low-cost mud blocks, palm leaf cups and hand- operated irrigation pumps. They also supplied machines and models for these technologies and provided training. Uravu installed the CART pumps within and outside the district in association with individual farmers, community groups and local self-government institutions.

The staff employed by Uravu is also local artisans and there are SHGs (Self Help Groups) that come together at Uravu and work there to help finance their groups and in doing so they are being empowered and become financially independent. Its impact can be seen in the fact that the children of those women who are employed go to school for better education. There are also opportunities for exposure for the artisans to travel across India and witness different exhibitions pertaining to bamboo and bamboo products.

The area is maintained as a bird and butterfly-friendly space and the organization provide opportunity for the guest to plant bamboo, fruit and medicinal plants, which in turn supports the villages as another source of income generation. The villagers are encouraged to grow vegetables and produce meat products. These farm units also supply grains, vegetables, fruits, eggs and other products to the resort run by Uravu. The local women in the community prepare food; this ensures sharing of profits, as well as traditional, 'home-made' meals for national and international visitors. Farm visits to local and organic farmers aim at providing knowledge on local farming techniques. Several young people from the local community have been trained as guides.

Uravu provides various services for supporting producers, self-help groups and micro enterprises. Uravu Eco Links Ltd., the public limited company promoted by Uravu trust members, assists producer groups in marketing their products in various markets. Uravu Eco Links operate in the field of Eco-Tourism-Bamboo Groves, Bamboo construction, and Bamboo trading. Bamboo Groves was launched for promoting the local tourism and also help in promoting the local income generation. The Eco-resorts were built by the local bamboo artisans after the brilliant design of a Swiss architect.

Thus, Uravu has ensured that in functioning in a remote village they have been able to sustain themselves and also develop the local eco-system and the community and have also actively involved the community in developing themselves by providing avenues to strengthen their local ecosystem and also to improve their lives.

ISSN 2394 - 7780

Bamboo trading is a source of livelihood for the community. The scope of planting bamboo is high in Wayanad because of the suitable climate, minimum nutrients and water required for the growth of plants, minimum effort required for growing bamboo and high return on investment within 6 years. This provides job opportunities for those who cut the bamboo, those who transport them, those who are in manufacturing and this becomes an interdependent system and can also help the local community by giving them time to practice other trade.

Social Enterprise: Buffalo Back

Kishore and Vishalakshi's journey with farming started when an aunt who had a farm couldn't take care of it anymore. The duo offered to do so and that led to a lot of learning in the process. "We realized there was something wrong with the way we were treating the land and the water. As the years passed, the yields just got worse and our water resources were fast depleting," says Vishalakshi.

That's when they started researching on safer ways of farming. "Unfortunately, our aunt's farm had to be sold and we had no place to try out what we had learned through our research. It was all theory at that point," she says. In Kariappana Doddi village, the couple bought 1.5-acre land. They built a house and set up a small farm to grow food for the family. However soon they faced the reality of being agriculturists.

Challenges abounded, from drought to community hurdles and the frequent elephant raids from Bannerghatta. For three years the couple struggled before realizing that they need to learn more. Thus, they began to travel around India, meeting farmers from every possible state.

Their travels showed them that the lack of collective and shared knowledge was one of the farming community's biggest obstacles. "They did not have the privilege of connecting and sharing knowledge with other farmers. Hence, they adopted everything which reached them through the little exposure they had to the traditional farming methods. They were blindly using the seeds and fertilizer available in the nearest agricultural office and following the methods used by every other farmer near them," said Vishalakshi.

They not only invested in such learning but also passed it on to farmers in their village. Being outsiders, from urban areas no less, made it difficult for them to gel with the villagers initially but the couple kept helping the villagers and gradually gained their trust. "We cannot match the expertise of the farmers who are doing this since generations. We will always be behind them in experience, however, what they are lacking is sharing of knowledge and we can help them in that," says Vishalakshi. The village that they had settled in had been drought-ridden for years, which limited farmers to cultivate only a few vegetables. To solve the water woes, the family motivated villagers to share water from the common pond and also helped to set up a bore well for every family in the village.

With time, the couple invested in more land and made a huge storage unit on their farm. This storage pace was opened to all villagers for free. Now, they could grow seasonal vegetables with minimum water and store them for the entire year. The next step was marketing of the produce. Following Vishalakshi and Kishore, many villagers started organic farming but they needed a market to sell this product, without middlemen.

Thus, Vishalakshi founded Buffalo Back, an organic farming collective that would benefit all stakeholders involved—farmers, consumers and the environment. Buffalo Back (named so because of Kishore's childhood favorite activity of riding a Buffalo), today retails whole grains, cold pressed oils, chemical-free detergents and cleaning powders, ready-to-eat mixes, dry fruits and more at their retail outlet in North Bangalore, as well as specialty stalls that are set up at different locations. The organization is run by a small team of 5 including two founders Visalakshi and Kishore who manage the overall functioning of the organization, Padma, an expert retailer of organic food, Mangla who directs the operations, Manjula who takes charge of all grain maintenance, cleaning, packaging and processing. The farming network has small and marginal farmers and farmer groups working to bring together good quality food to Bangalore.

With the rural community ready to grow and process food in the safest possible way, all that was needed was a market which was open enough to understand the nuances of agriculture and its dependence on resources most of which are consumed (at times abused). To fill the gap in the market, Buffalo back moved into a collective mode to bring together budding entrepreneurs, volunteers, experts, students, artists, storytellers etc. to work together on nurturing a sense of conscious consumption, more specifically in the urbanites. They also set up a small traditional processing unit where hand mills were used to grind and process the grains, employing the village women. The mill was a boon, as these women could work in the village and no longer had to travel to work in city factories as labourer.

Vishalakshi and Kishore also helped the women sell these processed products by setting up stores in Bengaluru. The couple does not charge the farmers anything for these initiatives. Vishalakshi realized the need to introduce

ISSN 2394 - 7780

forgotten varieties of grains and millets to both farmers and consumers. With a project called Roots to Grain, she made consumers aware of ancient foods.

Recently Buffalo Back's customers were introduced to a variety of native rice , which they call as 'Folk rice'. These ancient varieties are known to have characteristics like drought tolerance, flood (even submergence) tolerance and saltwater tolerance. In a nutshell, these are extremely climate resilient crops with an added dose of fragrance. The three varieties introduced were kala bhath (Black Rice), jasmine rice and kala nunia. There are wheat varieties on offer too, like khapli (emmer), kathiya and the recently-acquired pygambari wheat, a sugar-free variety whose roots drawback to the Indus Valley Civilization. The duo has consistently used feedback, from farmers and consumers, to introduce new organic products, including floral drinks made from the Roselle flower (hibiscus sabdariffa) and even organic Holi colors.

Vishalakshi and Kishore have also indulged their love for fruit trees, planting around 150 saplings of fruits in their farm. They also keep planted fruit trees at the periphery of the village to keep elephant raids at bay. They are also researching natural indigenous techniques to keep the elephants away from the farm, of the major concerns for all farmers in the village.

While Buffalo Back is not about scale, they are one of the largest stores in this space. Despite servicing large volumes over a wide area, they have taken steps towards sustainability. Groceries from this online store are packed in small cloth bags or glass jars. By returning the containers, a customer can earn money. Buffalo back wants to achieve zero-packaging and aims to become the world's most eco-friendly large-scale grocer.

The idea is to reach out to more members of the community who for some reason have certain pre-conceived notions about the sustainability of "Organic food". The actual impact of their initiative would be when buffalo back is actually able to reach out to such members of the community. in their small ways buffalo back does workshops, health meets, cooking meets and such similar activities which have been fairly successful. In particular, Malleshwaram in Bangalore as a community has been the most supportive.

In terms of measuring the impact they would be happy even if one family in a week started introducing one or two organic ingredients in their daily cooking. Consistency in this regard is not very visible in incorporating organic food in daily food practices at household levels.

Their biggest challenge is engaging the farming community and creating sustainable working models for the entire farmer's family, keeping in sync with them through the entire process, getting them to understand the importance of simple value addition to the produces. The other big challenge is in keeping the overheads to the minimum and making available good food at affordable prices.

"Personally, speaking farming has been a great life-changing experience for us. Every plant, every animal and every little insect in our farm has taught us great lessons. Every day we learn how to co-exist, share our resources and do our bit not to disturb the perfect balance and harmony that our ecosystem has in place."

They use public transport for delivering food and also to bring food from distant place. They face difficulties in transportation and rarely do they use private transport thus looking to reduce the carbon footprint.

Buffalo Back as an enterprise focuses on the core concept of sustainability and organic farming and in this regard to make it a lifestyle practice and not an occasional indulgence at household levels. By carefully thinking about the farming process and understanding the nuances associated with farming they are able to help better the agricultural process for the farmers. Buffalo back also creates a platform for engaging the consumers and the producers and provides opportunities for their interaction at their stores. This process serves to be fruitful for both the consumers and the farmers. The consumers understand the meaning and the work that goes behind the growth of food and thus learn to treat it differently. Food becomes more than just a need for the people when they start to understand their food. And the farmers, on the other hand, understand food preferences and the lifestyle of the people and grow food accordingly.

This platform of interaction had also led top farmers getting financial aid from the customers and in due course of time paying back the money as well when they could. Food becomes more than just needs but becomes a relationship and thus the consumers say they treat food differently, they value the food better and don't waste it and also adopt sustainable practices at home is inspired by the farmers.

Buffalo Back also maintains the documents of indigenous agricultural practices and also studies that past and finds out the best organic food that can survive without artificial enhancement. In doing so they are also discovering cultures that had used these practices and are thus able to shed more light about the grains and its

ISSN 2394 - 7780

history. This rich database id shared with the farmers and they have the option of incorporating these grains in their produce.

Buffalo back thus as an organization does not only promote organic farming but links the producers and the customers. They are also involved in ensuring the best sustainable practices are adopted by the farmers and the store and thus reducing the carbon footprint. They are also actively involved with the community and are trying to change the lifestyle of the people through food.

CONCLUSION

A number of studies have suggested that social enterprises can create local economic outcomes such as employment pathways (Lukkarinen, 2005; Berkes and Adhikari, 2006), training and skill development opportunities (Cameron and Gibson, 2005) and retaining local services (Barraket and Archer, 2010). Berkes and Adhikari (2006) found that in indigenous communities, social enterprises produced assets that included not only cash income and employment, but also self-determination and the protection and renewal of cultural and environmental resources. Questions focused on the background and development of each enterprise, the nature of their operations and activities, outcomes and impacts in terms of regional development, as well as impacts on the business environment (e.g. cooperation versus competition) to consider intended and unintended implications. The aim was to obtain an in-depth, understanding of the organization and its functioning. It also served to get more information on the driving force behind the organizations. It also looked at understanding the success of the organization on the basis of geographic location as seen in Uravu 'The geographic area creates a boundary that conditions the web of interactions that may affect the social structure within which social entrepreneurship occurs'. Different geographic places may therefore produce different types of social entrepreneurship (Zahra et al., 2009; Smith and Stevens, 2010). The importance of location and its relevance in promoting indigenous products can be seen in the case of Uravu. Researchers identified that social organizations are rooted in a place where the community follows a place-based community of practice (Somerville and McElwee, 2011, p.326). There are possibilities of starting different social enterprises based on the product availability in that locality. Therefore, Smith and Stevens (2010) mentioned that different geographic places may produce different types of social entrepreneurship.

The case study on Buffalo Back expresses the mediating role a social enterprise between farmers and customers. They understood the customers demand and played a major role to satisfy the customers. They also support the farmers through various farming techniques.

The two case studies that were described showed how differences in approach and the styles of interaction with the stakeholders can impact the functioning of the organization and their impact. The cases show the strengths that an organization can draw from when dealing with the local community and acting according to the geographic and resource limitations that exist in these spheres. The case study highlights the role social enterprises has taken to revive the agricultural sector, the efforts they have taken train the local community to contribute to the outcomes and provided employment opportunities. Previous research also explains the role social enterprises support to the farming sector, and creation of local employment opportunities for the rural communities (Lukkarinen, 2005; Berkes and Adhikari, 2006). The impact of the two cases shows the growth of the farming sector through the intervention of social enterprises and their support through marketing and selling the products. These enterprises are not only sticking to the area of expertise, but looking at the overall development of the local community through different support. In other words, the impact is not only economic but largely focused on the social impact.

REFERENCES

- Barraket, J., & Archer, V. (2010). Social inclusion through community enterprise? Examining the available evidence. *Third Sector Review*, *16*(1), 13-28.
- Berkes, F., & Adhikari, T. (2006). Development and conservation: Indigenous businesses and the UNDP Equator Initiative. *International journal of entrepreneurship and small business*, *3*(6), 671-690.
- Bhati, A., & Manimala, M. J. (2011). Talent acquisition and retention in social enterprises. *Journal of Security and Sustainability Issues*, *1*(1), 39-52.
- Dees, J. G. (2001). The Meaning of Social Entrepreneurship downloaded from http://www.brevolutionconsulting.com/assets/dees_sedef.pdf.
- Dees, J. G. (2017). 1 The Meaning of Social Entrepreneurship. In *Case Studies in Social Entrepreneurship and Sustainability* (pp. 34-42). Routledge.

ISSN 2394 - 7780

- Dwivedy, N. (2011). Challenges faced by the Agriculture Sector in Developing Countries with special reference to India. International Journal of Rural Studies, 18(2).
- Cameron, J., & Gibson, K. (2005). Alternative pathways to community and economic development: the Latrobe Valley Community Partnering Project. *Geographical Research*, *43*(3), 274-285.
- Eversole, R., Barraket, J., & Luke, B. (2013). Social enterprises in rural community development. *Community Development Journal*, *49*(2), 245-261.
- Johnston, B. F., & Mellor, J. W. (1961). The role of agriculture in economic development. *The American Economic Review*, *51*(4), 566-593.
- Lasprogata, G.A., Cotton, M.N. (2003). Contemplating enterprise: the business and legal challenges of social entrepreneurship. *American Business Law Journal 41*(1), 67–113.
- Lukkarinen, M. (2005). Community development, local economic development and the social economy. *Community Development Journal*, *40*(4), 419-424.
- Mair, J., & Martí, I. (2006). Social entrepreneurship research: Asource of explanation, prediction, and delight. *Journal of World Business*, *41*(1), 36-44.
- Pomerantz, M. (2003). The business of social entrepreneurship in a 'down economy'. *In Business, 25*(2), 25-8.
- Smith, B. & Stevens, C. (2010). Different types of social entrepreneurship: The role of geography and embeddedness on the measurement and scaling of social value. *Entrepreneurship & Regional Development, 22*(6), 575-598.
- Somerville, P., & McElwee, G. (2011). Situating community enterprise: A theoretical exploration. *Entrepreneurship & Regional Development*, *23*(5/6), 317-330.
- Thompson, J. and Doherty, B. (2006), The diverse world of social enterprise: a collection of social enterprise stories. *International Journal of Social Economics*, 33(5/6), 361-375.
- Wallace, S. L. (1999). Social entrepreneurship: The role of social purpose enterprises in facilitating community economic development. *Journal of developmental entrepreneurship, 4*(2), 153-174.
- Zahra, S. A., Gedajlovich, E., Neubaum, D. O. & Shulman, J. M. (2009). A typology of social entrepreneurs: Motives, search processes and ethical challenges. *Journal of Business Venturing, 24*(5), 519-532.

International Journal of Advance and Innovative Research
Volume 6, Issue 2 (XII): April - June, 2019
ISSN 2394 - 7780

RURAL HEALTH INFRASTRUCTURE IMPACTS ON HEALTH OUTCOME – SPECIAL REFERENCE TO KARNATAKA STATE

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ABSTRACT
Infrastructure refers to the facilities and services which influence the development of the Economy. Many researches have been conducted to estimate the productivity of Infrastructure investments on economic growth .Present study focus status of the rural health infrastructure in India with special reference to Karnataka. A well-equipped health care infrastructure plays a significant role in determining health of the nation. National rural Health Mission (NRHM) launched in 2005.Main objective of this mission is strengthening rural health care infrastructure in the country. NHRM focused to provide quality, affordable and easily available health care services in rural areas. Though the migration is happening in faster pace still 70 percent of population is living in rural area. Purpose of this study is to analyse the impact of Health outcomes in rural area based on the availability of health infrastructure. Health infrastructure includes manpower (Doctors, Specialist, Nurse, Health workers male and female, Health assistant male and female etc., availability) and Facilities (availability of Operation theatre, labour room, beds, water supply, Electricity etc.,) .Present Paper is examining the relationship between availability of health infrastructure impact on major health indicators such as Infant mortality Rate (IMR), Crude Birth rate (CBR), Crude Death Rate (CDR) during 2005-2017.

Keywords: Rural health infrastructure, rural health outcome, Health manpower, Health care facility, Infant mortality rate, Crude Birth Rate.

INTRODUCTION
"When health is absent, wisdom cannot reveal itself, art cannot manifest, and strength cannot fight, wealth became useless and intelligence cannot be applied"- Herophilas

Good health must be the primary objective of national development programmes it is a precursor is a improving the quality of life. The availability of health services is only one of many contributions to health development. It is a primary responsibility of any nation to provide healthcare to its people. Not only the availability of health facility is important for measuring the status of health, but more important fact is that how these facilities are distributed, whether these well accessible by the people living in an area or not. Thus, accessibility and availability of healthcare facilities reflect the direct impact on mortality and morbidity rates. Health services in India are not yet adequate. The problems are three- fold: inadequacy, urban bias and lack of service motivation among health workers. Among these Rural- urban bias is playing a significance role in India. Due to unavailability of sufficient medical personnel in rural area affects the quality of services at PHC, CHC and sub centres.

Health outcomes like Crude birth rate (CBR), Crude death Rate (CDR), Infant Mortality Rate (IMR) are greatly influenced by the availability of health infrastructure. As per the government protocol for every 5,000 people (3, 000 in hilly area) one sub-centre, every 30,000 people one primary health centre (20,000 in hilly areas) and one community health centre for every 120,000 people (80,000 I hilly areas) has to constitute by the government. Following studies discussed the health indictors and health outcome in a different time period and different places;

REVIEW OF LITERATURE
Mohd Taqi and Swati Bidhuri et al (2017) in his study on, "Rural Healthcare Infrastructural Disparities in India: A Critical analysis of availability and Accessibility" critically examined and evaluated the disparities in availability as well as accessibility of health infrastructure in rural areas of India. Finally authors noted that health care system in rural India has remained inefficient and sub optimal even after decades of planned development. India is lagging in terms of both availability and accessibility of healthcare infrastructure at all levels.

Dr.Pranjal protim (2015), in his analyses titled "Status of rural health infrastructure of Assam" discussed the status of health of different districts of Assam and the existing health care infrastructure of the state. Author identified that health infrastructure as well the health status of the people in rural areas of Assam is not satisfactory and he suggested the central and state government have to frame the policy to improve the present status.

ISSN 2394 - 7780

Neelamani Jaysawal (2015), in her research article, "Rural Health system in India: A Review" examined the challenges of rural health care system facing and highlighted the strategies implemented by the government to overcome the problem.

Health care Infrastructure in the Rural Areas of North- East India: Current Status and Future challenges by Dilip saikia (2014), explained about current status of health care infrastructure in the rural areas of north – eastern regions of India. Researcher focused the progress of health care infrastructure in rural area and challenges faced by them. Author found out that after the implementation of NRHM in 2005, there is significant improvement in health care infrastructure in north-east region.

Subba lakshmi and Dukhabandhu (2013) in her analysis on Health infrastructure and Health Indicators: Case of Andhra Pradesh calculated the elasticity coefficients of health indicators with respect to health infrastructure of the state of Andhra Pradesh during 1980-2010. Author identified that public health facilities are playing a crucial role for meeting the basic health requirements of masses in the state.

Angela M Spleen MS, Euhene J Lengerich VMD et. al (2013) published a research paper on "Health care avoidance among rural populations: Results from a nationally representative survey". This paper analysed that certain population in rural area avoided health care behaviour due to sociodemographic, attitudes, social expectations, ability to pay for care and prior experiences with providers. Health Information Trends survey was used to estimate above mentioned parameters. Author concluded that public health practitioners develop programs and initiatives to address avoidant behaviour among rural population.

Ritu Narang (2011), wrote on, "Determining quality of public health care services in rural India". Author focused the perceptions of patients towards quality of services in public health care centres in rural India. With mixed sampling technique, author collected the data from 500 respondents from eastern, western and central regions of Uttar Pradesh.Researcher identified that opinions of the respondents towards health care quality were not favourable due to unavailability of adequate medical equipment's, unavailability of doctors for women.

M.V. Ramana Murthy (2008) wrote an article titled, "Mobile based Primary health care system for Rural India". In this author explored the present status of mobile based health care systems across the world and discussed the shortfalls in primary health care management in rural India. Writer recommended the potential solution such as providing web based information system for management of primary health care, SMS interface for integrating SMS messages from the patients using 2nd generation mobile systems, WAP gateway for web access applications using WML for integrating GPRS/3G/4G mobile devices of doctors and nurses with the web server and finally development of location support to national and other Indian languages in mobiles by providing interface for translation.

A report titled, "Rural Health and Healthcare: a North West perspective" by Justin Wood (2004) discussed different perceptive of rural health care. Chapters of the report described the administrative and rural geography of the North West, different literatures explains about rural health and healthcare and details hoe perceived low levels of rural poor health, following chapter examines national rural health and rural policy and introduces recent initiatives and finally author presented examples of innovative rural healthcare projects and community-led project initiatives.

Research paper titled, "Current health scenario in rural India" by ashok vikhe patil and somasundaram et all analysed rural areas health status at micro and macro levels. Authors observed that a paradigm shift from the current Biomedical model to a sociocultural model at present. This transformation should bridge the gaps and improve the quality of rural life as per the current need. Researchers also suggested that revised National health policy addressing the prevailing inequalities and its working towards promoting a long-term perspective plan for rural health in significant manner.

HEALTH STATUS OF KARNATAKA

Karnataka is giving a significant contribution for to improve the health status of its people over last few decades. According to WHO, Health services, Human Resources, Health Financing, Medicines and Technologies, health Information and Governance has been identified as significant components for strong health system? Based on this brad policy have been framed by Karnataka state government.

Due to regional inequities and urban – rural health inequities following eight districts of Karnataka namely, Yadgir, Gulbaarga, Raichur, Koppal, Ballary, Bidar and Bagalkot and Chamarajanagar considered districts have poor health indicators compared to others.

Karnataka has the only state other than Andhra Pradesh, which has 26% utilisation of public health, earlier it was 36%.This decline trend explains people of Karnataka accessing more private health care facilities that public.

ISSN 2394 - 7780

Regarding the children vaccination ratio, Karnataka has stagnated in its status 75% during the last decade.

Human resources for Health have shortage in all the levels. Female junior health assistant shortage has increased from 13% to 28.5 % and shortage of total number of specialists went up from 32% to 39%. The distribution of health workers is also highly unequal in favour of urban areas and private health sector.Present paper is emphasising the consequences of shortage of health infrastructure on health outcome in Karnataka.

OBJECTIVES

- Examine the significance of rural population of Karnataka with India.
- Find out the relationship between Health infrastructure (Number of Doctors, Number of Specialist, availability of Labour room, availability of beds) and Health outcome (IMR, CBR and CDR) of Karnataka.

DATA SOURCE

This Paper is completely based on secondary Data. Data has been collected from various sources such as different issues of Rural Health statistics reports, Sample Registration system (SRS) bulletin, Census of India and so on.

SIGNIFICANCE OF THE STUDY

According to the Karnataka Integrated Public Health Policy 2017, Infant mortality rate for the past seven years is declining from 41 to 31 per 1000 live births and Birth rate declaim from 19.5 to 18.3 for 1000 population. When we analysing population utilising public health services in the last decade it declined from 34 % to 26 %. It observed that there is always shortage in the manpower in rural health infrastructure of Karnataka. This shortage increased from 13 percent to 28.5 percent during 2005 to 2015. Present study analyse this gap. Variation between rural health infrastructure and rural health outcome .In this connection, the paper is attempting to explain the modest relationship between health care infrastructure and health outcomes in rural part of Karnataka.

METHODOLOGY

Health infrastructure indicators are subdivided into educational and service infrastructure. Service infrastructure has two elements these are health manpower and health facilities. Health manpower has sub components such as health worker (Male & Female) at sub centre and (PHC) Primary health centres, Health assistant male and female at PHC, Doctors at PHC, and Surgeons at PHC, Nursing staff at PHC and CHC, total Specialist at CHC etc., Out of these researcher has taken only Doctors, Specialist and Nurses at PHC and Sub centres.

In same the way under Health facilities with labour room, with operation theatre, with at least 4 beds, without regular water supply, without electric supply and with telephone and so on. In this researcher has chosen with labour room, with operation theatre and with at least 4 beds were taken in to calculation.

Health infrastructure index is constructed for health infrastructure as a weighted average of various components because health infrastructure components are not mutually uncorrelated. By combining various components of health infrastructure in a suitable way researcher constructed a Composite index which represents as a Health Infrastructure Index (HII)

HYPOTHESIS

$H_{0:}$ Health infrastructure does not affect the infant mortality of the state.

$H_{a:}$ Health infrastructure affects the infant mortality of the state.

$H_{0:}$ Health infrastructure does not affect the crude birth rate of Karnataka.

$H_{a:}$ Health infrastructure affects the crude birth rate of Karnataka.

RESULTS AND DISCUSSION

Significance of rural population of Karnataka and India

Table:1 Percentage of Karnataka Rural Population in India's Rural Population

Year	Percentage of Karnataka rural population with India's rural Population	Percentage of Karnataka rural population with Karnataka Population
1991	4.94	69.07
2001	4.69	66.02
2011	4.50	61.43

ISSN 2394 - 7780

Above table explains significance of Karnataka rural population in India. The above three decade data presenting the fact that 4-5 percentage of population is living in rural part of Karnataka and when we comparing with state level 61- 69 percentage of population are living in rural Karnataka.

Correlation between Health Infrastructure Index and Infant Mortality Rate

$H_{a:}$ Health infrastructure affects the infant mortality of the state.

Table :3 Correlation between Health Infrastructure Index and Infant Mortality Rate			
Health Infrastructure Index		**Health Infrastructure Index**	**Infant Mortality Rate**
	Pearson Correlation	1	.640*
	Sig. (2-tailed)		.025
	N	12	12
Infant Mortality Rate	Pearson Correlation	.640*	1
	Sig. (2-tailed)	.025	
	N	12	12

*. Correlation is significant at the 0.05 level (2-tailed).

Above table explains relationship between the health infrastructure and Infant mortality rate. The correlation coefficient for the health infrastructure and Infant mortality rate is 0.640. p value for this correlation coefficient is 0.025 which is less than 0.05.This model is statistically significant. Therefore null hypothesis has been rejected. This model is revealing that when the health infrastructure strengthen by government in rural area it will increase the Infant mortality rate with declining ratio

Correlation between Health Infrastructure Index and Crude Birth Rate

$H_{a:}$ Health infrastructure affects the crude birth rate of Karnataka.

Table-3: Correlation between Health Infrastructure Index and Crude Birth Rate			
Health Infrastructure Index		**Health Infrastructure Index**	**Crude Birth Rate**
	Pearson Correlation	1	.575
	Sig. (2-tailed)	-	.051
	N	12	12
Crude Birth Rate	Pearson Correlation	.575	1
	Sig. (2-tailed)	.051	-
	N	12	12

Above table represents the relationship between Health Infrastructure and Crude Birth rate. Its statistically proved that health infrastructure not significantly influence the crude birth rate since its significance level is greater than 0.05. Because other factors such as infant mortality rate, availability of family planning services, Poverty levels, female employment etc., might significantly influence the Crude Birth rate.

CONCLUSION AND POLICY IMPLICATION

Present paper examines the status of health care infrastructure and its influences on health indicators in the rural parts of Karnataka. Rural health infrastructure has taken based on two category; i. Availability of manpower especially doctors, specialist and nurses in Primary health centre and sub centre ii. Availability of facilities such as labour room, operation theatre and beds in primary health centre and sub centre

The findings suggested that, last three decades 4.9 per cent of Karnataka rural population living in India. But when we compare the health infrastructure provided to those exciting population is not sufficient. Facilities in that health care centres are not well equipped. Another finding recommended that health infrastructure is significantly related with Infant mortality rate and less significantly related with crude birth rate. Due to shortage of manpower and health facilities in rural area, these health infrastructures are not significantly influencing the health outcome.

The state government should undertake more direct policies towards establishment of new health centres, specifically the existing sub centres, primary health centres and community health centres has to be upgrade to the next level. Existing health care centres must be strengthening by sufficient and well trained manpower and it should equip with well-maintained and upgraded medical facilities. Added to that state government should take

ISSN 2394 - 7780

urgent efforts to improvise the quality of rural health care services it will strengthen the Health outcome and reduce the regional inequality too.

REFERENCE

1. Angela M Spleen MS, Euhene J Lengerich VMD,Fabian T Camacho MA, Robin C Vanderpool (2013), "Health care avoidance among rural populations: Results from a nationally representative survey", The journal of rural health , Volume 30 Issue 1. DOB: https:// doi.org/10.1111/jrh.12032.
2. Ashok vikhe patil, K.V. Somasundaram and R.C. Goyal (202) , "Current health scenario in rural India" The Australian Journal of Rural Health, Volume 10,Issue 2, DOB: http://doi.org/10.1046/j.1440-1584.2002.00458.x.
3. Dilip Saikia(2014) , "Health care infrastructure in the rural areas of North-East India: Current Status And Future Challenges", Journal of Economic and Social Development, Vol – X,No.1, July, 2014.
4. Justin Wood (2004) , "Rural Health and Healthcare: a North West perspective" , A public health information report for the North West public Health Observatory, ISBN- 1-86220-144-7.report available ar http://www.nwpho.org.uk/reports/ruralhealth.pdf.
5. Mohd Taqi,Swati Bidhuri, Susmita Sarkar, Wani Suhail Ahmad and Padma Wangchok (2017), "Rural Healthcare Infrastructural Disparities in India: A Critical analysis of availability and Accessibility" DOB: http://doi.org/10.15415/jmrh.2017.32011 published in www.chitkara.edu.in/publications
6. Neelamani Jaysawal (2015), in her research article, "Rural Health system in India : A Review", International Journal of Social work and Human services practice, Volume.3,No.1, Feb 2015,Page 29-37.
7. Murthy M.V.R (2008), "Mobile based Primary health care system for Rural India", Science and Education publication, Vol.2, No1, Page 6-11.
8. Dr. Pranjal Protim Burgohain (2015), "Status of Rural Health Infrastructure of Assam", International Journal of Management and Social Science Research Review, e – ISSN – 2349-6746, ISSN – 2349 -6738, Vol.1, Issue.15, September -2015. Page: p218.S
9. Ritu Narang (2011), "Determining quality of public health care services in rural India".Clinical Governance: An international Journal , Vol.16 Issue:1, Page: 35-49, DOI: https://doi.org/10.1108/14777271111104574
10. Subba klakshmi and Dukhabandhu (2013), "Health infrastructure and Health Indicators: Case of Andhra Pradesh", IOSR Journal of Humanities and Social Science(IOSR-JHSS), ISSN:2279-0837, ISBN:2279-0845. Volume6, Issue 6 (Jan-Feb 2013), PP 22-29.

International Journal of Advance and Innovative Research
Volume 6, Issue 2 (XII): April - June, 2019
ISSN 2394 - 7780

LOANS AND SUBSIDIES OFFERED BY PRIMARY LAND DEVELOPMENT BANK FOR AGRO PRODUCTS

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ABSTRACT
The agriculture sector contributed 51.9 percent to India's GDP in 1950. Since then it has been on a downside and it currently stands at 13.9 percent. However, a change from an agrarian-centric economy to an industry-centric economy is inevitable with the advent of industries. Despite half of the population still continuing with the profession, the returns are low. While urbanisation might be cited as a reason, it is hard not to neglect the fact that agriculture is no more a profitable sector. Infrastructure costs have started running high, with its maintenance cost and capital investment only adding on to the farmers' misery.

INTRODUCTION
Agriculture is the utmost essential sector of Indian Economy. Indian agriculture area accounts for 18 per cent of India's gross domestic product (GDP) and provides employment to 50% of the countries workforce. India is the world's chief producer of pulses, rice, wheat, spices and spice products. India has many areas to choose for business such as dairy, meat, poultry, fisheries and food grains etc. India has emerged as the second largest producer of fruits and vegetables in the world.

Agriculture is the primary activity of Indian economy and it is therefore the priority sector to financial institutions for offering financial assistance to the agriculturists all across the country. Agricultural loans are available for various kinds of farming-related activities.

Schemes of Agricultural Loans in India
The various schemes offered under agricultural loans are:

- For routine operations
- For purchase of farm machinery such as tractors, harvesters, etc
- Purchasing land
- Warehousing
- Marketing of commodities

Financial aids are offered in form of grants and subsidies to farmers as an aid to protect them in the event of crop damage or loss of crops.

Agricultural loans in India are not only offered to farmers working towards the cultivation of food crops, but they are available to anyone who is engaged in other agriculture-related sectors like horticulture, aquaculture, animal husbandry, silk farming, apiculture and floriculture.

Land Development Banks in India
Land Development Banks in India are of quasi-commercial in nature. Though they are all registered under the Co-operative Societies Act, there are associations of borrowers as well as non-borrowers organized on the principle of limited liability.

The borrowing capacity of a member is generally calculated according to the number of shares they hold in the bank.

Co-Operative Banking in India:
Even though the first Land Development Bank was started in Punjab in 1920, the real progress began when the Land Development Bank was established in Chennai in 1929. The Land Development Banks are Cooperative Institutions established ore limited liability principle with borrowers and non-borrowers as members to supply long-term capital against development of land and building

Structure of Land Development Banks
These Banks have two-tier structure

1. Primary Land Development Bank at district level with branches at taluk level.

ISSN 2394 - 7780

2. State Land Development Bank. All primary Land Development Banks are federated into CentralLand Development Bank at the State Level. In some States, there is " Unitary structure" wherein, there is only one State Land Development Bank at the state level operating through its branches and sub-branches at district and below levels.

Primary Land Development Banks (PLDB):

These banks were originally organized to cover one or a few taluks in the district. At present they are eligible to cover one development block. All land owners are eligible to become members and borrow funds by mortgaging their land. The principal borrower is enrolled as „A" class member and others who have interest in the mortgaged property are admitted as „B" class members.

Central Land Development Bank (CLDB):

These members of the CLDBs are the PLDBs and a few individual promoters. It grants long-term loan to agriculturists through the PLDBs and branches of CLDBs. It raises funds through floating debentures, whichare guaranteed by the State Government. When PLDB obtains loan from the CLDB, it assigns the mortgagedeeds obtained from the borrowers to the CLDB. The CLDB floats debentures and raises funds against thesecurity of these properties. The NABARD and LIC subscribe for the debentures in large amounts and theformer also extends refinance assistance to LDBs.

The main objective of the land development bank is to promote the development of agriculture and increase the agricultural production. The CLDBs provide long-term finance to PLDBs affiliated to them or finance directly through their branches.

Statement of the Problem

Over the last five decades the role of loan sector has undergone a paradigm shift. It is widely recognized as an important aspect of the source of loan for the farmers. In this competitive world all the banks are concentrated on their investing sector through loans. The study focuses on how well the banks satisfy their customers in providing loans and subsidies.

The study undertaken is an effort to understand and analyze the farmer's satisfaction towards PLD bank with reference to loans and subsidies for Agro products.

REVIEW OF LITERATURE

Aurora and Malhotra (1997)

Studied the level of customer satisfaction and marketing strategies in both private and public sector banks in India. It revealed six factors of customer satisfaction in public sector banks viz, routine operations, price, situational environmental technology and interaction. But in private banking sector, they found seven factors in total, having staff factors as the top ranked and situational factors as the lowest ranked items. Instead of price factor, promotional factors have been explored by researchers. In private sector banks the customer level of satisfaction is comparatively more.

Dutta K. and Dutta A. (2009)

They investigated the perception of expectation of customers across all the banks in India. This study showed that customers are most satisfied with the services of foreign banks followed by private and public banks. This study suggested that Indian public banks should improve their banking services.

Edwin M. &Fathima S. (2011)

They conducted a study on the impact of service quality and customer satisfaction in commercial banks. This study shows that there is close link between the customers' perception on the service quality factor and customer satisfaction. It further showed that the impact of the service quality factor on customer satisfaction is unique. It brought the suggestion that bank managers have to formulate appropriate marketing strategies to satisfy their customers.

Hallowell Roger (1996)

Carried out a study on customer satisfaction in banks and suggested that banks should target service to only those who need it most. By adopting this strategy customers will be retained for longer periods since the bank can satisfy customers better than competitors.

Kotovalas and Siomkos (2006)

Conducted studies on customers' satisfaction in Greek banks.It revealed that there was a direct and positive correlation between perceiving service quality and customers' loyalty in the case of both private and public

ISSN 2394 - 7780

sector banks. The significant relationship has recorded demographic characteristics and perceived qualities of both types of banks. Customers of both banks were willing to express their complaints to the bank employees. The result revealed that bank's promotional efforts, aimed at providing relevant information to the public might increase loyalty level.

Research Gap

The research conducted by different researchers mentioned in review of literature is research findings on different schemes of loan provided by the banks to the farmers and their satisfaction with regards to services provided regarding sanctioning of loan procedures, interest rates, recovery procedures etc. and satisfaction level of farmers towards services provided by banks. This paper attempts at research being made on the loans and subsidies offered by primary land development bank for Agro products".

SCOPE OF THE STUDY

The study is limited to PLD banking sector. This report gives the information about the farmers' satisfaction towards loans and subsidies offered by PLD bank in Shidalaghatta Town, Chikkaballapur District to farmers'.

OBJECTIVES OF THE STUDY

- To studythe various schemes of loans offered by PLD Banks.
- To study the awareness among farmers regarding services offered by PLDbanks.
- To study the loans and subsidies offered by PLD Banks for Agro Products.

HYPOTHESIS

H1- Loans and Subsidies offered by PLD Banks have economically strengthen the farmers

H0- Loans and Subsidies offered by PLD Banks do not economically strengthen the farmers

LIMITATIONS OF THE STUDY

The study is limited to PLD banking sector in the Sidlaghatta Town, Chikkaballapur District, which covers 291 villages. The study is limited to subsidies and loans provided by PLD Bank and the data is collected from the account holders of the PLD Bank.

RESEARCH METHODOLOGY

The data was collected through both primary and secondary sources. Convenient Random sampling method was adopted for collecting the data.The sample size considered was 100 respondents. Customers of the bank or Farmers are selected as respondents for this study.

PLAN OF ANALYSIS

The data collected was classified and tabulated for analysis purpose. Statistical tools like one way ANOVA and Simple linear regression used to analyse the data and test the hypothesis.

Table-1: Respondents opinion towards loan sanctioning and repayment (One way ANOVA) (Descriptive)

Variables	N	Mean	Std. Deviation
PLD banks loan sanctioning and recovering procedure is convenient	100	2.5000	.50157
PLD bank is more efficient and faster towards loans and Subsidies	100	2.5000	.50157
Employees are more supportive when sanctioning the loan	100	2.1818	.38680
Bank policies and procedures towards loans and subsidies are very clear and transparent	100	2.4444	.49864
Satisfaction of the present repayment duration of loan	100	3.0000	.52500

Source: Field Survey

Table-2: Respondents opinion towards loan sanctioning and repayment (One way ANOVA)

		Sum of Squares	df	Mean Square	F	Sig.
PLD banks loan sanctioning and recovering procedure is	Between Groups	55.373	1	13.843	**76.572**	**.025**
	Within Groups	141.737	99	.181		

ISSN 2394 - 7780

convenient	Total	197.110	100			
PLD bank is more efficient and faster towards loans and Subsidies	Between Groups	72.339	1	18.085	**65.778**	**.031**
	Within Groups	215.549	99	.275		
	Total	287.888	100			
Employees are more supportive when sanctioning the loan	Between Groups	50.493	1	12.623	**66.174**	**.050**
	Within Groups	149.555	99	.191		
	Total	200.048	100			
Bank policies and procedures towards loans and subsidies are very clear and transparent	Between Groups	255.122	1	63.781	**347.200**	**.015**
	Within Groups	144.021	99	.184		
	Total	399.143	100			
Satisfaction of the present repayment duration of loan	Between Groups	55.373	1	12.623	**65.147**	**.029**
	Within Groups	141.737	99	.191		
	Total	197.110	100			

Source: Field Survey

Above tables indicates that variables of loan sanctioning and repayment facilities of PLD **Banks** are covered in this analysis. The variables like banks loan sanctioning and recovering procedure is convenient, bank is more efficient and faster towards loans and Subsidies, Employees are more supportive when sanctioning the loan, Bank policies and procedures towards loans and subsidies are very clear and transparent, Satisfaction of the present repayment duration of loan. The analysis identified with the one way ANOVA test and table 1 shows the descriptive analysis with mean values, table 2 shows the ANOVA table with F values and its significance. Customers of all the banks are satisfied with the various services, it is proved by one way ANOVA, Mean values and F value is significant with the 5 percent level of significance **(0.000<0.05)**.

Loan sanctioning and recovering procedure of the PLD bank is satisfied by the customers with a less mean value, but customers are not highly satisfied. It is strongly agreed by the one way ANOVA. Mean value 2.5000 with F value 76.572 and it is significant with 5 percent level of significance (0.025<0.05).

Customers are opined that PLD bank is more efficient and faster towards sanctioning of loans and Subsidies with a mean value of 2.5000 with F value of 65.778 it is significant with 5 percent level of significance (0.031<0.05). Customers are moderately satisfied.

Customers having the positive opinion about bank employees are more supportive when sanctioning the loan with a mean value of 2.1818 with F value of 66.174 it is significant with 5 percent level of significance (0.005=0.05). Customers are not highly satisfied with employees behavior when loan sanctioning and giving subsidies. Majority of the borrowers of PLD banks are rural people and farmers, some are illiterates and very less knowledge about loan procedures and subsidies, in this way employee's role is very important.

Bank policies and procedures towards loans and subsidies are very clear and transparent in this variable customers opinion is tested with a mean value of 2.444 with F value of 347.200 it is significant with 5 percent level of significance (0.015<0.05). Customers are moderately satisfied with the bank policies and procedures; these are formed by the management of the bank.

Present repayment duration of loan of the bank is seven years, customers are adjust with the duration is proved by one way ANOVA, with a mean value of 3.000 with F value of 65.147 it is significant with 5 percent level of significance (0.029<0.05). Customers are moderately satisfied.

TESTING OF HYPOTHESIS

H1- Loans and Subsidies offered by PLD Banks have economically strengthen the farmers

ISSN 2394 - 7780

H0- Loans and Subsidies offered by PLD Banks do not economically strengthen the farmers

Table-3: Showing Regression Model summary of Loans and Subsidies offered by PLD Banks and economical strength of the farmers

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.785[a]	.615	.615	10.15251
a. Predictors: (Constant), Loans and Subsidies offered by PLD Banks				

(Source: Primary Data)

Table-4: Showing results of Analysis of variance of the Regression model of Loans and Subsidies offered by PLD Banks and economical strength of the farmers.

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	129853.010	1	129853.010	**1259.811**	**.000[b]**
	Residual	81118.739	787	103.073		
	Total	210971.749	788			
a. Dependent Variable: Economical strength of the farmers						
b. Predictors: (Constant), Loans and Subsidies offered by PLD Banks						

(Source: Primary Data)

Table-5: Showing Analysis of coefficients of the Regression Model of Loans and Subsidies offered by PLD Banks and economical strength of the farmers.

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	32.042	1.759		**18.213**	**.000**
	Loans and Subsidies offered by PLD Banks	3.526	.099	.785	**35.494**	**.000**
a. Dependent Variable: Economical strength of the farmers						

(Source: Primary Data)

This hypothesis is tested with simple linear regression model and it is found that the value of Beta co-efficient and it is associated t values are statistically significant at 5 per cent level of significance (p</000 in all these cases) therefore null hypothesis Loans and Subsidies offered by PLD Banks do not economically strengthen the farmers is rejected with a conclusion that the there is a significant relation between Loans and subsidies really financially and economically strengthen the farmers.

SUGGESTIONS

Bank need to take measures on Bank authority to dodge the misbehavior that is requested cash or other profit by the agriculturists while issuing the credit and appropriations.

Bank should expand the most extreme loaning measure of Rs.1000000.because it isn't adequate for the ranchers needs in the present situation to beat the issues like yield misfortune because of cataclysmic event and so forth,.

Bank need to consider expand their portion time of 7 years to stop the ranchers suicide endeavors since they are bringing about misfortunes because of deficient precipitation so agriculturists require additional era to pay the portion sum.

Bank need to diminish their financing cost from 13.50% to 9.50% in light of the fact that ranchers pay are not sufficiently adequate to pay the more loan cost.

Bank need to redesign with their framework from printed material to PC work to maintain a strategic distance from the decimation of reports; it tends to be spared in PC legitimately by giving appropriate security to the records.

CONCLUSION

The agriculturists are happy with the PLD bank towards the credit and endowments accommodate the agro items. Be that as it may, there is a need to change a few methods all the while.

ISSN 2394 - 7780

Based on factual information and examination, it very well may be presumed that PLD bank is fulfilled their clients. However, in some procedure like misbehavior by the bank representative are turned out to be real issue, the financing cost and most extreme loaning sum will be an issue in the PLD bank.

Absolutely PLD bank is happy with their present status. They are giving more advances and appropriations to agriculturists immediately. The representatives of the bank are very much coordinated with the clients and effective in their work.

Further research is required so as to recognize more issues with respect to the agriculturist's fulfillment towards the bank credits and appropriations for agro items.

REFERENCES

Books referred

- Prasanna Chandra – " financial management"
- L.m. bhole - "financial institutions"
- B.s. Raman - "banking theory and practices"

News papers

- Business line
- Business standard

Journals

- Management accounting
- ICFAI

Websites

- www.pld.com
- http://en.wikipedia

International Journal of Advance and Innovative Research
Volume 6, Issue 2 (XII): April - June, 2019
ISSN 2394 - 7780

MODERNIZATION OF INDIAN AGRICULTURE

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ABSTRACT
It has been 71 years since Independence where we all witnessed many developmental activities in every sector in India. The development started with blossoming of technology, from bullock carts to fighter jets, from cottage industry to MNCs, every sphere got developed due to technological advancements but still we are struggling to enhance the agricultural output. Even though 60% of total Indian population is dependent upon agriculture as their livelihood, the contribution from agriculture sector to GDP is 15.45% (2017) whereas, the nearest nation Nepal is contributing 27% (2017) from agriculture sector to its GDP with almost same percentage of population as India in agriculture sector. This paper provides the information of agriculture in pre and post-independence era, adaptation of modern technology for agricultural development in India and reasons for failing to adopt. This paper also provides an account of some modern methods that prevail in the world and recommendations to enhance the agricultural output in India.

Keywords: Modern agriculture, technology in agriculture, government policies.

INTRODUCTION
Indian farmers are dependent on heavy monsoon rains to score sufficient output. Another way to reduce dependency on the monsoon is the highly promoted 'micro irrigation'. To reduce the water use in Agriculture, 'micro-irrigation' is indeed a worthwhile system. By March 2015, 7.73 million hectares of land were covered by this method. It uses drip irrigation and sprinklers to water plants and seeds. Micro-irrigation is an economic and efficient way for irrigation with which farmers are able to control water use and save 20-48% of water, as well as increase yield by 20%. Acknowledging the seriousness of the issue of water shortage for use in the Agriculture Industry, the Indian Governments decided to collaborate with Israel for their water technology. Israel's water technology will assist India in reducing the cost of water desalination and water recycling for irrigation purposes. The Indian Government is also taking additional steps, such as transport water to drought ridden areas or educating farmers on water conservation. Farmers in India need to become more entrepreneurial, for example by adopting methods like the Agricultural Markets Support Programme in Africa, where farmers receive the know-how about crops and irrigation, as well as market demand, and cultivate popular cash crops in accordance with rehabilitated irrigation schemes. Farmers are organized in associations and learn how to market their products directly to big buyers without going through middlemen.

OBJECTIVES
1. This research provides the details about the factors (climate and government policies regarding the agriculture in India) influencing the Indian agriculture
2. This paper aims to observe the reasons for the failure of adaptation of modern methods in Indian agriculture.
3. This research focuses on some of the modern methods prevail in the world agriculture.
4. This paper aims to provide some suggestions to improve the production in Indian agriculture.

METHODOLOGY
This paper is prepared by using the secondary data such as articles and journals published in print media and data collected from previous surveys as well as the data provided by the national organizations as well as the world organizations and literature reviews by pervious authors.

LITERATURE REVIEW
- In 2011, K R Kakumanu explained about the adoption of micro irrigation projected has resulted water savings, yield and income enhancement at farm level, he took nine states for their research and gave some suggestions like reduction in capital cost of the system, provision of technical support for operation after installation and suggested about establishment of single state level agency for implementation of the program.
- In 2017, CH. Chandrasekar and CH. Sekhar discussed about the paper on bacterial attacks and lack of information resources. The main goal was to provide feasible solution for the finding problem and to enhance the productivity of agricultural sector. The Indian farmers getting market structures, weather alerts. It helps them to sell their products in global market and earn remarkable profits.

ISSN 2394 - 7780

- In 2016, Mahesh PJ, published a paper about modern agricultural practices through technology aided organic farming and new aspects of efficient large-scale organic crop cultivation by using the modern agriculture technics like Hydroponics and Aquaponics, aeroponics and indoor farming.
- In 2017, K. Lokesh Krishna proposed in his Paper about creating awareness of latest technology and practices. A novel wireless mobile robot that based on internet of things designed and implemented for various operations in field like forecasting weather, quantity and type of fertilizers and pest control measures, etc. can help the farmer in reducing the cost of hiring extra labor.
- H. Dholakia and Ravendra H. Dholakia, explained the impact of modernization of agriculture on the productivity in India. They laid emphasis on green revolution and its contribution to increase of agricultural productivity and found, the area under HYVP increased up to 2 million hectares in 1980 from 68 million hectares in 1960 and the productivity also increased from 0.8% before green revolution to 2.5% after green revolution.
- In 2014, Mayur M. Prajapati, Rakesh N. Patel mentioned the impact of modern technology in agriculture on tribal and non-tribal farmers by collecting the data from 220 farmers in Gujrat, they concluded that the impact is more on non-tribal because they are living in mainstream where the government policies, financial assistance, etc. are available for mainstream and absence to tribal farmers.
- In 2016, Thakur Mandakini and Bath K. S explained the modernization of Indian agriculture during the British in Punjab after it was annexed by the British. Wheat is the main and staple crop for the Punjab but there was no exportation to rest of the states so. Britishers laid rail connectivity and provide better and proper irrigation facilities leads to increase the output of agriculture in Punjab.

Time and man are said to be the two costliest things in the field of agriculture as they make the entire processes very expensive. Agriculture has been an integral part of the Indian economy despite its decline in share of GDP (15.45% as of 2017). Half of India's population depends on Agriculture as a livelihood. It is the largest producer of coriander, spices, millets, commercial crops and many more. Still at present 1/3rd of Indian population is under poverty. Many technological innovations since independence were adopted to make agriculture very easy and profitable. Advancement in technologies and implementation government policies will help for enhancing agriculture productivity in India. Some of the modern methods being followed in India at present are using harvesters, sowing machines, tractors, etc. Now-a-days we are also witnessed to drip irrigation as well as step farming in some terrain areas in India.

By exporting agricultural output to England, the trade with Indian sub- continent was triggered by the British at the end of 18^{th} century. Most of the exports were spices, millets and many more agricultural products. Permanent land revenue system was introduced in Bengal and a Botanic garden was started in Calcutta. The establishment of the Agricultural and Horticultural Society of India also took place during the British to develop the agriculture sector in India.

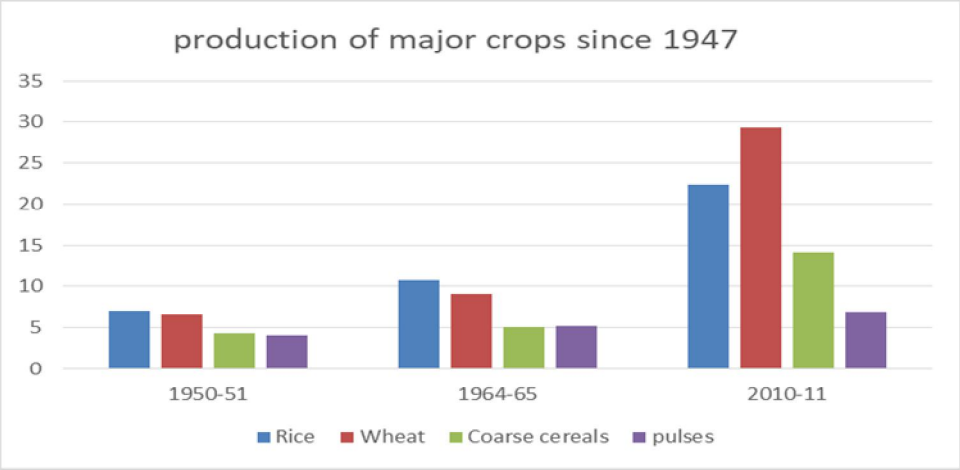
During 18^{th} and 19^{th} centuries, agriculture was the one of the leading sectors along with local industries but the jolt of Industrialization affected the Indian agriculture in mid-19^{th} century. With the establishment of new industries in India, the people started working in factories, leads to reduction in agriculture output. Britishers commercialized our Indian agriculture by focusing only on production of particular crops like Indica, Potato, sugar cane etc. Zamindars started take-over of farmers on the behalf of the British by levying taxes. Around $4/5^{th}$ of the total produce was taken by the zamindars from farmers in the form of taxes. There was no implementation of new technology during British rule in India other than constructing a very few canals to provide irrigation. People used sickle, plough, horses and oxen for cultivation.

Britishers in order to show their monarchy they hoarded the rice imports from Burma and caused for the increasing prices in 1943 ultimately leads to Bengal famine in which more than 2 million were dead because of hunger. By the time of independence India is left with low agriculture production, extreme poverty, farmer under the landlords as bonded labor etc. since 1947 in order to reduce the problem of low agriculture production Indian government started importing rice, wheat, etc.

Food production increased eventually in first five-year plan from 54 million tonnes in 1950 to 65.8 million tonnes in 1955. The third five-year plan gave priority to make the nation self-sufficient in food production. Fertilizer plants were also started during this plan. On the recommendations of dr. MS. Swaminathan, Green revolution was introduced in the field of agriculture by using high yield variety seeds increased the total

ISSN 2394 - 7780

production in some crops such as, wheat, rice, potato. We can make a point that introduction of green revolution was one of the first steps for starting the use of technology in Indian agriculture.



Source: Trends in agricultural productivity in India

FACTORS INFLUENCE THE INDIAN AGRICULTURE

There are many factors that can influence our Indian agriculture such as climatic conditions and government policies for agriculture development. Climatic conditions like rainfall shows much impact on agriculture production. There are two kinds of rainfall firstly, no rainfall, country like India where people depend more on rainfall due to lack of proper irrigation will lose their production in the case of no rainfall. Secondly, over rainfall which causes floods leads to vanish of crops? In these both cases farmers are left with zero or less produce from the total produce.

The Kharif which starts in June accounts for more than 50% of the food grain production due to southwest monsoon. The Rabi growing season starts in October because to the soil moisture of south-west monsoon. Fluctuations in south-west monsoons have a strong impact over both kharif and Rabi. The retrieving monsoon gives the substantial rainfall in much of Tamil Nadu and eastern Andhra Pradesh, allowing rainfed crop production in the Rabi season. In any case of low rainfall or over rainfall gives less production. People should not depend on rainfall alone but also depend on irrigation that provided through tanks, canals, wells etc.

(000 Hectares

Year	Source of Irrigation							Net Irrigated Area
	Canals			Tanks	Tube-Wells	Other Wells	Other Sources	
	Government	Private	Total					
1	2	3	4	5	6	7	8	9
2001-02	14993	209	15202	2196	23245	11952	4342	56936
2002-03	13867	206	14073	1811	25627	8727	3658	53897
2003-04	14251	206	14458	1916	26691	9693	4299	57057
2004-05	14553	214	14766	1734	25235	9956	7538	59229
2005-06	16490	227	16718	2083	26026	10044	5966	60837
2006-07	16802	224	17027	2078	26942	10698	5999	62744
2007-08	16531	217	16748	1973	28497	9864	6107	63189
2008-09	16686	195	16881	1981	28367	10389	6020	63638
2009-10	14789	188	14978	1587	28371	9992	7008	61936
2010-11	15472	171	15643	1980	28543	10629	6864	63659
2011-12	15833	172	16005	1919	29943	10595	7236	65697
2012-13	15506	165	15672	1753	30543	10763	7536	66266
2013-14	16115	163	16278	1842	31126	11312	7542	68100

Source: Directorate of Economics & Statistics, Ministry of Agriculture and Farmers Welfare.

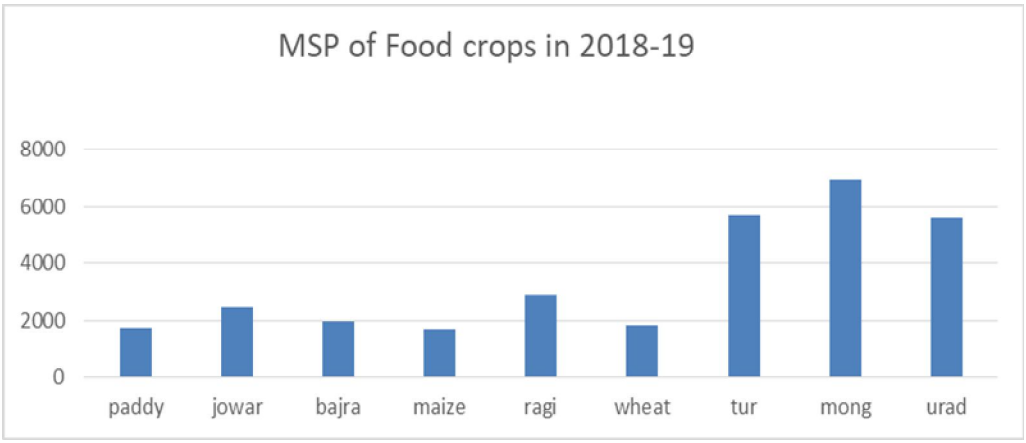
Though India has the largest irrigated area in the world, the coverage of irrigation is only about 40% of the gross cropped area as of today. One of the main reasons for low productivity is lack of irrigation which is the

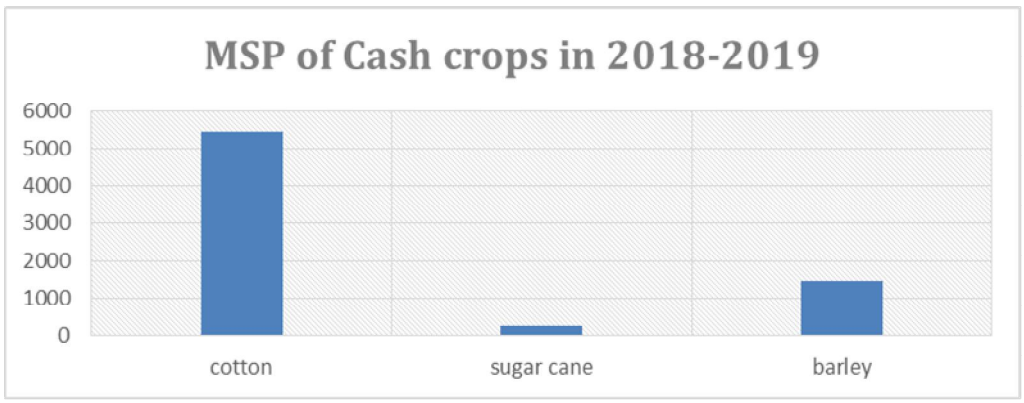
ISSN 2394 - 7780

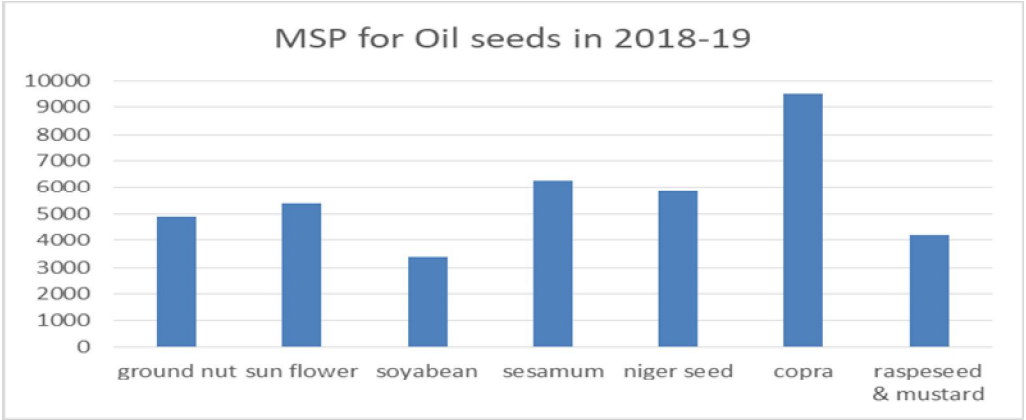
artificial application of water to the soil usually for assisting in growing crops mainly used to replace missing rainfall in periods of drought. It helps in cooling the soil and atmosphere to create more favorable environment for crop grown. In order to save water as well as to get output people should go for micro irrigation. It includes drip irrigation and sprinkler irrigation methods, has been introduced to conserve water and increase the water use efficiency in agriculture.

Drip method supplies water directly to the root zones of the crop through a series of pipes with the help of emitters, sprinkler irrigation method is as same as rainfall. The water will come out through nozzles into the air which subsequently break into small water drops and fall on the field surface and goes into the roots of the crop. By using these methods, the loss of water through evaporation is completely absent. Apart from reducing water consumption, drip irrigation method also helps in reducing the cost of cultivation and improvement in production of crops as compared to the same crops cultivated under flood method of irrigation. The area under drip irrigation method increased from 1500 hectares in 1985 to about 4.50 lakh hectares in 2005.

Government policies are also one of the reasons for the low agricultural productivity. Policies like minimum support prices which is the most common hindrance that every farmer face in India, the government of India fix minimum price for crops which is very low as compared to what farmers deserve in actual and this leads to less profit and sometimes loss to the farmers. As the government fixes the prices, market for famers becomes fixed to the MSP and they are losing what they actually deserve.







ISSN 2394 - 7780

From the above graphs, it is clearly mentioned that the average MSPs of crops are less than 8000/- per quintal. Government should boost the farmers by increasing MSP leads to improvement in production.

To increase the crop production government should increase the minimum support price of output and also should provide better financial assistance to the farmers for purchasing modern technology. Middle men should be eliminated from the market and allow the farmers to sell their products directly to the consumers.

Allocation of land for industrial development is also one of the reasons for less agricultural output. Sometimes, government provides land to private people in the name of development in which they allocate some fully fertile agriculture lands also. This leads to reduction of crop production.

Reasons for failing to adopt the modern technology:
In India 60% of total population are from rural areas with no proper **education**. They are unable to learn the usage of modern technology so, they still follow the traditional methods like using previous crop seeds for the next crop, using animals instead of machines and still dependent on rainfall.

By following those traditional methods, they get less output leads to less income and push into **poverty.** They cannot afford the modern expensive technology. The countries like India, small and marginal farmers do not adopt even a low-cost technology in some regions. They need zero cost technology or managemental type of interventions which is not always possible. If we give financial support, they will agree otherwise chances of adoption become meager.

Another reason is that farmers may not agree with a change in the method they know and practicing all the time which they see it working so, are denying adopting the modern ways of farming. There is a large gap between R & D and farmers in India where the developmental activities are unaware by the farmers.

Even though the financial institutions providing assistance the farmers are using those money for own causes like festivals, marriages and some farmers are using those money for drinking and gambling rather than purchasing new equipment for agriculture land.

Modern methods prevail in the world
Technology is the heart of development in every sector, some of the modern technology prevail in current world are as follows.

Soil cultivation
1. Cultivator - To stir the soil around a crop as it matures to promote growth and destroy weeds.
2. Chesil plow - Deep tillage done quickly and economical.
3. Harrow - Implement for breaking up and smoothing out the surface
4. Rototiller - Electric-powered lawn tool that uses blades called tines to churn and break soil.

Planting
1. Broadcast seeder - Implement used for spreading seed, fertilizer.
2. Air seeder – It allows consistent delivery from the seed-metering device to the seedbed via an air delivery method.
3. Transplanter - used for transplanting seedlings to the field.

Fertilizing and Pest Control
1. Sprayer – used for spraying chemicals and fertilizers to the crop.
2. Manure spreader- helps to spread manure for the crop

Harvesting / Post- Harvesting
1. Beet harvester – machine used for harvesting the crop
2. Corn harvester – used for harvesting corn crops
3. Huller - A rice huller is an agricultural machine used to automate the process of removing the husk.

Agrobots
An agrobot has a movable physical structure, sensor system and computer. It involves use of sensors, image processing algorithms and GPS. Agrobots, provide smart and multifunctional capabilities to the farmer. Usage of agrobots is highly profitable to the farms.

ISSN 2394 - 7780

Bio Technology: Genetic Engineering (Ge)
GE is not a new technology, but it has its importance in agriculture. Many of the farmers heard about it and some might be following; This GE is very helpful in reducing costs as well as helpi9ng in increasing in output. The express toxins present inside can defend the plant from all kinds of insects which farmer need not go across the field by spraying the pests.

Sensor Topology
Wireless sensor networks are being used to check water requirement of plants. There is also automatic switching on/off the pump motor on the basis of farm area and the status of irrigation system. Micro irrigation system can be connected to wireless sensor networks to monitor status of the system.

Suggestions to improve the Indian agriculture
1. Create awareness about the usage of modern methods in every village. The trained officials from agriculture and research institute, government and non-government organizations should educate the rural farmers on how to use the implements in field and the local government should have one window in the name of agriculture development which can provide every minute detail about agriculture such as which crop is best for the soil, how much quantity of fertilizers should be used, how much price they will get if they plant one particular crop, etc.to the farmers.
2. The minimum support price should be increased from what they are providing at present.
3. At present banks are providing agriculture loans with 4% effective interest rate per annum, to encourage the farmers and to purchase modern agriculture equipment like beet harvester, harrow, Chesil plow, tractors, etc. they should reduce the interest rates further.
4. Private individual should invest in agriculture by providing modern equipment, there are some crops which can be used as raw material for industries like, cotton for textile industry, vegetables for food industry, etc. those private industrialists should invest in those crops which can be the raw materials for their factories.
5. Government should not allot the agricultural land for industrial purpose.
6. Usage of new irrigation methods like drip irrigation and sprinklers should increase. It helps to save water as well as enhancement in production.
7. New technology such as Internet of Things (IoT) is introduced into the field of agriculture. It can forecast the weather and can also suggest the quantity of fertilizers should be use for crop. Technology like this should adapt to every farm in India. It works with the help of a computer.
8. Adaptation of genetically modified crops should increase. It can reduce the usage of chemicals and harmful fertilizers on crops. These crops can be cultivated in all seasons.
9. Adaptation of IT like GPS, Sensors, etc. Into the agriculture.

CONCLUSION
Over a century, agriculture is the back bone of our nation; it is the primary occupation of millions and the output of the agriculture are directly used as inputs for industrial sector. The effect of green revolution paves way to use high yield varieties and modern machineries increased the yield of agriculture over a period.

In the advanced world along with the advanced techniques of cultivation can increase the productivity by using modern machines like harvesters, air seeders, broadcast seeder, etc. adaptation of those methods can increase our agricultural output also. Along with machines, some modern techniques like drip irrigation, sprinkler irrigation, IT applications like internet of things, agrobots, sensor topology also helps in enhancement of our crop production.

REFERENCES
i. KR Kakumanu, Kadri Mohan 2011, Spread and economics of micro irrigation in India: Evidence from nine states.
ii. CH. Chandra Shekhar and CH. Shekhar 2017, productivity improvement in agriculture sector using big data tools.
iii. Mahesh PJ 2016, new aspect for organic farming practices. Controlled crop nutrition and soilless agriculture.
iv. K. Lokesh Krishna 2017, Internet of things applications for implementation of smart agricultural system.

ISSN 2394 - 7780

v. H. Dholokia and Ravendra H, modernization of agriculture and economic development: The Indian experience.

vi. Mayur M. Prajapati, Rakesh N. Patel, Rakesh D. Dhandhukla and Khattubhai D. Solanki: Impact of agriculture modernization on sustainable livelihood among tribal and non-tribal framers.

vii. Thakur mandakini and Bath K. S, modernization of agriculture in colonial Punjab and its impact on the rural economy

viii. Directorate of Economics & Statistics, Ministry of Agriculture and Farmers Welfare.

ix. Market information, minimum support prices, Ministry of Agriculture

International Journal of Advance and Innovative Research
Volume 6, Issue 2 (XII): April - June, 2019
ISSN 2394 - 7780

A STUDY ON THE IMPACT OF WOMEN SELF HELP GROUPS IN THE DISTRIBUTION OF PER CAPITA INCOME AMONG RURAL HOUSEHOLDS IN KANYAKUMARI DISTRICT, TAMILNADU

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ABSTRACT
Despite the decades of development the fact remains that women in India are a deprived section of society, not only the benefits of development excluded women as a category, in some ways development processes have enhanced male domination over women. They perform many activities at home and unrecognized. Women occupy a very low positioning in organized employment sector as compared to men. They are not perceived as substantial income generating source. In addition to economic factors, the rigidity of socially ascribed gender roles and women's limited access to power and productive resources are considered as important factors that have led to insecurity of women. A number of Rural Development programming has laid the foundation for the progress of women in rural areas but still a large group of rural women has been excluded from the development paradigm.

INTRODUCTION
In India, more than 68 per cent of people live in rural areas. Rural population constitutes the major proportion of the population and thus remains as a core for the development of the nation. Development with welfare would have no meaning if the level of income and welfare of the rural people did not increase. In recent years, Rural India is undergoing a sweeping transformation. Development of rural areas and the rural people has been the primary concern of the economic planning and development process of the country. In the wake of economic liberalization and structural adjustments and in order to provide a safety net, especially for the rural poor, top priority has been accorded to rural development through introduction of new programmes and restructuring of the existing ones. The Ministry of Rural Development is committed to eradicating poverty and hunger from the rural India and to usher in all round development of rural masses. As such there has been a paradigm shift in the policy of rural development, as the rural poor are treated as resource who form an integral part of the development strategy. Rural development was traditionally associated with agriculture. Agriculture development became a top priority for investment in the first plan. Although the priority changed in the subsequent plans the welfare of the rural population through providing development inputs has remained one of the major concerns of the government and planning bodies in the country.

STATEMENT OF THE PROBLEM
Women population in India was reported to 48.18 per cent in the year 2018 according to the report of World Bank development indicators. Since women constitute one half of the population, improving the economic condition and bringing them into the mainstream of development through promoting economic activities will be an important strategy for improving the welfare of the family and the nation as a whole. One of the programmes which focus on women participation to achieve development is SHGs. As most of the studies have identified lack of finance as one of the important factor for rural poverty, financial institutions where linked with SHGs for easy access of credit to women. This programme was considered as a very big success in most part of the country especially in the southern region. It is observed that SHG-Bank Linkage programme has reached the saturation stage in the recent past. Hence analysing the current status of the programmes in terms of how far it has reached the rural women, to what extend it has benefited women living Below Poverty Line, how much women population has covered under financial sector, whether it has empowered women in terms of economic, social and political aspects, to what extend it has motivated women entrepreneurship especially in rural areas and finally, in what all areas it has failed should be studied to identify the lapses in the microcredit delivery system and increase the efficiency of the programme. On the other hand, a detail research which studies the scope of linking the other welfare schemes for women with SHGs should be studied to design one single holistic scheme for the welfare of the women in the country. This include the schemes which covers women health, pension for widows, micro insurance, loans to promote women entrepreneurship, loans for girls education, nutritional food for pregnant women etc. In this backdrop, the study is more appropriate in today's environment because it evaluate the impact of SHG programme on rural house hold development in five aspects i.e., Increase in standard of living and income level, empowerment of women through economic, social and political aspects , financial inclusion through linking them to formal banking system and promoting and supporting women entrepreneurship.

ISSN 2394 - 7780

OBJECTIVES

1. To study the socio-economic condition of rural women in Kanyakumari District.
2. To find the impact of SHGs in the per capita income of rural women.

HYPOTHESIS

1. Income inequality among sample respondents is reduced significantly after joining SHGs.

METHODOLOGY

The study is descriptive in nature pursuing with an aim to analyse the impact of SHGs in the per capita income of rural women in Kanyakumari District. The analysis is based on primary data collected through semi-structured questionnaire. To analyse the collected data Lorenz curve and Gini-coefficient was used.

THE AREA OF STUDY

Kanyakumari is situated in the southernmost part of the Indian peninsula surrounded by Kerala state in the west and north-west, Tirunelveli district in the north and east, Gulf of Mannar in the south-east, Indian Ocean in the south and Arabian Sea in the south-west. It is the smallest district in Tamil Nadu and has a total area of 1,684 sq km which is 1.295 percent of the total area of the state. Administrative set-up of the district includes two revenue divisions, four taluk and nine blocks. The District has four Municipalities, six Assembly Constituencies and One Parliamentary Constituency. There are 97 village panchayats and 56 town panchayats. Nagercoil is the headquarters of Kanyakumari District.

Sample Design

As the research focus on the role of SHGs in income inequality on rural areas, the study excludes the SHGs belong to town panchayats and municipalities. The list of SHGs belong to village panchayat was collected from mahalir Thittam office of Kanyakumari District. A total of 500 SHGs was selected from different village panchayats of Kanyakumari District.

Socio-Economic Profile of SHG Members

In this section an attempt is made to present the socioeconomic profile of sample SHG members.

Age-wise Classification of SHG members

Age is an important factor, which represents the physical and mental maturity of a person. Age and socio-economic activities are inter-related. Hence the age limit to join SHGs has been fixed as 18 to 60 considering it as a productive age. The women below 18 and above 60 are not permitted to join in the SHGs as per the norms of Mahallir Thittam Scheme in Tamil Nadu.

Table-1: Age-wise Classification of SHG Members

Age (in years)	No. of Respondents	Percentage
Below 20	24	4.80
20 - 30	136	27.20
30 - 40	125	25.00
40 - 50	155	31.00
Above 50	60	12.00
Total	**500**	**100.00**

Source: Primary data

Table.1 states that 31 per cent of sample SHG members are between the age group of 40 to 50. Followed by that 27.20 per cent of them belongs to the age group of 20 to 30.The participation of women below age 20 is relatively very low. The mean age of sample SHG members is 45.35. This reveals that experienced middle age group women between the age group of 40 to 50 are taking active part in SHG activities. Hence more importance should be given to cover the age group between 18 and 30.

Marital Status-wise Classification of SHG members

Marriage is considered to be an essential thing in civilized society and a most important part in women's life. When it comes to economic activity, married women face a conflict over time spent on household work with time spent on paid work. This problem mainly arises because of their immobility in labor market after marriage. It becomes one of the important factors which restrict the income generating activities carried out by women.

ISSN 2394 - 7780

Table-2: Marital Status-wise Classification of SHG members

Marital status	No. of Respondents	Percentage
Unmarried	43	8.60
Married	437	87.40
Widowed/Divorcee	20	4.00
Total	**500**	**100.00**

Source: Primary data

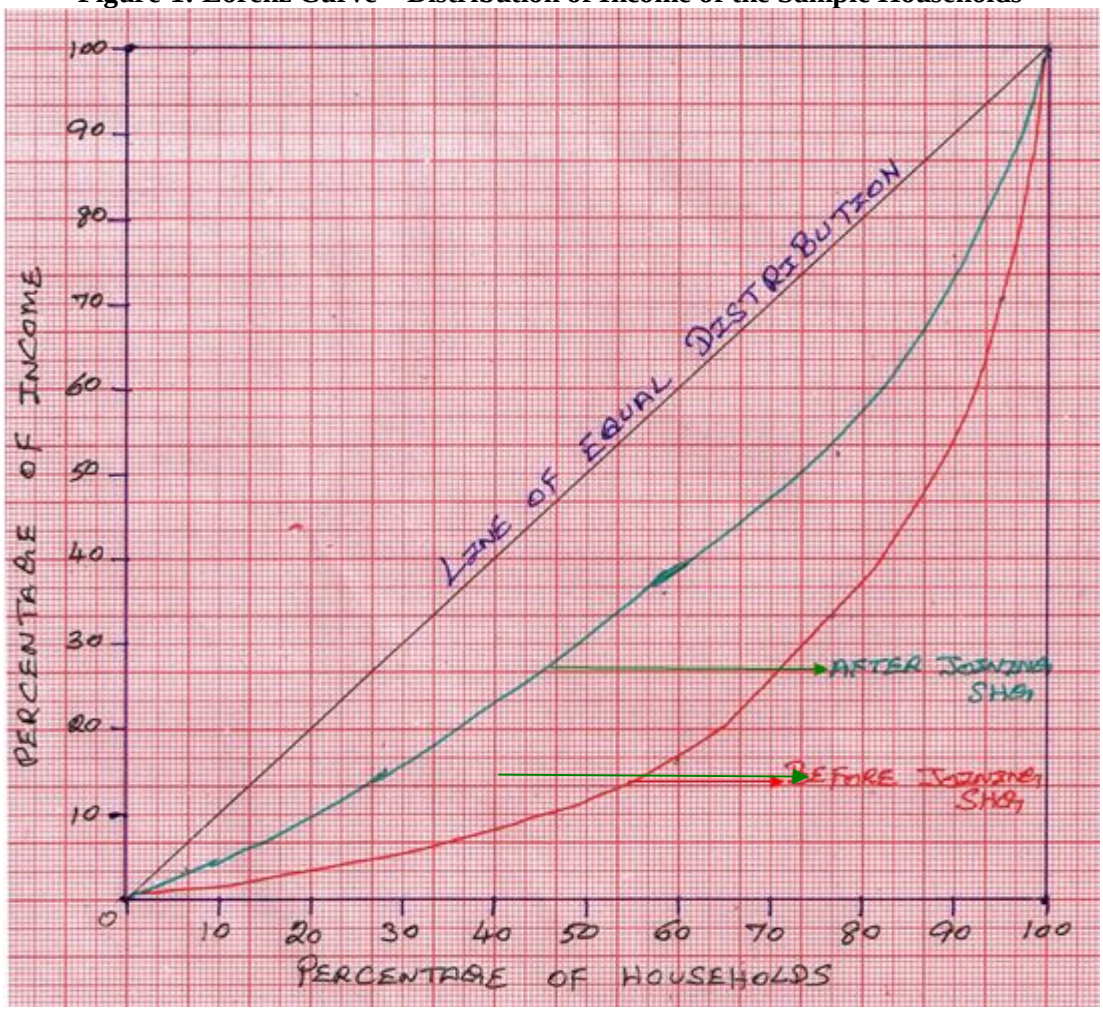
Table.2 clearly states that 87.40 per cent of sample SHG members were married and four per cent of sample SHG members were widow/divorcee. Only few of them were unmarried. It is clear from the table that the participation of married women is high in SHG activities.

Impact of SHGs on Per capita Income of Rural Households

The measure of the degree of inequality in the distribution of per capita income of SHGs members is carried out by using Lorenz curve. Lorenz curve is given as a box diagram and the 45^0 line represents the line of equal distribution. Actual distribution is represented by their cumulative frequency curve. The curve fell entirely within unit square and the curve hung below the diagonal joining (0, 0) and (1, 1) when there was perfect equality the curve coincided with the diagonal. If the cumulative curve is far from the line of equality, then the inequality is higher for the distribution considered.

Lorenz curve has also been drawn to know about the extent of inequality in the sample respondents. The Lorenz curve for the professional income is depicted in Figure 1. It explains that there is s significant difference in the distribution of SHGs members' income among different income groups.

Figure-1: Lorenz Curve – Distribution of Income of the Sample Households



Gini Co-efficient Ratio

The Gini co-efficient ratio is a method used to measure income inequality among the group of respondents. The greater the value of the Gini co-efficient, the larger would be the inequality and vice versa. In this study, the

ISSN 2394 - 7780

Gini co-efficient is fitted to measure the level of inequality among all the 500 respondents of the SHG members and it is represented in Table 3.

The following form of formula is computed for measuring Gini co-efficient.

$$G = 1 + \frac{1}{n} - \frac{2}{n^2 \bar{y}} (ny_i + (n-1)\, y_2 \ldots\ldots + 2y_{n-1} + y_{n-1} + y_n)$$

Where

G – Gini Co-efficient

n – Number of individuals

y_i – Income of individual rank i ($y_t <= y_2 <= y_{n-1} <= y_n$)

y – Mean income

Table-3: Gini Co-efficient of Annual Income Before and After Joining SHGs

Income	Gini Co-efficient
Before Joining SHG	0.6231
After Joining SHG	0.3348

It is observed that the Gini ratio is 0.62 (1-0.38) which indicates that a high income inequality exists among the respondents before joining the SHGs. After joining SHGs, inequality of income among respondents has been reduced to a large extent. The Gini ratio is 0.33 (1-0.67). This may be attributed to their increase in income, savings and borrowings. The Gini ration was employed to test the hypothesis that there is the income inequality among sample respondents is reduced significantly after joining SHGs. The calculated value of Gini ratio after joining SHG is less than the before joining. Therefore, the hypothesis is "the income inequality among sample respondents is reduced significantly after joining SHGs" which is proved true and hence it is accepted.

CONCLUSION

The study reveals that the mean age of sample SHG members is 45.35. This reveals that experienced middle age group women between the age group of 40 to 50 are taking active part in SHG activities. It is concluded that there is a significant difference in the per capita income of SHG members before and after joining SHGs in Kanyakumari District.

REFERENCE

1. Karmakar, K.G., Rural Credit and Self-help Group-Micro finance Needs and concepts in India. New Delhi: Sage Publications, 1999, p.270-271.
2. Arjun Y. Pangannavar, Women SHG Programme and Rural Poverty: A Micro Study, Southern Economist, 49(4): June 15, 2010.
3. Bhaskar Bagchi and Gangotree Gosh, Microfinance through Self Help Groups Women Micro Entrepreneurs in West Bengal, Southern Economists, 50(11): October 1, 2011, pp.39-43.
4. Chandrakavate, M.S, The SHGs Model of Microfinance: A Silent Movement towards Empowering Rural Women, Southern Economist, 44(17): January, 2006, pp.20-24.
5. Kuntala Lahiri-Dutt and Gopa Samanta, Constructing Social Capital: Self-Help Groups and Rural Women's Development in India, Geographical Research, 44(3):2006, pp.285–295.
6. Sasikumar, G., and Sethuraman, D., Role of Micro Finance in Women Entrepreneurship Development - A Case Study on making of 'Pickles', Kisan world, 41(4): April 2014, pp.55-57.
7. Shashikala and Uma.,Women Empowerment through SHGs: A Study, Southern Economist, 49(19): February, 2011, pp.51-54.

International Journal of Advance and Innovative Research
Volume 6, Issue 2 (XII): April - June, 2019
ISSN 2394 - 7780

AN OVERVIEW OF THE INDIAN TEA INDUSTRY: A STUDY ON ITS PERFORMANCE

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ABSTRACT
This paper aims to study the performance of the Indian tea industry as compared to other industries with its vital role of providing employment to a vast area of the Indian population. The paper is based on secondary data and mainly focuses on the trade and employment aspect of the industry.

INDIAN TEA INDUSTRY: AN OVERVIEW

Tea is one of the most popular and refreshing beverage of the world. It is not just a beverage in India but is more like a staple drink and this product is indispensable from an Indian's daily life. India is one of the largest producers of fine quality tea in the world. More than 600 million kilograms (*indianmirror.com*) of orthodox Assam and CTC tea, the finest quality tea are consumed every year.

Due to strong geographical indications, strategic expansion of markets, continuous innovation, heavy investments in units that process tea and augmented product mix, India acts as one of the top producers of the finest quality tea. In addition to this, India also tops the list as one of the largest consumers of tea in the world with almost three-fourths of the consumption of the produce happening locally.

Tea was indigenous to the northern and eastern parts of India originally but the tremendous growth and expansion of the industry has made India one of the largest producer, consumer and grower of tea in the world and has retained its leading position for the past 150 years. Nilgiri, Assam and Darjeeling are the prominent three areas for tea cultivation. The land used in producing tea has increased by 40% and the production by 250% since 1947 (*tea. in/industry*).

There has even been an increase in tea exports bringing roughly about Rs 1847 crores per year (*tea. in/industry*). The sector is labour intensive and more than 3.5 million (*tea. in/industry*) Indian workers, more than half being women are employed in the industry. The freshness and flavour of the tea is on account of most of the factories being situated within the cultivation region. Due to the wide assortment of tea, tea enthusiasts around the world find India an ideal destination for the same.

Table-1: Overview of India

Year	Nominal GDP In US Dollars (millions)	Total Imports In US Dollars (thousand)	Total Exports In US Dollars (thousand)
2000	476636	-	-
2001	493934	50,671,106	43,878,489
2002	523768	57,453,469	50,097,958
2003	618369	72,430,524	59,360,659
2004	721589	98,981,129	75,904,200
2005	834218	140,861,667	100,352,637
2006	949118	178,212,440	121,200,606
2007	1238700	218,645,294	145,898,053
2008	1224096	315,712,106	181,860,898
2009	1365373	266,401,553	176,765,036
2010	1708460	350,029,387	220,408,496
2011	1843018	462,402,791	301,483,250
2012	1835821	488,976,378	289,564,769
2013	1875157	466,045,567	336,611,389
2014	2049501	459,369,464	317,544,642
2015	-	390,659,088	264,020,963

Source: IMF's World Economic Outlook database, Trademap.org

ISSN 2394 - 7780

Graph-1: Overview of India

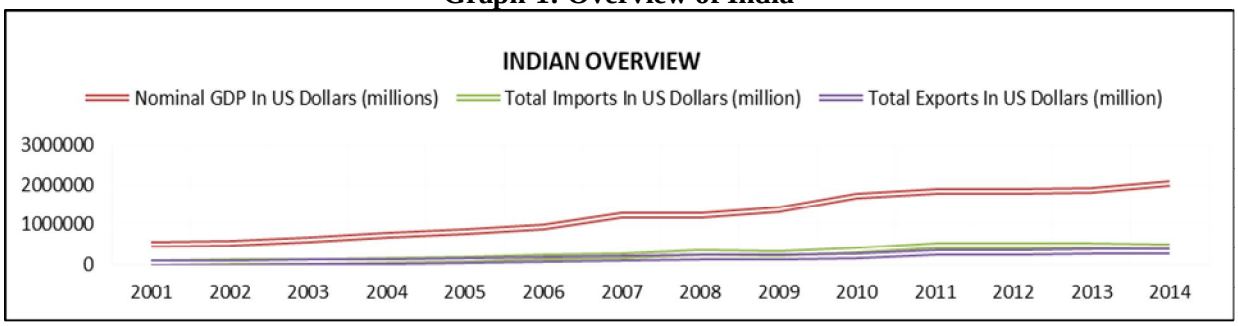


Table-2: Area under Tea Cultivation (End-2013) & Production (2013-14) – Financial Year

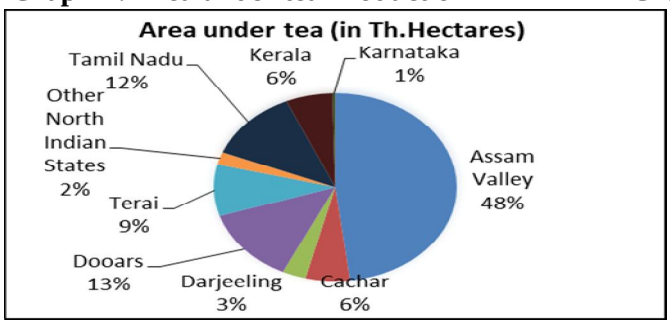
State/Districts	Area under tea (in Th.Hectares)	Production (million Kgs)
Assam Valley	270.92	581.03
Cachar	33.48	48.02
TOTAL ASSAM	304.40	629.05
Darjeeling	17.82	8.91
Dooars	72.92	177.85
Terai	49.70	125.34
TOTAL WEST BENGAL	140.44	312.10
Other North Indian States	12.29	23.92
TOTAL NORTH INDIA	457.13	965.07
Tamil Nadu	69.62	174.71
Kerala	35.01	63.48
Karnataka	2.22	5.52
TOTAL SOUTH INDIA	106.85	243.71
ALL TOTAL	**563.98**	**1208.78**

Source: teaboard.gov.in – Tea Board of India

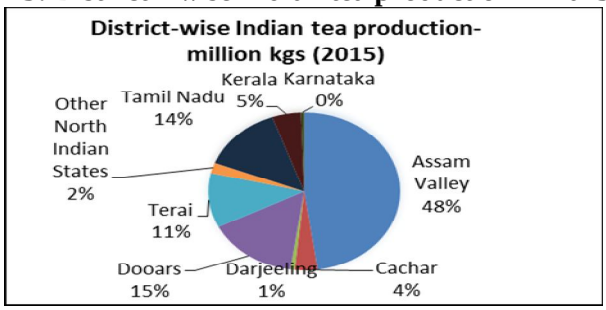
Table-3: District Wise Indian Tea Production – Calendar Year (Million Kgs)

District/State	2012	2013	2014	2015
Assam Valley	537	573.98	561.56	568.87
Cachar	53	47.89	49.41	45.70
TOTAL ASSAM	590	621.87	610.97	614.57
Darjeeling	9	9.13	8.51	8.72
Dooars	157	177.90	189.16	181.70
Terai	114	125.85	131.79	132.96
TOTAL WEST BENGAL	279	312.88	329.46	323.38
Other North Indian States	18	23.87	24.77	25.68
TOTAL NORTH INDIA	887	958.62	965.20	963.63
Tamil Nadu	171	173.36	169.79	162.94
Kerala	63	62.84	65.58	58.01
Karnataka	6	5.59	6.74	6.52
TOTAL SOUTH INDIA	239	241.79	242.11	227.47
ALL INDIA	1126	1200.41	1207.31	1191.10

Graph-2: Area under tea Production



Graph-3: District – wise Indian tea production in 2015



Source: teaboard.gov.in

ISSN 2394 - 7780

HISTORY OF THE INDUSTRY

Robert Bush in 1823 discovered indigenous tea plants in Assam and marked the birth of the Indian tea industry. This gained momentum when the tea trading monopoly in China was lost to the East India Company in 1833. The scientific deputation sent to report on tea prospects in 1835 saw the hills between Burma and Assam full of potential. C.A Bruce who was made the superintendent of Tea Forests in 1836 formed the Bengal tea company in Calcutta and a similar one in London. Both had the objective of tea purchase from the East India Company's plantations. The first Indian tea planter who holds the credit for the first Assamese variety of tea's commercial plantations was Maniram Dewan.

The India Tea Association was formed by tea planters in 1881 with Calcutta headquarters to promote common aims and interests. Many such associations gained formation in South and North India's tea regions. Originally tea was consumed only by the anglicized Indians and only in 1920's did it gain popularity through the rest of India and 1950's for the rural part of North India.

The first consignment of tea was shipped to London from India in 1839 and was sold at an auction for a price of 6 to 34 shillings per pound. Two-thirds of experimental tea exchanged company hands in 1840. The final dividends were paid by the first tea company in India in 1852 and the second limited company called Jorhat Company was formed in 1859 in Assam. 1862-67 witnessed the start of tea cultivation in Chotta Nagpur and Chittagong. In a few months, the industry grew in India allowing it to dominate the world market along with Sri Lanka.

For nearly a century, India was the highest producer of tea but China overtook it recently with more land available to them. As of 2013, green tea consumption in India showed a growth pattern of over 50% per annum. In 2013-14, India held a significant share in the world tea market with 12% (*indianmirror.com*) share of world tea exports. It also employs over 3.5 million workers spread over 1500 estates and is the second largest employer (*indianmirror.com*).

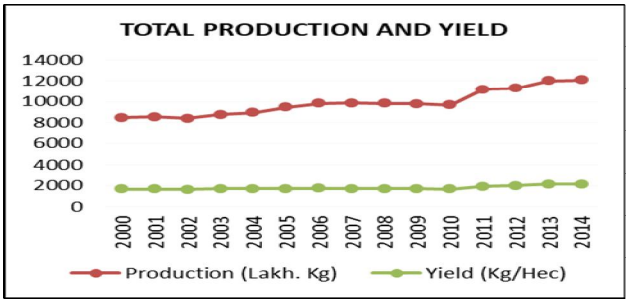
Table-4: Area under Production and Yield - India

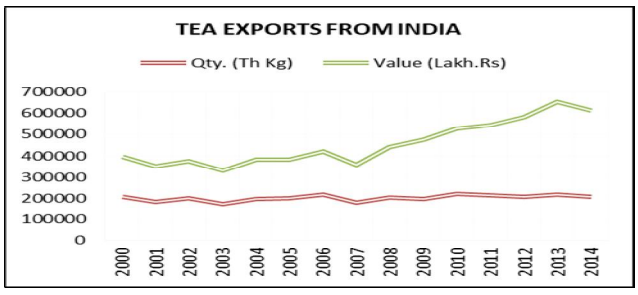
Year	Total Area (Hec)	Production (Th. Kg)	Yield (Kg/Hec)
2000	504366	846922	1679
2001	509806	853923	1675
2002	515832	838474	1625
2003	519598	878129	1690
2004	521403	892965	1713
2005	555611	945974	1703
2006	567020	981805	1732
2007	578458	986427	1705
2008	579353	980818	1693
2009	579353	979000	1689
2010	579353	966400	1668
2011	579353	1115720	1925
2012	563979	1126330	1997
2013	563979	1200040	2127
2014	563979	1207310	2141

Source: indiatea.org

Graph-4: Total Production and Yield

It can be seen from the above graph that even though the total area under production and the production has been increasing, the yield per hectare has been declining. This can be attributed to the aging of tea bushes, exhaustion of soil and insufficient replanting.





ISSN 2394 - 7780

TEA STATISTICS

Table-5: Tea Exports of India (Including Instant Tea)

Year	Qty. (Th Kg)	Value (Th.Rs)	U.P (Rs/Kg)
2000	206816	18986119	91.80
2001	182588	16821115	92.13
2002	201002	17533989	87.23
2003	173684	15902128	91.56
2004	197668	18411416	93.14
2005	199050	18309786	91.99
2006	218737	20065260	91.73
2007	178754	18101095	101.26
2008	203117	23929136	117.81
2009	197903	27858465	140.77
2010	222019	30583081	137.75
2011	215410	32918700	152.82
2012	208230	37507600	180.12
2013	219060	43552300	198.81
2014	207440	40540200	195.43

Source: indiatea.org

Graph-5: Tea Exports from India

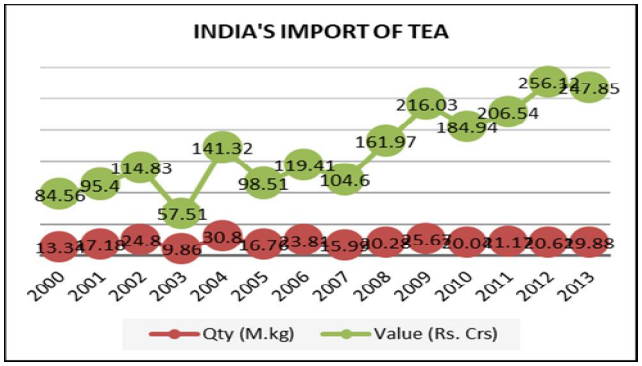
The export quantity as seen from the above graph has either been declining or showing a constant trend because of the lack of increase in demand for Indian tea. This is because the quality of Indian tea is poor compared to the other top tea exporting nations. This is one of the reasons that India is just the 4th largest exporter of tea in spite of it being the 2nd largest producer. The export revenue received from the sale of tea abroad has increased with the rise in prices at an increased rate. But there is little price realization.

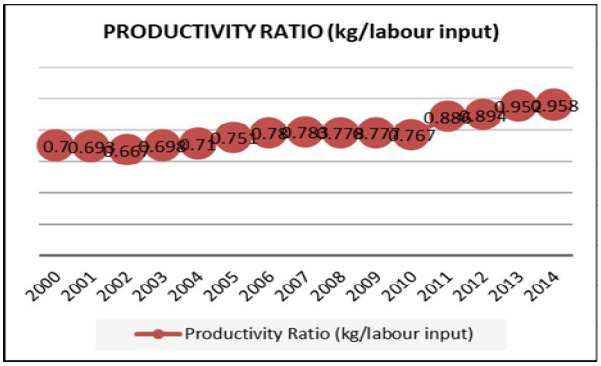
Table-6: Import of Tea into India

Year	Qty (M.kg)	Value (Rs. Crs)	Unit C.I.F Price (Rs/Kg)
2000	13.34	84.56	62.96
2001	17.18	95.40	55.50
2002	24.80	114.83	46.30
2003	9.86	57.51	58.33
2004	30.80	141.32	45.88
2005	16.76	98.51	58.79
2006	23.81	119.41	50.15
2007	15.99	104.60	65.43
2008	20.28	161.97	79.90
2009	25.67	216.03	84.16
2010	20.04	184.94	92.26
2011	21.17	206.54	97.57
2012	20.62	256.12	124.21
2013	19.88	247.85	124.67

Source: indiatea.org

Graph-6: India's import of tea **Graph 7: Productivity ratio**





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The quantity of tea imported is more or less constant because most of the domestic demand for tea is met by the domestic production itself. About 80% of tea produced in India is consumed by its domestic customers. India has had a cyclical trend of the import payments abroad with fluctuations in tea prices abroad and at home.

Table-7: Employment of Labor in Tea Plantation

Year	Avg.No. of labor in tea plantation	Total production (Th. Kg)	Productivity Ratio (kg/labor input)
2000	1210055	846922	0.700
2001	1232150	853923	0.693
2002	1256210	838474	0.667
2003	1256210	878129	0.698
2004	1257610	892965	0.710
2005	1258800	945974	0.751
2006	1259500	981805	0.780
2007	1259950	986427	0.783
2008	1259950	980818	0.778
2009	1259950	979000	0.777
2010	1259950	966400	0.767
2011	1259950	1115720	0.886
2012	1259950	1126330	0.894
2013	1259950	1200040	0.952
2014	1259950	1207310	0.958

Source: indiatea.org

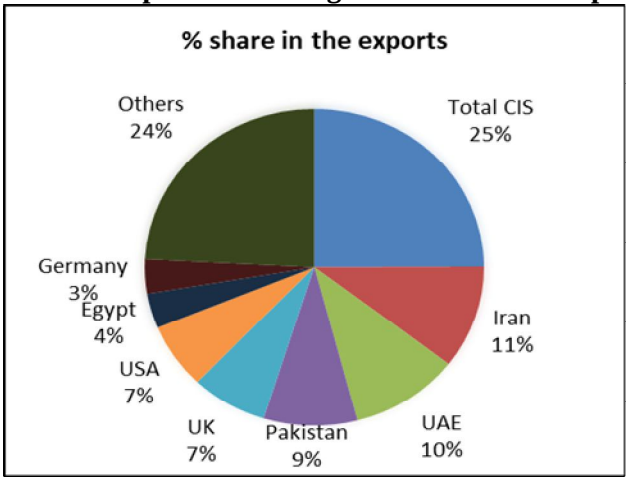
The productivity ratio of tea has been increasing at a decreasing trend. The increase is not enough to offset the increase in cost of production and wage rise. This is just a quantitative term. Qualitatively the productivity ratio has gone down. Earlier the same quantity of tea leaves would give more output of tea product than it is giving at present.

Table-8: Destination Wise Tea Exports from India (2013)

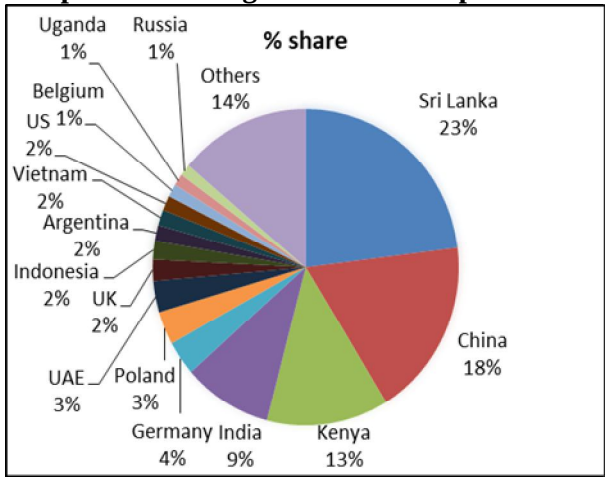
Countries	Quantity (million kg)	% share in export
Total CIS	52.81	24.93
Iran	22.34	10.54
UAE	22.09	10.43
Pakistan	18.97	8.95
UK	15.40	7.27
USA	14.07	6.64
Egypt	7.49	3.54
Germany	7.47	3.53
Others	51.22	24.18
Total	211.86	100

Source: Tea industry report 2014 (www.onicra.com)

Graph-8: Percentage share in India's exports



Graph 9: Percentage share in the exports



ISSN 2394 - 7780

The above graph shows the top importers of Indian tea. These are the top markets for tea exported from India. In some countries the ratio of percentage of tea imported from India has gone down because of fall in Indian tea quality whereas in others India has been able to find new market opportunities.

Table-9: Major World Exporters of Tea (2014)

Rank	Country	Value(US Dollars million)	% share
1.	Sri Lanka	1600	23
2.	China	1300	18.2
3.	Kenya	907.5	12.9
4.	India	656.2	9.4
5.	Germany	248.2	3.5
6.	Poland	237	3.4
7.	UAE	224.6	3.2
8.	UK	153.6	2.2
9.	Indonesia	134.6	1.9
10.	Argentina	115.1	1.6
11.	Vietnam	113.6	1.6
12.	US	107.8	1.5
13.	Belgium	92.4	1.3
14.	Uganda	84.7	1.2
15.	Russia	83.7	1.2

Source: www.worldstopexports.com

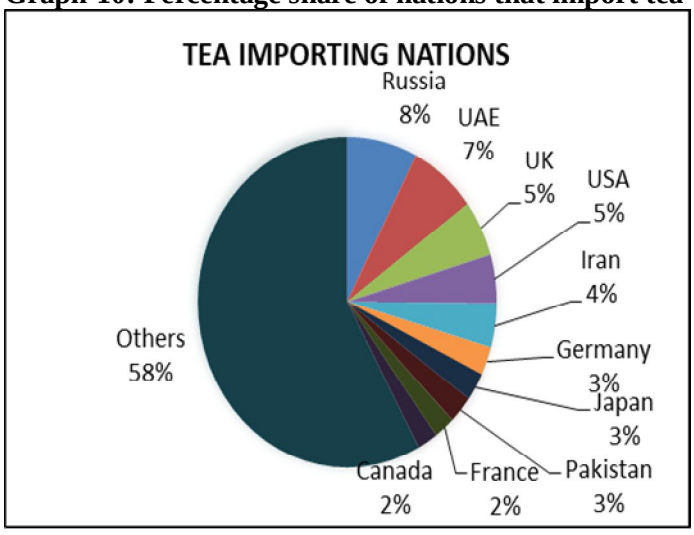
India exports about 9% of the total global tea exports. Its main competitors are Sri Lanka, China and Kenya. Sri Lanka has an advantage over India because of its trade agreements with India. This enables it to export tea into India creating a competition for the domestic sellers. Other countries also enter the Indian market through Sri Lanka.

Table-10: Major Tea Importing Countries (2014)

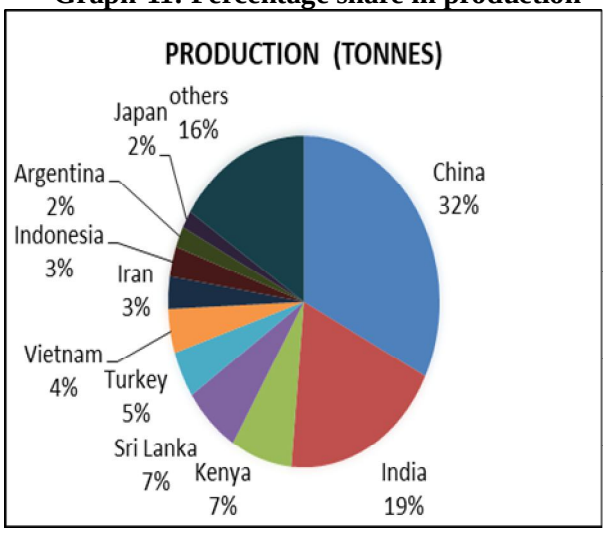
Rank	Country	Value (US $)
1.	Russia	510872000
2.	UAE	485768000
3.	UK	367564000
4.	USA	318535000
5.	Iran	284873000
6.	Germany	183141000
7.	Japan	182173000
8.	Pakistan	181699000
9.	France	149905000
10.	Canada	148197000

Source: www.toptenfindings.com

Graph-10: Percentage share of nations that import tea



Graph-11: Percentage share in production



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India comes under the other 58% who import tea and is not in the top ranks for import because 80% of its domestic consumer demand is met through local production.

Table-11: Major tea producing countries (2015)

Rank	Country	Production (metric tonnes)
1.	China	1640310
2.	India	966733
3.	Kenya	369400
4.	Sri Lanka	340000
5.	Turkey	230115
6.	Vietnam	217000
7.	Iran	158910
8.	Indonesia	150478
9.	Argentina	102890
10.	Japan	85990

Source: www.perfectinsider.com

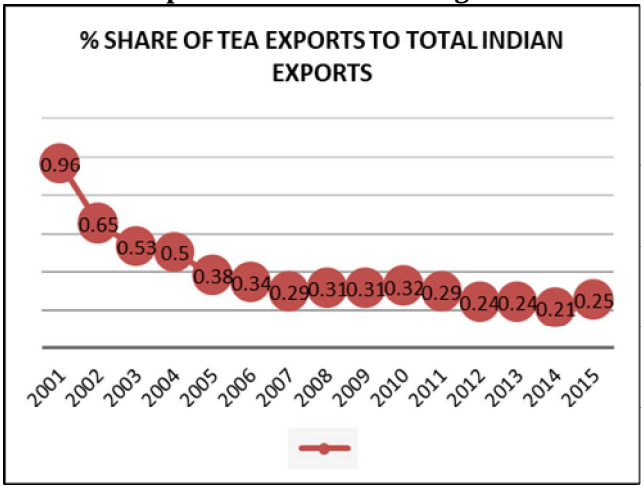
India produces about 19% of the total global tea production. It's only other competitor being China. But most of the tea produced in India is of poor quality and is sold off in domestic auctions or in domestic markets at low loss inducing profits. Despite producing 19% of total world tea produce, it is only about 9% of world tea exports and the country consumes 75-80% of its own production. The tea sector in the country is largely organized since the total production's 74% and 72% of the total area under tea cultivation comes from the organized sector.

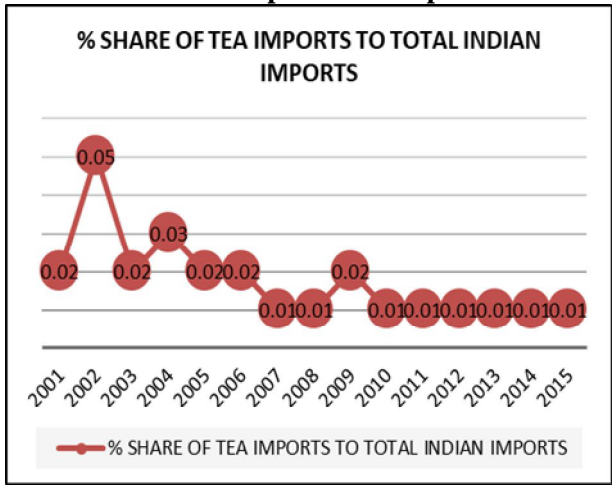
Table-12: Share of India's Tea Exports to Total Exports of India

Year	India's tea exports (In US $ thousands)	Total Exports In US Dollars (thousand)	% Share
2001	422,932	43,878,489	0.96
2002	324,294	50,097,958	0.65
2003	313,381	59,360,659	0.53
2004	381,624	75,904,200	0.50
2005	385,483	100,352,637	0.38
2006	415,287	121,200,606	0.34
2007	433,340	145,898,053	0.29
2008	560,493	181,860,898	0.31
2009	554,326	176,765,036	0.31
2010	694,852	220,408,496	0.32
2011	865,427	301,483,250	0.29
2012	685,456	289,564,769	0.24
2013	816,055	336,611,389	0.24
2014	656,214	317,544,642	0.21
2015	671,795	264,020,963	0.25

Source: trademap.org

Graph 12 and 13: Percentage share of tea exports to total Indian exports and imports





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The share of Indian tea exports to total exports of India has been falling in the recent years with the rise in foreign competition and fall in demand for Indian tea.

Table-13: Share of India's Tea Imports to Total Imports of India

Year	India's tea imports (in US dollars thousand)	Total Imports (in US Dollars thousand)	% Share
2001	11,337	50,671,106	0.02
2002	26,693	57,453,469	0.05
2003	13,357	72,430,524	0.02
2004	31,311	98,981,129	0.03
2005	24,167	140,861,667	0.02
2006	28,774	178,212,440	0.02
2007	29,285	218,645,294	0.01
2008	40,301	315,712,106	0.01
2009	51,871	266,401,553	0.02
2010	48,940	350,029,387	0.01
2011	44,744	462,402,791	0.01
2012	46,231	488,976,378	0.01
2013	43,843	466,045,567	0.01
2014	49,568	459,369,464	0.01
2015	54,457	390,659,088	0.01

Source: trademap.org

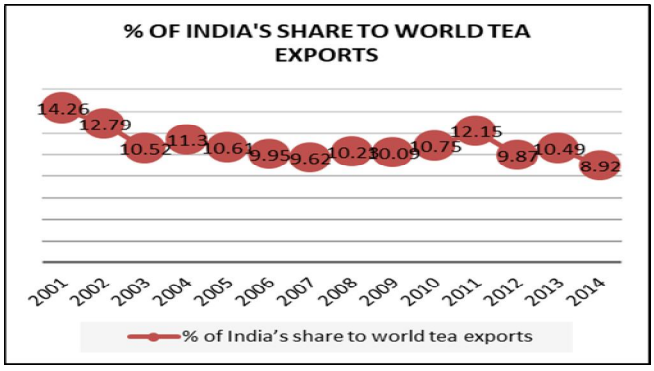
The percentage share of tea imports to total imports are at a low rate and is either falling or remaining constant as most of its consumption need is met by domestic production or through domestic markets.

Table-14: India's share in world tea exports

Year	India's tea exports (In US $ thousands)	World tea exports (In US $ thousands)	% of India's share to world tea exports
2001	422,932	2,966,022	14.26
2002	324,294	2,533,617	12.79
2003	313,381	2,980,103	10.52
2004	381,624	3,375,825	11.30
2005	385,483	3,632,008	10.61
2006	415,287	4,175,167	9.95
2007	433,340	4,502,603	9.62
2008	560,493	5,477,804	10.23
2009	554,326	5,493,622	10.09
2010	694,852	6,461,543	10.75
2011	865,427	7,123,718	12.15
2012	685,456	6,945,274	9.87
2013	816,055	7,779,560	10.49
2014	656,214	7,359,883	8.92

Source: trademap.org

Graph-14: Percentage of India's share to world tea exports Graph-15: Percentage of India's share to world tea imports



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The above graph shows the share of Indian tea exports to total world exports over a number of years. Currently the share has fallen from the previous 14.26% in 2001 to 8.92 in 2014 even though it is the 4th largest exporter of tea.

Table-15: India's share in world tea imports

Year	India's tea imports (in US $ thousand)	World tea imports (In US $ thousands)	% of India's share to world tea imports
2001	11,337	2,918,072	0.39
2002	26,693	2,787,248	0.96
2003	13,357	2,911,123	0.46
2004	31,311	3,128,829	1.00
2005	24,167	3,535,947	0.68
2006	28,774	3,719,822	0.77
2007	29,285	4,433,601	0.66
2008	40,301	5,326,844	0.76
2009	51,871	4,902,418	1.06
2010	48,940	5,655,232	0.87
2011	44,744	6,442,709	0.69
2012	46,231	6,691,433	0.69
2013	43,843	6,949,294	0.63
2014	49,568	6,687,946	0.74

Source: trademap.org

The percentage of India's tea import share to world tea imports is very less as about 80% of its domestic demand is met by domestic tea production. Because of the availability of cheap tea at better quality from foreign producers, the percent has increased from 0.39 to 0.74 from 2001 to 2014.

CONCLUSION

India is one of the largest producers, exporters and consumers of tea. This industry provides employment to a large number of people and is considered as one of the vital agricultural sectors of our nation.

The condition of Indian tea industry differs in various regions. Some sections are well run with sizable profits but the other majority is facing many problems. Many reasons are a part of this crisis. Some are internal issues because of inefficiency; high costs of production, lack of proper infrastructure or technology and other issues are external initiated because of market or global nature. One big advantage that Indian tea cultivators have is that about 89% of its consumers are domestic consumers. The domestic demand trend has also been rising.

REFERENCES

- The Hindu. August 5, 2013 "India to promote tea aggressively"
- Zee News (2010) "Assam tea gardens an hour 'ahead' of India"
- Asopa, V.N., (2004), "Competitiveness in Global Tea Trade"
- IIM Ahmedabad (2007) "India's Global Tea Trade"
- Banerjee Barundev (1993): "Tea production and Processing", New Delhi Oxford, IBH and Publishing Company.
- Arunachalam K (1995), a handbook of India Tea Coonoor, The TamilNadu Tea Plantation Corporation Ltd.
- Banerjee G D (1983): "Structural Changes in Tea Industry since 1956"
- Banerjee G D (1996): "Tea Plantation Industry in India between 1815 and 1992"
- Sarkar Gautam K. 1972 , The World Tea Economy, New Delhi Oxford University Press
- Colleen Taylor Sen (2004), Greenwood Publishing Group "Food Culture in India"
- Titus Bhengra and Lamkholal Doungel (2009) "The Tea Labourers of North East India: An Anthropo-historical Perspective"
- Banerjee G D: Annual Conference Issue, December 2000 "Primary Marketing of Indian Tea" Indian Journal of Agricultural Marketing,

ISSN 2394 - 7780

- Banerjee G D and Km. Sarda Banerjee (January - March 2004), Sustainable Tea Plantation Management published in IASSI Journal
- Chatterjee, Bappaditya; Roy, Samarpita, (2009) "Impact of Tea Industry on Indian Economy"
- Fernando, H.C; Tissera, W.M.R; Athauda, R.I, (2008) "Gaining Insights to the Tea Industry of Sri Lanka"
- Jantschi L; Bolboaca, Sorana D; Stoenoiu, Carmen E, (2007) "National Trends on Agricultural Crops"
- Asopa, V.N (2007) 'Tea Industry of India: The cup that cheers has tears',Indian Institute of Management, Ahmedabad
- Barthakur, Ranjit & Kripalini Dipak (2010) 'Vision 2020 Reinventing the Indian Tea'
- Global Managed Service (GMS) - 2015 'Industry to Achieve Sustainable Global Competitiveness and Sustainable Livelihood.'
- Goddard, Samantha (2005), 'Tea Break: A crisis brewing in India',
- Hussain, M.M. and Hazarika, S.D. (2010), 'Assam Tea Industry and its crisis',
- Nagoor, B.H (2009), 'Performance of India's Tea Exports: A Comparative Study of Major Tea Countries of the World', Quantitative Approaches to Public Policy, PP
- Ashmin Kr. Das (2003) "Sustainability in Tea Industry: An Indian Perspective"
- Food and Agricultural Organisation (www.fao.org)
- Tea Board India-Under Ministry of Commerce and Industry, Government of India (www.teaboard.gov.in)
- Trade Map-Trade statistics for international business development (www.trademap.org)
- Indian Tea Association (www.indiatea.org)
- UPASI Tea Research Foundation (www.upasi.org and www.upasitearesearch.org)
- Tea Statistics, Tea Boards of India, various issues
- Tea Directory, Tea Boards of India, various issues

International Journal of Advance and Innovative Research
Volume 6, Issue 2 (XII): April - June, 2019
ISSN 2394 - 7780

DEBT WAIVER SCHEME AND FARMERS' SUICIDE IN KARNATAKA

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ABSTRACT
The 'Green Revolution' in India in the mid 20th Century yielded to double-cropping existing farmland, expanding farming land continuously and using seeds with improved genetics. This project reached record-high grain output in 1978. It made India almost self-sufficient in food. Now, Indian Agriculture is the provider of most of the local food in India. Due to its geography, many different fruits, spices and vegetables can be cultivated. Therefore, many people's livelihood depends on farming as their main income. According to the Indian Merchants Chamber, India has great potential for more Agriculture exports. The prerequisites missing for this are good logistics and facilities. India is for example the largest banana producer worldwide, but doesn't export them. Tapping into opportunities of Agriculture exports would create more jobs and strengthen the country's economy. This could in consequence reduce the urbanization process caused by insufficient income produced by droughts, which result in less profitability for the industry.

1. INTRODUCTION

The debt waiver scheme has become the poll winning agenda of several political parties across the country. Karnataka is one of the major agricultural economies in the country; the primary occupation of more than 50% of the population is related to farming. Since majority of the population are farmers or farm labourers, the key to gain votes is to meet their demands. To relieve their distress of debt, debt waivers are extended by the government. In the last couple of years, following UP, Punjab, Maharashtra and Andhra Pradesh, Karnataka is the fifth state to have rolled out the debt waiver scheme. The Janata Dal Party (JDP), promised to implement the debt waiver scheme in the year 2018, if they're voted to power. The party was elected to power in May 2018, and they fulfilled their promise by announcing a debt waiver scheme amounting to Rupees 34,000 crores. The debt relief programme widens the fiscal debt of the nation. The programmes implemented by various state governments in the year 2016-2017 amounted to 0.50% of the Gross Domestic Product (GDP) (kundu, 2017).

Farmers' distress has been a major problem since the early 1900s. In the case of Karnataka, the topic of loan waiver has always been a highly debated one. There have been multiple reasons listed by different parties for farmers' suicides. The central and the state governments are of the opinion that suicides can be attributed to failure of monsoons and low productivity. The media presents news that is in contrast with the government's opinion. They are of the opinion that suicides occur due to indebtedness, and the various price and cost discrepancies present in the agricultural markets.

Apart from the reason for suicide, even the rationale behind the extension of debt waiver is debated. Political parties claim that it's extended on humanitarian grounds and to improve farm productivity. On the contrary, there is some evidence that these waivers are extended to gain polls. (Gaur, 2009)

In the last 15 years, the state government of Karnataka has announced 3 debt waiver schemes i.e. in the years 2007, 2012 and 2018. The objective of the scheme was to reduce farmer's distress. There's an increasing statistic of farmers suicide every year, yet there's a lot of criticism aimed at the debt waiver scheme extended by the central and the state government for providing relief to the ailing farmers. This paper is an attempt to understand the effect of loan waiver scheme on intended objectives, especially the farmer suicide.

2. REVIEW OF LITERATURE

The topic of debt waiver scheme has always been debated since the very beginning. Different scholars have given different theories either taking a stance for or against the scheme. The scholars that are rooting for the debt waiver scheme have based their opinion on the 'debt over hang' theory. They believe that in order for the agricultural sector to enhance, there should be considerable amount of investments made by the farmers. The farmers will be unable to make these required investments, if they are in debt. The debt waiver scheme helps the borrowers to overcome their debt, and put in their resources in the form of investments, which eventually leads to growth in the sector. (Muggur, 2012)

Contrary to the 'debt over hang', there are scholars that hold the opinion that the scheme does more harm to the economy, than good. It distorts the credit mechanism, it causes a change in the behavioural pattern of the borrowers, it causes increase in disparities between marginal farmers and the farmers with large land holdings. (Kanz, 2012)

ISSN 2394 - 7780

There's also a considerable amount of literature in the area of non-distressed farmers. These farmers do not receive any direct benefit from the loan waiver scheme. Empirical evidence suggests that these farmers are incentivized through credit rationing schemes for their loyalty in repayment of loans.

The review of literature for the debt waiver scheme will be discussed under 3 major themes.

- Loan waiver scheme as a result of political agenda
- Loan waiver scheme not an efficient tool for agricultural development
- Loan waiver scheme an efficient tool to relieve farmers of their distress and also for agricultural development

a. Loan waiver scheme as a result of political agenda

The debt waiver program has several discrepancies in terms of disbursement of loan, distribution of the loan amount, and the effect it has on the farmers and their income. It's a political loophole to gain votes from the rural population. (Gaur, 2008)

The election campaigns by parties often spread the idea that a debt waiver scheme is an efficient solution to the problems faced by the agriculturalists. The scheme maybe the need of the hour, it's not a sufficient measure to stimulate any improvement. If a politician's agenda is to develop the agricultural sector and cater to the farmers needs, the debt waiver scheme should be supplemented with long term investments such as irrigation facilities, improved technology etc. (Jadhav, 2009)

Another major concern that has been repeatedly raised is the issue of distributive efficiency. If the agenda of the ruling political party is to relieve the farmer of his distress, then how is loan waiver the solution to the crisis? The small and marginal farmers are the ones that are most vulnerable to indebtedness. These small farmers are not considered creditworthy by the formal institutions; therefore, the loan waiver scheme does not work to their benefit. The scheme only widens the disparities between the small, marginal farmers and the rich farmers with large holdings. (Editorial EPW, 2017)

There always has been a striking coincidence between a debt waiver scheme announcement and the election dates. In lieu of the 2019 cabinet elections in India, MPs have been approving debt waivers like never before! The situation has been the same even in the case of the state governments.

b. Loan Waiver Scheme not an efficient tool for Agricultural development:

A loan waiver announced by any government involves an opportunity cost. If the loan waiver amount was utilized for the agricultural sector, there would've been a 340 percent increase in the allocation (Kanz, 2012). Substantial amount of studies reveals that there has been an intersection between drought years and debt waiver schemes. This suggests that the primary goal of the waiver scheme has been extended to mitigate losses rather than accelerate development. Other literature points out that, there has been an intersection between electoral dates and the announcement of the debt waiver scheme. Leading economists are generally of the view that debt waiver schemes are not an efficient tool for agricultural development.

The generally held opinion of the public when a farmer commits suicide is that, it is a consequence of farm related issues. The National Crime Record Bureau of India, for the very first time in 2014 collected information regarding farmer suicide and compared it to the total suicides in the economy. Statistics proved that only twenty percent of the suicides were related to bank borrowings.

The debt relief program, in theory, is to relieve the farm related distress of the farmers, stimulate productivity, to shift the farmer's dependence for credit from the informal to the formal sector to escape the future traps of high interest rates etc. Empirical evidence shows otherwise. Research in this area shows that, it merely is used as a tool by the farmers to relieve the societal pressure relating to debt. Being out of debt implies having a higher standing in the rural society. (Kanz, 2012)

Substantial amount of research after the debt waiver scheme in the year 2008 was conducted to find the relationship between the debt waiver scheme and development in the agricultural sector. Results showed that almost 50% of the amount was spent on non-agricultural purposes such as marriage expenses, hospital expenses, expenses incurred for child's education and other consumption expenses of the household. The inefficient debt waiver process only increased the government's deficit and caused inconvenience to banks that were involved in the debt waiving process. (Tiwari, 2008)

The attitude of the borrower has also substantially changed post the debt waiver schemes extended by the government. Initially, farmers were mindful of what they invested in, the productivity levels and other farm

ISSN 2394 - 7780

related concerns. Now, most farmers believe that they will be bailed out of their debt due to the scheme. This has resulted in deliberate inefficient outcomes. There are reckless investments made, loan amounts over and above the requirement levels are being borrowed. The level of ordinary prudence that was maintained for borrowing loans and making investments is not used by the borrowers. (Shliefer, Lopez, Porta, 2002)

c. Loan waiver scheme as an efficient tool for Agricultural development

Although a lot of criticism is aimed at the debt waiver scheme being an inefficient tool for agricultural development, there's certain amount of literatures that states that debt waiver scheme is beneficial to the farmer and the agricultural sector. Propagators of the scheme are of the opinion that the scheme relieves the farmers of their debt, which eventually helps them to direct their funds towards investments which help in increasing the productivity.

3. RESEARCH GAP

Although there is an entire body of literature available for the debt waiver scheme on the national level, there is very little analysis available on the state level. Even though Maharashtra has the highest number of farmers suicide in India, Karnataka's percentage increase in suicide is increasing in a greater proportion than Maharashtra. The relative percentage increase of Karnataka's farmer suicides is highest in the country. The objective of this paper is to analyse whether the debt waiver schemes extended by the Karnataka government has an impact on farmer suicides or whether it acts as a political tool to gain votes.

4. METHODOLOGY

This study is completely a descriptive one. The study takes into consideration data from the last 15 (2004-2018) years. For the purpose of analysis, secondary data is collected from official government websites (NCRB, Indiastat). The findings and analysis in this paper are only suggestive.

5. ANALYSIS

In the last 15 years, the state government of Karnataka has announced 3 debt waiver schemes i.e. in the years 2007, 2012 and 2018. The objective of the scheme was to reduce farmers' distress. The debt waiver scheme is thematically analysed in 3 major ways

- Access to credit
- Farmers suicide and Debt waiver scheme
- Debt waiver scheme and election dates

a. Access to credit

The farm loan waiver in Karnataka is only extended to farmers that have borrowed loans from formal institutional sources of credit but unfortunately a very small percentage of small and marginal farmers in the state fall under this category. The marginal and small farmers depend on money lenders and other forms of non-institutional sources of credit.

Table-5.1: Farmers that have access to institutional credit in Karnataka

Hectares of land	Percentage of farmers that have access to institutional sources of credit
< 0.01	14.9
Between 0.01-0.40	46.9
Between 0.41-1.00	53.2
Between 1.01-2.00	64.8
Between 2.01-4.00	67.5
Between 4.01- 10.00	71.5
Above 10.00	78.9

Source: National Sample Survey Office's, survey of farm households (2013), Government of India

The small and marginal farmers that own less than 0.01 hectare of land, less than 15% of them have access to institutional credit. Less than 50% of the famers that fall in the category between 0.01-0.40 have access to institutional credit. More than 60% of the farmers that fall in the category of 1-4 hectares of land have access to institutional credit. More than 70% of the farmers that fall in the category of 4-10 hectares of land have access to institutional credit.

The debt waiver scheme announced in Karnataka has very little effect on the small and marginal farmers, due to their inaccessibility to formal credit institutions. The small and marginal farmers are the ones that hold less than 2 hectares of land. The inability of access to credit for the small and marginal farmers pushes them to depend

ISSN 2394 - 7780

on other sources of credit, mainly money lenders. Money lenders charge a very high rate of interest, therefore most of these small and marginal farmers result in a debt trap and the scheme does not come to their rescue.

The real benefit of the debt waiver scheme only goes to the medium sized and large land holding groups. They are the farmers that hold more than 2 hectares of land. More than 65% of the farmers that hold more than 2 hectares of land have access to institutional credit. There is a huge contrast between the interest rates charged by the formal and informal lending institutions. The formal institutions consist of banks and other government sources, the informal lending institutions consist of money lenders, shop keepers, relatives, landlords, family friends etc. The formal institutions charge an average of 11% interest on their loans (Tripathi, 2017), whereas the informal charge between 25-30%, depending on the source, time period etc. A large majority of small and marginal farmers depend on these informal institutions. They not only have minimum access to formal sources of credit but also pay more than double the interest rates in comparison to medium and large-scale farmers. The scheme does not cater to their debts, therefore most of the farmers end up in a debt trap.

b. Farmers suicide and debt waiver scheme

Table-5.2: Farmers suicide and announcement of debt waiver scheme

Year	Number of suicides in Karnataka *	Announcement of debt waiver scheme **
2004	2680	NO
2005	1960	NO
2006	1880	NO
2007	1720	YES
2008	2140	NO
2009	1740	NO
2010	2590	NO
2011	2100	NO
2012	1880	YES
2013	1400	NO
2014	770	NO
2015	1569	NO
2016	1212	NO
2017	3515	NO
2018	NA	YES

*Source for farmer's suicides: NCRB
**Source for announcement of debt waiver: The Hindu, Times of India

Farmers' suicide occurs due to several reasons. Poverty, family problems, farm productivity, indebtedness, threats from money lenders, societal pressures etc. are some of the major reasons why a farmer commits suicide.

Table 5.2 depicts data relating to farmers' suicides, and the years in which the debt waiver scheme was announced by the government. Using the above data, keeping other things constant (other reasons for suicide, improvements in technology, extension of subsidies or other government schemes etc.), we can analyse the relationship between the farm loan waiver scheme and farmers' suicides in Karnataka.

In the year 2007, a debt waiver scheme was introduced by the BJP. In spite of the debt waiver the number of suicides has increased from 1720 to 2140. There has been an increase of 420 suicides.

Another debt waiver scheme was announced in the year 2013 by the BJP government. The farmers' suicides went down from 1880 to 1400. There has been a decrease of 480 suicides.

The year 2017 experienced a drastic increase in the farmers' suicide. Out of the 3515 suicides, 2525 is due to farm related causes, which amounts to 70% of the total suicides (NCRB). The state agricultural department declared 2014-2016 as drought years. Droughts in Karnataka drastically reduce the productivity since majority of the farmers completely depend on monsoons. In the year 2017, there was adequate amount of rainfall, thereby increasing productivity. In spite of that, the farmers' suicide more than doubled. Although there may be several social and personal problems, one of the major reasons could be that of indebtedness. During periods of drought, the farmers heavily borrow money to compensate for the losses incurred due low productivity. The aim of the government was to relieve the farmers of their debt. A debt waiver scheme was announced in the year 2018.

ISSN 2394 - 7780

In the year 2018, JDS promised a debt waiver scheme if they're elected to power. As promised, they extended the scheme when the elections were won. Although the annual suicides statistics for the year is not officially released, there have been several news reports of suicides by farmers in Karnataka.

c. The relationship between election dates and announcement of loan waiver schemes

Good loan waivers are bad economics. While many who are in favour argue that it gives instant relief to the farmers, it also at the same time discourages farmers who pay back loans diligently. It could also lead to lack of Credit discipline and even farmers using it for non-agricultural purposes. It may sound very humanitarian on the surface but it surely ignores the underlying problems. Arundhati Bhattacharya, the head of the country's largest lender, the State Bank of India (SBI), was on target when she recently said that loan waivers affect credit discipline. Shawn A. Cole of the Harvard Business School in a 2008 paper—*Fixing Market Failures or Fixing Elections? Agricultural Credit in India*—showed that agricultural credit extended by government-owned banks goes up in an election year, while defaults also increase during election time.

The farmers and agricultural laborers formed about 56% of the total workforce population in Karnataka (2011 Census). When a farmer is distressed, this automatically becomes a great concern for the politicians. This has pushed the farmer to demand waiver of agricultural loans and a policy initiated in this direction by one state will cause ripples in others too. There have been continuous debates for the reasons of the implementation of the debt waiver scheme. The scheme could be extended on humanitarian grounds (prevent suicides of farmers), to relieve farmers of their debts, to provide financial stability to the farmers which can ultimately lead to increase in investments and increase in agricultural productivity. The scheme can also be implemented to further various political agendas, mainly to win the elections.

Table-5.3:The relationship between election dates and loan waiver schemes has been given in the table 5.3.

Election year	Loan Waiver Announcement Year
May, 2018	May, 2018 (Promised by JDS if elected to power)
2012	2012 (BJP)
2007	2007 (BJP and JDS)

Source: The Hindu, Times of India and other internet sources

Table 5.3 shows a direct relationship between election dates in Karnataka and announcement of the debt waiver scheme.

In light of the 2018 elections in Karnataka, the Janata Dal (Secular) had promised to grant a debt waiver if they were elected to power. In May 2018, when JDS won the election, they implemented the debt waiver scheme, as promised.

In light of the 2013 elections, the BJP had announced a debt waiver scheme. However, congress was voted to power in the year 2013.In the year 2007, BJP and JDS promised a debt waiver scheme. BJP won the elections in the year 2007.

If there's a direct relationship between election dates and the implementation of the debt waiver scheme, the doubt now arises about what the real agenda of the government is and whether the scheme is used only as a currency for gaining votes.

There have been repeated pleas from several leading economists of the nation to the government to refrain from promising debt waivers. The IMF Chief Economist, Gita Gopinath on 20th January 2019 emphasized on the idea that the government should focus on providing and investing in better technology and seed investments. She was of the opinion that farm loan waivers will not solve any of the farmer's issues on a permanent and long run basis, instead cash transfers would serve the purpose of solving the distress of farmers. She also believes that these schemes are being extended to appease the farmers in light of the elections.

After successive debt waiver schemes being extended only during election processes, the borrowers will eventually understand the motives behind these schemes. Politicians propagate these loans stating that they're being granted on economic grounds, some even encourage the scheme on humanitarian grounds.

6. SUMMARY AND CONCLUSION

The debt waiver scheme intends to reduce farmer suicides and increase the productivity of the agricultural sector. The analysis conducted shows that a large percentage of small and marginal farmers do have access to institutional sources of credit and are not covered under the debt waiver scheme. It has also been observed, that there is no considerable amount of reduction in farmer suicides after the scheme is implemented. The study also shows that there lies a political agenda behind the implementation of the scheme. The debt waiver scheme has

ISSN 2394 - 7780

been frequently announced by political parties during the election periods. The scheme may be the need of the hour, but to increase the farmers welfare in the long run, it should be followed up with other measures. The debt waiver scheme alone will not be able to solve farmers distress and other agricultural problems. For the debt waiver scheme to be successful, it should be right from the crux of it. The motive behind the extension of the scheme should be to improve the agricultural sector and relieve the farmers of their distress. The scheme requires to be moral, just and fair, for it to serve the required needs of the economy.

7. RECOMMENDATIONS

1. There's a huge amount of opportunity cost involved due to the implementation of debt waiver scheme. More profitable sources of investment should be identified, and funds can be diverted to those sources to relieve farmers of their debt and increase the agricultural productivity.
2. Inflexibility of loans, non-eligibility to avail credit from formal institutions, several farmers borrow loans from informal lending institutions, mainly money lenders. Money lenders charge a very high rate of interest in contrast to formal lending institutions. High interest rates charged by the money lenders causes the farmers to default in the payment of interest, and in some cases even the principal amount. In most cases, farmers borrow fresh loans for the repayment of old loans. This causes the farmer to fall into a debt trap. The purview of the debt waiver schemes only limits it to relieve loans that were extended by formal credit institutions. Majority of the farmers in destress due to indebtedness do not fall under this category. Means should first be made to make a shift from the primary dependence from the informal to the formal sector. To achieve this objective, the formal credit institution should attain more flexibility in terms of its criteria for extension of credit, the loan period, interest rates, and mainly in terms of the collateral that requires to be provided to avail credit. Another major issue that formal institutions face is in terms of the relationship it shares with its clients.
3. Money lenders share a personal relationship, attainment of background information and follow up process after disbursement of loans is fairly easy. The formal institutions such as commercial banks, scheduled banks etc. unlike the money lenders do not share a direct personal relationship with their borrowers. There should be a mechanism put in place to reduce the problems created through information asymmetry.

REFERENCES

1. BANIK1, N. (2018). Is Loan Waiver a Panacea for Rural Distress? *ASIA-PACIFIC RESEARCH AND TRAINING NETWORK ON TRADE*.
2. GAUR, U. (2008). LOAN WAIVER SCHEME AND INDIAN AGRICULTURE. *Center for Civil Society*.
3. Mayya., M. D. (2016). IS DEBT WAIVER A RIGHT SOLUTION TO FARMERS SUICIDE? *Adarsh Journal of Management Research*.
4. MUGGUR, D. (2012). Farmer Suicide Cases in Karnataka; An overview. *Indian Journal of Research*.
5. Ramakumar, R. (2009). Lessons from the Debt Waiver Scheme.
6. National Crime Records Bureau
7. IndiaStat
8. National Sample Survey, Government of India
9. The Hindu
10. Times of India

International Journal of Advance and Innovative Research
Volume 6, Issue 2 (XII): April - June, 2019
ISSN 2394 - 7780

CHANGES IN THE LAND MARKET AND LIVELIHOOD OF RURAL POOR IN INDIA: A CASE STUDY OF KRISHNA DISTRICT, ANDHRA PRADESH

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ABSTRACT
Agriculture is one of the principal sectors of Indian Economy. Allied Agricultural activities constitute the single largest component of India's gross domestic product, contributing nearly 14% of the total (Economic survey, 2015). Further Farming sector offers livelihood and employment to more than 50% of the population. Interestingly Agriculture stands out as one of the single largest employment providing private sectors. According to 2011, Indian Census roughly 61% of Scheduled Castes (Dalits) and 79% of Scheduled Tribes (Adivasis) exclusively and extensively depend on the Agriculture. Most of them roughly 75% are agricultural labourers and the rest of 25% of Scheduled Castes and Schedule Tribes are cultivators (Census of India, 2011).Though the Marginal Land Holding percentage has increased to 73.17%, just 27.71% of the total operated area is under the control of Dalits and Adivasis.While small holdings constitute merely 15.30% of the total holdings out of which only 23.44% of operated area is under the control of Dalits and Adivasis in the year 2012-13. On other hand, the number of medium holdings has been registered as 3.04% of the total holdings. However, the area under the control of Dalits and Adivasis is confined to 19.33% of the operated area. Simultaneously, large holdings have steadily declined to 0.36% of total holdings but remarkably the Dalits and Adivasis control 6.02% of the total holdings in 2012-13 (NSSO, 2015). Around this time the Population Census has declared that 68.86% percent of total population lives in the Rural Areas. Their livelihood is exclusively dependent on Agriculture. Since more than 65% of India's cropped area is rain-fed and subjected to climatic munificence, the livelihood of the Rural Poor and Food Production too vacillates accordingly. Subsequently, Food production as well as Economy too has been forced to depend on such unpredictable non-remunerative Agriculture.

Keywords: Land Market, Rural Poor, Agricultural, Farming, Land Holding

INTRODUCTION
Agriculture is one of the principal sectors of Indian Economy. Allied Agricultural activities constitute the single largest component of India's gross domestic product, contributing nearly 14% of the total (Economic survey, 2015). Further Farming sector offers livelihood and employment to more than 50% of the population. Interestingly Agriculture stands out as one of the single largest employment providing private sectors. According to 2011, Indian Census roughly 61% of Scheduled Castes (Dalits) and 79% of Scheduled Tribes (Adivasis) exclusively and extensively depend on the Agriculture. Most of them roughly 75% are agricultural labourers and the rest of 25% of Scheduled Castes and Schedule Tribes are cultivators (Census of India, 2011).Though the Marginal Land Holding percentage has increased to 73.17%, just 27.71% of the total operated area is under the control of Dalits and Adivasis. While small holdings constitute merely 15.30% of the total holdings out of which only 23.44% of operated area is under the control of Dalits and Adivasis in the year 2012-13. On other hand, the number of medium holdings has been registered as 3.04% of the total holdings. However, the area under the control of Dalits and Adivasis is confined to 19.33% of the operated area. Simultaneously, large holdings have steadily declined to 0.36% of total holdings but remarkably the Dalits and Adivasis control 6.02% of the total holdings in 2012-13 (NSSO, 2015). Around this time the Population Census has declared that 68.86% percent of total population lives in the Rural Areas. Their livelihood is exclusively dependent on Agriculture. Since more than 65% of India's cropped area is rain-fed and subjected to climatic munificence, the livelihood of the Rural Poor and Food Production too vacillates accordingly. Subsequently, Food production as well as Economy too has been forced to depend on such unpredictable non-remunerative Agriculture.

STATEMENT OF PROBLEM
As per the Agriculture Census, the total number of operational holdings in the country has increased to 138.35 million hectares in 2010-11, in comparison to129.22hectares in 2005-06 i.e. an increase of 7.06 %. At the same time there is a marginal increase in the operated area from 158.32 million hectares in 2005-06 to 159.59 million hectares in 2010-11 showing an increase of 0.80%. The operated area has primarily increased because for the first time the State of Jharkhand has participated in the Agriculture Census operation after it has come into being in the year 2000.

ISSN 2394 - 7780

REVIEW OF LITERATURE AGRARIAN MARKET

According to Bhardwaj (1994.14,) *Agrarian Market is categorised into three types. They are land, labour and credit. They are very much interlinked or interdependent. Hence the nature and function of these markets are based on exchange and production relations. The author is of the strong opinion that these markets have to go a long way when they are compared to the Capitalist Countries. The outstanding characteristic of these markets is that they still function under the influence of complex socio- economic and political hierarchies. Therefore hegemonic groups/party or dominant community (Socially, Economically and politically) dominates the weaker section groups/party through compulsive exchange relations. Invariably in these markets multiple factors like caste, class, mediators/ middlemen etc., play a major role in the exchange process which leads to exploitation of socially, economically and politically weaker sections/parties in subtle ways.*

Cain (1981) Structure, nature and operation of Land Market in India are very complex and defy the general expectations and behaviour of the Market. Land possession is Social Wealth indicator. It accords status, prestige and qualifies the standard of living. It acts as collateral emergent fund in case of requirement (e.g. for marriage, for medical treatment, for house construction etc.). Therefore, often the size and/or quality of land, defying the basic nature of the demand function, determine the price of land. It is not surprising that in the literature scan we find arguments regarding land market response to prices. A study by Cain (1981) finds that the land sale takes place in order to satisfy 'conspicuous or status consumption', investment needs and institutional requirements.

Sarap (1998), based on a village study, analysed in detail the sudden requirement for cash arising due to many factors like marriage, medical purpose, consumption need, and investment. Even in the presence of sudden requirements, people part with their land resource when good price is offered.

Harriss-White, (1996) in that case land tends to be transferred from less efficient to more efficient farmers and ultimately land transactions will improve resource allocation. Here the land market is conceptualised as a mechanism of allocatively efficient production decisions. But in order to understand properly why a particular given market has evolved in its particular way, its analysis needs contextualisation in production relation and in its internal disposition of power. Ground level realities, as they exist in rural areas of many less developed countries, may not follow the expectations of mainstream economists because their analysis is over simplistic. This study also highlights the nuances of contractual arrangements in different types of land market transactions. Land provides a livelihood to a majority of the rural population. In the absence of alternative and assured employment opportunities, most farm households cling to their existing plots or seek to enlarge their current plots, if possible, to maintain their livelihood

OBJECTIVES OF THE STUDY:

a. To study the changes in the structure of the land and land market. How landownership pattern is changing among different social groups over a time.
b. To unearth subtle factors that are operative in the selling and buying of land in selected villages
c. To examine the changes in the strategies of livelihood of the rural poor in the context of land market changes from selected village.
d. To critically analyse the various government policies that are designed to ensure rural poor livelihood in the context of land market changes from selected village

METHODOLOGY

The Study will extensively employ both primary and secondary data. The secondary data will be collected from various reports such as population census of India, agricultural census and directorate of economics and statistics of respective governments. The villages will be selected based on baseline survey conducted by office of registrar general of India of respective governments and Records of Registration Office of respective governments. Primary data will be obtained from village field survey. The survey will be covering a total of 200 households and 5 villages in each state, consisting of both buyers and sellers since post reform period. The households will be selected based on stratified random sampling method from the list of total land transactions. Village level macro information will be collected from personal interviews with key informants in each village.

Framework and methods proposed for research

The Study will extensively employ secondary data. The secondary data will be collected from various reports such as population census of India, agricultural census and directorate of economics and statistics of respective governments. The villages will be selected based on baseline survey conducted by office of registrar general of India of respective governments and Records of Registration Office of respective governments. Primary data will be obtained from village field survey.

ISSN 2394 - 7780

RESULTS AND DISCUSSIONS

Table-1: Sector Wise Land Utilization in Krishna District

S. No	Item	Area (Sq.Km)	% of Total Area
1	Agricultural Land	4802.94017	69.30649596
2	Forest/Shrubs/Vegetation	53.86420952	0.777261321
3	Water Bodies/Wetlands	919.9766506	13.27527634
4	Built-up	1119.741426	16.15788494
5	Water Lands/others	33.4775	0.483080808

Source of Data: Primary

Above table shows sector wise land utilization in Krishna district, by land Area (Sq.Km) and % of Total Area type. It can be observed that there were 4802.94017 Area (Sq.Km) with a Agricultural Land are of 69.30649596 percent of Total Area utilization and 53.86420952 Forest/shrubs/ with a total area of 0.777261321 Percent of Total Area. Average utilization in Krishna is shown in above table.

Table-2: Size and Categories of Land Holdings in Krishna District

Item	Percentage of owner- operators	Percentage of Total Leased –In Area	Percentage of Total Operated Area Owned
Marginal (<1 ha)	69%	16%	17%
Small (1-2 ha)	22%	19%	34%
Medium (2-4 ha)	5%	22%	18%
Large (> 4 ha)	4%	43%	32%

Source: Primary Data

The implementation of land reform legislation has generally been weak, non-existent, or counterproductive, resulting in eviction of tenants, their rotation among landlord plots to prevent them from acquiring rights, and a general worsening of their tenure security. As a result of all the various tenancy reform legislation, tenants acquired ownership or owner-like rights in only about 4 percent of the countries operated area. Meanwhile, land reform legislation led to the large-scale eviction of tenants on about 30 percent of the operated area. These evictions took place even in the states that benefited large numbers of tenants with ownership or owner-like rights.

Table-3: Average affected area of owned sample farmers, by land type

S. No	Land type	No.of Farmers	Total Area (Acres)	Average Area (Acres)
1	Irrigated	12	62	5.59
2	Dry	38	198	5.32
3	All	50	300	5.38

Source: Primary Data

Above table shows average affected area of owned sample farmers, by land type. It can be observed that there were 12 farmers with a total irrigated are of 62 acres and 38 farmers with a total dry area of 198 acres. Average irrigated area of owned sample farmers was to be 5.59 acres and average dry area was found to be 5.32 acres.

Table-4: Responsibilities Granted to Gram Panchayats for Land Management

Responsibilities	Constitution	Krishna District
Mandatory		**Land Management and Ownership** • Removing encroachments on public land • Developing and maintaining grazing lands • Maintaining community assets • Managing of hut sites • Developing wastelands • Distributing house sites • Can acquire, hold and dispose of property **Record Keeping** • Maintaining records related to house sites **Participation in Schemes** • Promoting of public awareneness of and participation in poverty alleviation programmes.

ISSN 2394 - 7780

		Planning and Revenue • Preparing annual plans for development of the panchayats area and annual budget. • Revising and collecting taxes, rates and fees per the Act.
Discretionary (must be further assigned by the state government)	**Land Management** • Land improvement and land consolidation • Minor irrigation and watershed development. • Social and farm forestry. • Maintaining community assets **Land Reforms:** • Implementing land reforms **Planning and Revenue:** • Preparing economic and social justice plans • Implementing economic and social justice plans. • Levying and collecting taxes, duties, tolls and fees Participation in Schemes • Participating in rural housing • Participating in poverty alleviation programme.	**Land Management** • Managing and maintaining forests within the panchayats jurisdiction. • Managing wastelands, pasturelands or vacant lands that belong to the government within the panchayats jurisdiction. **Revenue:** • Collecting land revenue on behalf of government and maintaining connected revenue records.

Source of Data: Andhra Pradesh Panchayat Act (1964 as amended)

In Krishna district, gram panchayats have responsibility over the removal of encroachements on public lands and the management and maintenance of grazing grounds, public tanks and other public property within a panchayats jurisdiction. Panchayats can acquire, hold, and dispose of property, and can be given responsibility for bringing wasteland under cultivation, promoting village plantations through social and farm forestry, arranging for the cultivation of fallow land, and arranging for the cooperative management of land and other resource of the village.

Table-5: Sustainable Livelihoods Approach to Land Rights in Krishna District

Sustainable Livelihood development objectives	Sustainable Livelihood Framework for analysis	Sustainable Livelihood Method of poverty eradication
• More secure access to, and better management of land • A policy and institutional environment that supports multiple livelihood strategies and equitable access to all • Improved nutrition, access to education and training • More secure access to financial resources. • More supportive and cohesive social environment	• Land is a natural asset central to rural livelihood • Land is a natural asset subject to vulnerability factors such as environmental change, political upheavals, and conflict. • Land is natural asset filtered through policies, institutions and processes(Land Laws and policies, dispute resolution systems, self help groups, intra household relations, credit markets, extension services)	• Land rights create a basis to access other poverty – alleviating assets/ livelihood outcomes: • Human (health, skill development, food security). • Financial (Income, credit, crops, livestock). • Social (Land-based networks, community land management, labour relationships, dispute resolution). • Natural (land and resource preservation through more sustainable use of land) • Physical (housing structures). • Political Voice

Source of Data: Primary

The sustainable livelihoods approach also recognizes that policies, institutions, and processes influence access to and use of assets, which ultimately impacts livelihoods. India's land laws, policies, and land reform distribution processes may impact whether the family has a plot large enough to maintain a cow and whether it is able to add to its land holding. The panchayats may identify the family as qualifying for a government house plot programme

ISSN 2394 - 7780

RELEVANCE OF THE PROPOSED STUDY FOR POLICY-MAKING

The topic of land and rural livelihoods remains highly controversial, meaning that the importance of land to rural livelihoods is very different between countries. In some countries, land is essential for rural livelihoods possibly because of the limited opportunities for farmers to engage in nonfarm activities. In such countries, farming is the only opportunity open to farmers and thus land shrinking severely threatens rural livelihoods. In other countries, land is becoming less important in terms of determining rural livelihood; most likely because people there have more chances to participate in non-farm economic activities. The above discussion implies that land is not an equally important determinant of rural livelihoods in all agrarian countries.

REFERENCES

1. De Haan, L., and A. Zoomers. 2005. "Exploring the Frontier of Livelihoods Research." Development and Change 36 (1): 27–47.Deo, F. 2011.
2. "Land Distribution Programmes in Odisha. ASocial Audit in Nuapada."Social Change 41 (2):271.
3. Alinovi, L., M. D. Errico, M. Erdgin, and D. Romano. 2010. "Livelihoods Strategies and Household Resilience to Food Insecurity: An Empirical Analysis to Kenya."European Report on Development.
4. Roth, Michael. 1993. A Critique of Zimbabwe's 1992 Land Act: Quasi-Market Versus Non-Market Options for Land Reform. In Beneath the Surface of Zimbabwe's Agricultural Revolution, edited by M. Rukuni and C.K. Eicher. Harare: University of Zimbabwe's Publication Office.
5. GOZ. 1998. Land Reform and Resettlement Programme, Phase II: A Policy Framework, June.
6. Karl M., (August 2002) Participatory Policy Reform from a Sustainable Livelihoods Perspective: Review of concepts and practical experiences. FAO, LSP WP 3, Participation, Policy and Local Governance Sub-Programme. Also available in Spanish and French.
7. Warren P., (December 2002) Livelihoods Diversification and Enterprise Development: An initial exploration of Concepts and Issues.FAO, LSP WP 4, Livelihoods Diversification and Enterprise Development Sub-Programme.
8. Hodgson S., (March 2004) Land and Water – the rights interface. FAO, LSP WP 10, Access to Natural Resources Sub-Programme.
9. Mitchell R. and Hanstad T., Rural Development Institute (RDI), USA, (March 2004) Small home garden plots and sustainable livelihoods for the poor. FAO LSP WP 11, Access to Natural Resources Sub-Programme.
10. Hanstad T., Nielsen R., Brown J., Rural Development Institute (RDI), USA, (May 2004) Land and Livelihoods: Making land rights real for India's rural poor. FAO LSP WP 12, Access to Natural Resources Sub-Programme.
11. Fisher R.J., Schmidt K., Steenhof B. and Akenshaev N., (May 2004) Poverty and forestry: A case study of Kyrgyzstan with reference to other countries in West and Central Asia. FAO LSP WP 13, Access to Natural Resources Sub-Programme.

International Journal of Advance and Innovative Research
Volume 6, Issue 2 (XII): April - June, 2019
ISSN 2394 - 7780

MICROFINANCE AND SELF HELP GROUPS – A CASE STUDY OF ASSAM

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ABSTRACT
Rural Development is a very dynamic process which helps in improving the quality of life and also the socio-cultural and economic well-being of people living in the rural areas. The North-Eastern region of India is one of the most backward regions of the country where poverty, illiteracy, lack of skills, basic infrastructure, etc are prevalent in almost all the villages. The Self Help Groups have been playing a crucial role to eradicate all these problems by means of group efforts. The SHGs approach is a new process into the field of rural development which aims at improving and uplifting the living condition of the rural poor by establishing sustainable community based institutions. This study is conducted in order to analyse the progress of various SHG-Bank linkage programmes in the North Eastern Region of India in general and Assam in particular. The study has also tried to explain some of the determinants of the expansion of credit linked SHGs. From this study, it is evident that the SHG-Bank linkage programme, though is successful in some parts of NER and Assam, but still is in an infant stage. The study also suggest that the SHG-Bank linkage programme is a rural phenomenon and the government has been successful in introducing this programme in the rural areas but the expansion of this initiative is still a hurdle.

INTRODUCTION
In this era, for credit delivery, particularly for the poor and the deprived microfinance has become an important institution and mechanism. Various studies in microfinance conducted in India and other developing countries have revealed the success of such programmes related to microfinance in alleviating rural poverty, developing small enterprises and promoting holistic development of individuals and communities. Due to the rigorous and pioneering work undertaken by Prof. Yunus of Bangladesh in the field of microfinance, the viability, suitability, and efficiency of microfinance as an agent and institution of development have been recognised all over the world.

The credit element in microfinance is basically undertaken and promoted by various Microfinance Promoting Institutions (MFPIs) which can be any Non Govt. Organizations (NGOs), Self Help Group (SHGs) and other social groups. These microfinance programmes and the MFPIs are successful in various rural areas due to the constant market and government failures in the sphere of rural development in general and rural credit in particular. With the introduction of such microfinance programmes the age old belief that "poor are not bankable" by most of the formal sector financial institutions, is challenged in today's economic scenario.

In different countries, different organizations are engaged in such microfinance programmes like in India, the success of such programmes is mostly due to another institution popularly known as Self Help Groups (SHGs). The SHGs are a group of people who come together to address certain collective goals that could be economic, social or both. In this new economic scenario it is believed that in order to ensure simultaneous growth and human development, these SHGs needs to be encouraged and developed. Thus microfinance and SHGs have become pivotal institutions in development theories and development practices.

In this paper we have analysed the linkage programmes of various SHG-Microfinance institutions and their progress in the North-Eastern Region especially in Assam.

REVIEW OF LITERATURE
Micro-Credit or Microfinance has tremendous impact on the upliftment of the rural economy, particularly of the poor and weak section of the peasant community. Microfinance as a concept was first proposed in the Marshall Plan at the end of World War II and also in the writings of Spooner in 1880s. Dr. Akhtar Hameed Khan, founder of Pakistan Academy for Rural Development is credited for pioneering the idea. In 1974 during a famine, Muhammad Yunus started a similar project in his native Bangladesh. He discovered that banks were not inclined in giving tiny loans to poor people as there was a repayment risk and in 1976, Yunus founded the Gramin Bank which helped the poor Bangladeshi people by giving out loans of small amount.

In 1988, NABARD introduced a methodology of providing alternative credit to the poorer class via Self Help Groups. In 1991, a circular to the commercial banks was issued by the RBI, upon which the first pilot project establishing the linkage of SHGs with other banking institutions was launched.

ISSN 2394 - 7780

According to Asian Development Bank (2000), microfinance is the provision of a broad range of financial services such as deposits, loan payment services, insurance to the poor and low income households and their micro enterprises. The Bank mentions that the major business of Microfinance Institutions (MFIs) is to provide microfinance services which do not concern the bankable. Asian Development Bank also observes microfinance having relations particularly with poor peasants and people with limited income and conspicuously small extent of land holdings.

P Satish (2005) described micro-credit as the loans which are provided to poorer masses living in rural and urban areas which would help in generating income through self employment. Micro-credit refers to very small loans which have no collateral that help in income generation through market based self employment given to the rural and urban poor and also that helps in the formation of borrower groups. According to him, the SHG completely controls the use of its funds, unlike the Gramin Model. The rate of interest is decided by the members of the SHGs.

T.S. Nair (2005) pointed out that the largest microfinance outreach programmes in the world is the SBLP (SHG-Bank linkage programme) and that it is the most successful in the microfinance sector. Thus SBLP has helped the poor in availing credit at a sustainable and cost effective manner.

Arora S. Singh who participated in the Microfinance India Conference (New-Delhi, 2005) mentions the recognition of a Task Force on Microfinance. The Task Force says it much more than micro credit- a provision of credit and other financial services and products of very small amounts to the poor in rural, semi urban or urban areas for enabling them to raise their income levels and improve living standards. So the Task Force asserts microfinance as a means for raising income levels and improving living standard of the poor.

Namboodiri and Shivani (2001) gave an account on the rate of development of the microfinance programme in India through the SHG model. According to their research it was the initiatives of the NGOs that led to the initiation of the SHG system in India. In 1991, NABARD through the help of commercial banks financed 500 SHGs which led to the establishment of a working group by the RBI that resulted in the inclusion of SHGs under priority sector advances and integrated with mainstream credit operation. Today the SHG-Bank linkage programme that was initiated by NABARD has become one of the largest microfinance programmes in the world.

Sinha and Patole (2002) proposed that apart from the SHG bank linkage programme, there are two other ways to provide financial services to the poorer class by the MFIs. These methods are the Gramin replica and the co-operatives. When the co-operative method is considered, the most successful organizations are the Annapurna Mahila Co-operative Credit Society in Mumbai, the Self Employed Women Association or SEWA Bank in Ahmedabad and the Indian co-operative Network for women in Tamil Nadu. The other method is through the replica of Gramin model, where the money is lend to the individual who belong to a joint liability by the MFI and where peer pressure plays a key factor in ensuing repayments.

Dasgupta (2005) provided the comparison between two main microfinance programmes in India, the Swarnajayanti Gram Swarozgar Yojana (SGSY) scheme and the SHG bank linkage programme (SBLP). According to the studies conducted by him, in poorer states like Bihar and Madhya Pradesh, the SGSY scheme is more successful, whereas the SBLP is more successful in the Southern states of India with almost 63% of the Southern region under the SHG bank linkage programme.

Borbora and Mahanta (2001) in their study gave an account on the progress on the SHG-Bank linkage programme (SBLP) and Credit and Saving Programme (CSP) of Rashtriya Gramin Vikash Nidhi (RGVN) in Assam. According to them, the SBLP is having a positive impact in the state of Assam in terms of reach and linkage.

AREA OF STUDY

The study area for the present research work is confined to Assam and the other North Eastern states. Assam is one of the seven sister states and is located in the North Eastern region of India with Dispur as its capital. Assam shares its borders with the states of Arunachal Pradesh, Nagaland, Manipur, Mizoram, Tripura and Meghalaya. Internationally Assam shares it borders with Bangladesh and Bhutan.

OBJECTIVE OF THE STUDY

In the Northeast and as well as in Assam, the SHG-Microfinance linkage programme has been recently implemented. In this paper we have explained and analysed this linkage programme and how well this programme is performing as compared to the rest of the Indian states. Furthermore, there are some other

ISSN 2394 - 7780

determining factors apart from Government initiative that led to the growth of this linkage programme; we have addressed these factors too in this paper. The main objectives of this study are:

1. To analyse the growth and expansion of various SHG-Microfinance linkage programmes in the NER and in Assam.
2. To analyse and compare the progress of this linkage programme in NER and the rest of the Indian states.
3. To address the different factors that are in anyway responsible for the success of this linkage programme.

HYPOTHESES OF THE STUDY

Below are the lists of hypotheses that have been identified and analysed in the course of this study:

1. As compared to the rest of the Indian states, the rate of progress of the SHG-Microfinance linkage programme in the North East as a whole and in Assam is very low.
2. In NER as a whole, there exist very high inter-state differences in the progress of SHG-Microfinance linkage programme.
3. The important factors contributing to the growth of the SHGs are rural employment diversification, growth of NGOs and growth of banking infrastructure.

SOURCES OF DATA

The data collected for this study are from secondary sources and the major sources of this data are surveys conducted by National Sample Survey Organisations (NSSO), All India Census Reports, Annual Reposts of Ministry of Rural Development of the Government of Assam, and Annual Statistics on SHG-bank Linkage Programme by NABARD and different other statistics on microfinance provided by different organizations. The data have also been collected from different published and unpublished data sources which are available in different journals and government reports.

Various data from Census of India (2001), Economic Survey of Assam, Report of NSSO, etc were collected that helped in the study of the basic features of the economy of the NER and Assam. For the evaluation of the progress of SHGs credit programmes in Assam, secondary data from various sources have been used in this study. For the purpose of secondary data collection, the two main sources are: The Annual Statistics of NABARD on the progress of SHG-bank Linkage Programme in the country from the year 2000-01 to 2010-15 and the annual progress report of Panchayat and Rural Development department of Assam for the year 2012 in order to assess the progress of SGSY (Swarnajayanti Gram Swarozgar Yojana) which was renamed as National Rural Livelihood Mission in 2011.

In this study, data collected from the Reserve Bank of India's Basic Statistical Return, various issues of Statistical Hand Book of Assam, Report of North Eastern Council 2012 have been used.

METHODOLOGY

In this study simple tables and charts and standards tools like averages and growth rate(r) have been used for analysis purpose in order to describe and explain the growth and progress of the SHG-Bank Linkage programme. For calculating the growth rate the formula $r= (Pn/Po)^{1/n}-1$, have been used, where Pn is the value of variable at the terminal period; Po is the value of the variable at the initial period and n is the time period.

In this study statistical tools like co-relation matrix and linear regression models have been used in order to analyse the factors responsible for the growth of the linkage programme. The linear regression equation used in this study is as follows:

$$\mathbf{Y=a + b_1X_1 + b_2X_2 + b_3X_3 +.....+ u_i}$$

FINDINGS AND DISCUSSION

In the North Eastern region of India, the concept of Self Help Groups got a major boost with the initialisation of the North East Rural Livelihood Project which is a poverty reduction project funded by the World Bank aimed at improving the rural livelihood especially that of women, unemployed youth and the most disadvantaged North Eastern region.

From the Table-1, it is evident that the SHG Credit linked was highest in Assam and Meghalaya with 58% and 34% respectively in the year 2007, whereas in the same year in the state of Manipur it was 7% while in Tripura and Sikkim it was 1% and there was no SHG Credit linked in the other states. From the year 2007-2012, there is evident of improvement in the SHG Credit linked programme as the cumulative number of SHGs increased

ISSN 2394 - 7780

from 0.2 to 2.8% and the cumulative loan disbursed increased from 0.2 to 1.5%. In the state of Assam in the year 2012, almost 90% of the SHGs provided 86% of bank credit. While in the same year in the state of Meghalaya, the SHGs credit linked was 33.5% as compared to that in NER. In terms of disbursement of cumulative bank loan, the growth of SHG-Bank Linkage Programme (SBLP) in the state of Assam was around 225% in the year 2007-12, whereas in Tripura it was 153%, in Manipur it was 179%. While in the state of Meghalaya, for the same time period, the growth of SBLP was recorded as 36% of Mizoram and Nagaland. As compared to the Indian average, the average credit per SHG in the NER was just Rs. 26506 in the year 2012. The major concern is that the SHG linkage programme is more successful in Assam than compared to the rest of the North Eastern states despite the fact that the latter is having substantial population sizes. The SHG financing in the region of Meghalaya as well as Mizoram has not been that successful. The distribution of SHGs linked to bank in the state of Sikkim is not symmetrical in nature too and the number of SHGs being linked to banks is too less. 50% of the linked groups in the state of Arunachal Pradesh is mostly in the capital town of Itanagar and the adjoining the district.

TABLE 1: Performance of SBLP in NER, 2007-08 to 2011-12 (Rs. in millions)

Region/State	SHGs provided with bank loans	Bank loan disbursed	% share of total SHGs	% of total loan disbursed	Annual Growth Rate in no. of SHGs	Annual Growth Rate in loan disbursement	Average loan per SHG					
YEAR	2007	2012	2007	2012	2007	2012	2007	2012	2007-2012	2007-2012	2007	2012
Northern	9021	133099	163.7	3985.9	3.4	5.9	3.4	3.5	71	89	18165	29947
Eastern	22252	394351	190.2	9354.2	8.4	17.6	3.9	8.2	78	118	8547	23721
Central	28851	267915	257.2	8050.1	10.9	12	5.4	7.1	56	99	8915	30047
Western	15543	166254	246.4	5251.4	5.9	7.4	5.1	4.6	61	84	15853	31587
Southern	187690	1214431	3942.4	85676.9	71.1	54.3	81.9	75.2	45	85	21005	70549
NER	477	62517	8.9	1657	0.2	2.8	0.2	1.5	165	184	18658	26505
India	263825	2238565	4808.8	113975.4	100	100	100	100	53	88	18227	50914
Assam	276	56449	3.9	1423.9	57.9	90.2	44.8	85.9	190	225	14130	25225
Meghalaya	160	735	4.1	16.2	33.5	1.2	45.5	0.9	36	32	25625	22041
Tripura	5	1996	0.3	31.1	1.1	3.2	3.6	1.9	231	153	60000	15581
Sikkim	5	127	0.1	1.9	1.1	0.2	1.1	0.1	91	80	20000	14961
Manipur	31	1468	0.5	71.9	6.5	2.3	5.7	4.3	116	170	16120	48978
A.P	108	346	2	13.5	0	0.6	0	0.8	34	61	18519	39017
Nagaland	15	422	0.6	34.4	0	0.7	0	2.1	130	175	40000	81517
Mizoram	22	974	2.5	64.1	0	1.6	0	3.9	565	406	113636	65811

*****Calculation for NER states is against the NER total
Source: NABARD Data

The Table-2 shows the model wise distribution of SHGs. Under the SBLP, there are 3 types of SHGs formed.

Model I: The SHGs which are formed and financed by banks.

Model II: The SHGs which are formed by formal agencies such as NGOs, but are directly financed by the banks.

Model III: The SHGs which are financed by the banks using NGOs and other agencies as financial intermediaries.

Table-2: Model wise percentage distribution of SHGs under SHG-Bank linkage programme in NER, 2012

Region/State	MODEL-I		MODEL-II		MODEL-III	
	SHG Credit linked	SHG Loan	SHG Credit Linked	SHG Loan	SHG Credit Linked	SHG Loan
Northern	9	8	91	92	0.1	0.1
Eastern	33	37	58	56	9	7
Central	20	17	78	81	2	1
West	32	31	63	62	6	8
South	13	10	80	85	7	5
NER	76	83	16	14	74	81
Assam	79	89	12	7	9	3
A.P	0	0	100	100	0	0

ISSN 2394 - 7780

Meghalaya	9	8	77	67	14	25
Manipur	31	27	68	72	0.3	0.7
Mizoram	98	96	2	4	0	0
Nagaland	7	25	93	75	0	0
Sikkim	75	49	25	51	0	0

Source: Annual report of NABARD, 2012

The majority of the SHGs around 76% are formed and credit linked by banks using the Model-I in the NER whereas just 16% of the SHGs are credit linked under the Model-II. Looking at the national level statistics, around 74% of the SHGs are formed under Model-II whereas 20% under Model-I and just 6% under Model-III. In 2012, 79% of SHGs are formed by banks in the state of Assam. Assam tops the list of states in North East where the SBLP is a success. Thus it is evident that SHGs promoted and linked are more in number in Lower Assam and Central Assam districts. This number is very minimal in the Upper Assam districts despite of having substantial population. Hence, the distribution of SHGs is not equal in the state of Assam and therefore, there exist both inter-state and intra-state differences in the SHG- Bank linkage programme in the NER and Assam as shown in the Table-3.

Table-3: SHG-Bank linkage district wise cumulative physical and financial progress, 31st March 2012

Districts	Cumulative no. of SHGs provided with bank loan					Cumulative Bank loan disbursed upto (Rs. In millions)					Average loan per SHG	
	2008	2009	2010	2011	2012	2008	2009	2010	2011	2012	2008	2012
Barpeta	22	325	812	2337	4490	0.56	2.53	5.34	52.59	92.2	25454.5	20534.5
Bongaigaon	3	80	149	623	1257	0.03	0.8	2.6	19.54	36.34	10000	28910.1
Cacher	86	197	498	1726	2843	1.2	2.28	4.12	19.7	34.38	13953.5	120922.9
Darang	76	320	886	2361	4740	0.5	2.63	6.17	29.25	70.77	6578.9	14930.4
Dhemaji	27	38	84	275	871	0.49	0.66	1.35	4.1	12.88	18148.1	14787.6
Dhubri	10	38	96	809	1946	0.17	0.49	0.77	26.05	55.81	17000	28679.3
Dibrugarh	7	12	44	545	1135	0.08	0.13	0.42	27.38	41.5	11428.6	36563.9
Goalpara	37	105	245	777	1410	0.08	0.13	0.42	20.1	32.94	2162.2	23361.7
Golaghat	37	105	276	855	2395	0.27	0.98	4.47	27.38	47.9	7297.3	20000
Hailakandi	0	3	9	73	238	0	0.03	0.09	3.35	9.66	7297.3	40588.2
Jorhat	37	103	360	1269	1783	0.27	1.17	5.26	29.2	39.01	13513.5	378737.9
Kamrup	37	58	358	2256	4380	0.5	0.7	33.3	203.26	258.53	13542.8	59025.1
Karbi Anglong	26	59	165	568	970	0.6	1.53	3.25	31.63	40.38	23076.9	41628.9
Karimganj	16	16	16	61	132	0.02	0.02	0.02	2.36	5.31	1250	40227.3
Kokrajhar	0	154	225	643	1464	0	2.23	2.96	17.9	30.83	0	21058.7
Lakhimpur	19	36	154	748	1252	0.25	0.45	3.3	13.48	21.21	13157.9	16940.9
Morigaon	365	858	1397	2249	3849	5.01	15.48	26.42	51.79	86.43	13726	22455.2
Nagaon	128	373	848	2648	3665	1.95	5.56	20.86	139.23	160.66	15234.4	43836.3
Nalbari	17	41	73	1134	2894	0.39	0.68	1.8	34.7	67.78	22941.2	23420.9
N.C Hills	0	0	30	143	413	0	0	4.21	12.75	21.35	0	51694.9
Sibsagar	30	82	349	1090	2135	0.35	1.05	5.15	34.37	51.79	11666.7	24257.6
Sonitpur	78	523	3628	7840	11797	0.93	5.55	33.1	129.48	186.96	11923.1	15848.1
Tinsukia	0	3	4	204	390	0	0.03	0.04	12.28	19.37	0	49666.7
TOTAL	1024	3477	10706	31234	56449	13.65	45.5	168.59	941.81	1423.98	13330.1	2.5226

Source: Compiled from NABARD Data

ISSN 2394 - 7780

Table-4: District wise spread of SGSY up to 31st March for SHGs

Variables/Districts	SHG formed		SHGs passed Grade-I		SHGs passed Grade-II		SHGs taken up Economic activities		Women SHGs formed		Women SHGs taken up Economic Activities
	2007-12	2011-12	2007-12	2011-12	2007-12	2011-12	2007-12	2011-12	2007-12	2011-12	2011-12
Baksa	0	0	0	0	0	0	0	0	0	0	0
Barpeta	6724	199	3555	200	3273	120	2137	67	3877	110	35
Bongaigaon	2715	95	1763	163	673	71	673	71	1234	43	45
Cacher	2861	101	2427	169	749	45	534	21	1722	90	7
Chirang	0	0	0	0	0	0	0	0	0	0	0
Darrang	11942	0	5324	76	999	13	896	10	6765	0	0
Dhemaji	4134	477	2222	7	837	19	665	19	2215	0	15
Dhubri	9435	57	8717	180	2605	250	1896	129	4773	4	65
Dibrugarh	4751	0	3227	48	954	27	947	20	4134	0	17
Goalpara	4815	151	2796	80	1355	81	1149	31	3403	95	25
Golaghat	5485	180	3047	297	755	63	692	58	3418	115	30
Hilakandi	2475	0	1231	64	346	22	331	22	764	0	4
Jorhat	5166	0	4832	648	2778	419	1549	13	2501	0	13
Karbi Anglong	2947	0	2250	1249	425	99	357	62	2799	0	60
Kamrup	9634	766	6800	600	2531	181	1350	78	5264	635	52
Kamrup (Metro)	0	0	0	0	0	0	0	0	0	0	0
Karimganj	4131	61	2879	122	1931	87	1062	72	1409	41	36
Kokrajhar	2666	33	1752	33	1311	33	1311	33	1706	9	13
Lakhimpur	6683	579	2382	175	305	46	169	30	3937	330	17
Morigaon	3773	53	3611	192	1314	138	1219	138	1840	30	75
N.C Hills	737	0	520	0	244	0	244	0	416	0	0
Nagaon	9906	369	3537	50	1870	78	1465	86	4480	6	13
Nalbari	3610	110	2339	175	1457	63	559	73	1638	86	68
Sibsagar	6321	321	3863	132	1886	79	794	96	5966	67	79
Sonitpur	21346	246	14997	777	5646	534	5132	381	15596	268	213
Tinsukia	3347	147	2806	137	675	37	666	37	2266	30	30
Udalguri	0	0	0	0	0	0	0	0	0	0	0
Total	135622	3945	86877	5574	34919	2505	25797	1547	82123	1959	912
Mean	5023.03	146.11	3217	206.44	1293.29	147.35	955	57.29	3041.59	72.55	33.77

Source: Dept. of Panchayat and Rural Development (PNRD), Govt. Of Assam

In this study, we have not considered the three newly created districts namely, Baksa, Chirang, and Udalguri as they are not covered by the scheme and so no SHGs are promoted in these districts. The data reveals that most of the SHGs formed in 2007 were concentrated heavily in the Sonitpur district (21346) and Darrang (11942). In the year 2012, the formation of the SHGs was a bit slow and Kamrup tops the list with 766 SHGs. We have calculated the mean (5023.03, 146.11) for both the years respectively. It is seen that in most of the districts except Barpeta, Dibrugarh, Dhubri, Darrang, Golaghat, Jorhat, Kamrup, Lakhimpur, Nagaon, Sibsagar and Sonitpur not many SHGs were formed. We find skewed data in case of SHGs that have passed Grade-I and Grade-II with more emphasis on the above mentioned districts. In the year 2012, the economic activities undertaken by women SHGs are highest in Sonitpur (213). This study also records that at present Assam has more than one lakh SHGs with a membership of ten lakhs. But no income generating activities are exercised by most of these inactive SHGs. Most of them are interested in receiving only the subsidy amount instead of investing this subsidy amount in some employment productive and income generating schemes.

The expansion of SHGs in the state of Assam is attributed to several factors. This study has taken into account literacy rate (LR), non-farm employment (NFE), number of NGOs registered and number of bank branches (BB) as the main determinants of the growth of SHGs under both SHG-Bank Linkage Programme (SBLP) and SGSY. The study made a cross-sectional analysis that has been undertaken in reference to two time periods, viz. 2007 and 2012 using the data that is available. Data on LR and NFE for each district of Assam have been collected for the year 2007 and data on NGO and BB have been taken for the year 2012. The effects of LR, NFE, NGO and BB on the spread of SHGs under SBLP and SGSY programmes have been analysed. The Table-5 shows the cross-sectional data for different indicators.

ISSN 2394 - 7780

Table-5 District wise selected Economic and Social Indicators of SHGs expansion under SBLP and SGSY in Assam

Sl. No.	Districts	LR	NFE	BB	NGO	SBLP	SGSY
1	Barpeta	56.24	41.83	58	109	2337	6724
2	Bongaigaon	59.33	46.23	38	171	623	2715
3	Cacher	67.82	50.29	70	74	1726	2861
4	Dhemaji	64.48	23.28	17	141	275	4134
5	Darrang	55.44	31.17	49	266	2361	11942
6	Dibrugarh	68.96	41.83	70	31	545	4751
7	Goalpara	58.03	43.44	35	100	777	4815
8	Golaghat	69.38	31.97	48	33	855	5485
9	Hailakandi	58.03	35.79	19	43	73	2475
10	Jorhat	69.38	46.36	61	174	1269	5166
11	K.Anglong	59.64	26.21	53	44	568	2947
12	Kamrup	76.33	68.24	69	501	2256	9634
13	Karimganj	57.7	50.8	44	48	61	4131
14	Kokrajhar	74.16	26.21	53	44	568	2947
15	Lakhimpur	66.24	29.05	47	49	748	6683
16	Morigaon	58.53	27.94	27	50	2249	3773
17	N.C.Hills	67.62	49.2	16	10	143	737
18	Nagaon	61.73	40	86	90	2648	9906
19	Nalbari	67.23	46.12	46	148	1134	3610
20	Sibsagar	74.47	43.28	57	35	1090	6321
21	Sonitpur	59	38.83	81	77	7840	21346
22	Tinsukia	60.95	39.77	67	16	204	3347

Source: (i) Statistical Handbook of Assam, 2012 (ii) Office of Registrar, Firm and Society, Annual Report 2011-12

Correlation and Regression Analysis

By using the Table-5, the correlation coefficient matrices of these cross-sectional data for SHGs of each district under SBLP and SGSY programmes have been constructed and are given in the Table-6

Table-6: Correlation Coefficient Matrix of SHGs under SBLP and Other Variables

	Literacy Rate	Non-Farm Employment	Bank Branches	NGO	SHG-Bank Linkage Programme (SBLP)
Literacy Rate	1.000000	0.484537*	0.206578	0.190965	-0.177280
Non-Farm Employment	0.484537*	1.000000	0.287701	0.493668*	0.065115
Bank Branches	0.206578	0.287701	1.000000	0.161943	0.523972*
NGO	0.190965	0.493668*	0.161943	1.000000	0.203886
SHG-Bank Linkage Programme (SBLP)	-0.177280	0.065115	0.523972*	0.203886	1.000000

*****Correlation is significant at 0.05 level (2-tailed)

Table-7: Correlation Coefficient Matrix of SHGs under SGSY and Other Variables

	Literacy Rate	Non-Farm Employment	Bank Branches	NGO	Swarnajayanti Gram Swarozgar Yojana (SGSY)
Literacy Rate	1.000000	0..484537*	0.206578	0.190965	-0.148370
Non-Farm Employment	0.484537*	1.000000	0.287701	0.493668*	0.041768
Bank Branches	0.206578	0.287701	1.000000	0.161943	0.554300**
NGO	0.190965	0.493668*	0.161943	1.000000	0.315223
SGSY	-0.148370	0.041768	0.554300**	0.315223	1.000000

* Correlation is significant at 0.05 level (2-tailed)

**Correlation is significant at 0.01 level (2-tailed)

ISSN 2394 - 7780

In Table-6, the correlation matrix gives a positive correlation between number of SHGs under SBLP and also the number of Bank Branches (BB) as well as the number of NGOs registered. From this table, it is evident that the correlation between SBLP and BB is positive and statistically significant but the correlation between SBLP and NGO is only positive but not statistically significant. It is also stated that the correlation between NFE and SBLP is positive but not significant at all while the correlation between LR and SBLP is negative.

From Table-7, it is found that the correlation between SHG expansion under SGSY and BB is positive and statistically significant but the correlation between NGO and SGSY is positive but not significant. The result drawn for NFE and LR are same as mentioned in Table-6.

The correlation matrices shows that the expansion of SHGs under the programmes SBLP and SGSY is greatly influenced by the increase in the number of Bank Branches in the state of Assam. Since the correlation coefficient of NGOs is not statistically significant, thus we cannot accept this relationship. It is also clear that LR and NFE have not been significant enough in accelerating the pace of SHG growth in the state of Assam.

In order to analyse this data in terms of regression analysis, we have used the simple linear regression model.

$Y= a + b_1LR + b_2NFE + b_3BB + b_4NGO$

The result of the regression analysis can be seen in Table-8 and Table-9.

Table-8: Linear Regression Analysis of SBLP and Other Variables

Independent Variables	Coefficient	t-Statistic	Prob.
Constant	4466.670	1.382	0.1846
Literacy Rate(LR)	-80.13632	-1.540	0.1419
Non-Farm Employment(NFE)	-20.55541	-0.574	0.5733
Bank Branches(BB)	49.69929	2.965	0.0087
NGO	3.531156	1.069	0.2998

*Significant at 0.05 level

In the above regression analysis

(i) Dependent variable is SBLP

(ii) The value of R square is 0.40

(iii) The value of Adjusted R square is 0.259

(iv) Durbin-Watson Statistic is 2.16

(v) Probability of F-statistic is 0.0569

From Table-8, it is evident that the relation between SBLP and BB is positive as well as statistically significant. From the regression analysis, we can also see that there is a positive relationship between NGO and SBLP, but the relationship is not statistically significant. The relationship between LR and NFE with SBLP is negative in nature and hence they have little influence on the expansion of SHGs under SBLP. From this negative relationship, it is seen that the SHGs have grown in rural areas where the people are illiterate and employment diversification has not happened much.

SBLP= 4466.670-80.13632LR-20.55541NFE+49.69929BB+3.531156NGO

(1.383) (-1.540) (-0.574) (2.965) (1.06)

Table-9: Linear Regression Analysis of SGSY and Other Variables

Independent Variables	Coefficient	t-statistic	Prob.
Constant	13710.33	1.755	0.0972
Literacy Rate(LR)	-193.9773	-1.541	0.1416
Non-Farm Employment(NFE)	-104.1338	-1.203	0.2454
Bank Branches(BB)	138.8790	3.427	0.0032
NGO	15.78651	1.977	0.0645

In the above regression analysis

(i) Dependant variable is SGSY

(ii) The value of R square is 0.498

ISSN 2394 - 7780

(iii) The value of Adjusted R square is 0.380

(iv) Durbin-Watson Statistic is 1.944

(v) Probability of F-statistic is 0.014

The linear regression equation of the above analysis is

SGSY= 13710.33-193.9773LR-104.1338NFE+138.8790BB+15.78651NGO

(1.755) (-1.541) (-1.203) (3.427) (1.977)

The Table-9 gives more or less the same result like the Table-8. The most important variable in expansion of the number of SHGs under SGSY is the number of Bank Branches (BB). BB has a positive relationship with SGSY and is statistically significant. The number of NGOs registered also has a positive relationship with SGSY but this relationship is not statistically significant. The other two variables i.e. LR and NFE are negatively related to SGSY and are not statistically significant. From this analysis, it is seen that SHGs have not been able to penetrate in rural areas where people are illiterate and employment diversification has not happened much.

CONCLUSION AND POLICY IMPLICATIONS

This study reveals that in the NER and Assam, there exist basically micro-credit with little bit of micro-saving whereas the other aspects of microfinance i.e. marketing, insurance, capacity building, etc are not happening in true terms. The pattern of growth of SHGs under NER as well as within the districts of Assam is not symmetric. SGSY scheme is more successful in the backward states of the region than SBLP. From this study, it is also evident that the growth of SHG-Microfinance Linkage Programme within Assam is more in the lower region and central region as compared to the upper Assam where the growth is very poor except Dibrugarh. Dibrugarh tops the list in terms of growth followed by Kamrup. The progress of the SHGs has not been that successful in the other states of NER except Assam. In this study, it is seen that Model-I where the direct link between the SHGs and the sponsoring bank has been more successful in terms of reach and linkage than the other two models. The growth of SHGs is particularly a rural phenomenon. The policies implemented by NABARD and the government of India have helped in achieving the first and foremost objective of penetrating to rural areas by the SHG-Bank linkage programme.

Some of the policy implications that can be suggested are

i. As the expansion of bank branches and increase in the number of SHGs credit linked has helped the financial inclusion of the poor in the state, thus more emphasis should be given in establishing more bank branches in rural areas.

ii. One of the major factors of reduction in the growth of the linkage programme in NER as well as in Assam is due to the lack of NGOs specializing in SHGs formation. Hence NGOs should be encouraged by the government to take interest in microfinance activities.

iii. There should be proper regulation in monitoring system by the government in order to make sure that the self-employment schemes are taken seriously by the members of the SHGs.

iv. The spread of the SHG linkage programme is not symmetric in nature in the NER, so special effort should be given by the bank, government and NGOs in order to have successful growth of SHGs.

v. The other elements of microfinance like marketing, insurance, providing technical assistance are not present in the NER. Thus special effort should be given in order to introduce these elements as soon as possible.

REFERENCES

- Anjuman, M. and T. Alugumoni, (2001): "Impact of Microfinance through SHG-A
- Case Study", *Indian Journal of Agricultural Economics,* 56 (3), July-Sep.
- Christen, R.P. and D. Drake, (2002): "Commercialisation", in D. Drake and E.
- Rhyne (eds). *The Commercialisation of Microfinance: Balancing Business and Development,* Bloom field, CT, Kumarian Press.
- Das, Debabrata,(2006): "SHG-Bank Linkage Programme in NER with special reference to Assam- An Evaluative Study", Unpublished Project Report, Deptt. Of Commerce, Gauhati University.
- Dasgupta, R, (2001): "An Informal Journey through Self Help Groups", *Indian Journal of Agricultural Economics,* .56(3), July -Sep.

ISSN 2394 - 7780

- Harper, Malcom, (2009):'Self Help Groups and Grameen Groups-What are the Differences?', in Thomas Fisher and M S Sriram (eds). *Beyond*
- *Microcredit: Putting Development Back into Micro-Finance,* Vistaar Publications; New Delhi.
- Jairath M.S.,(2010): "Growth and Development of SHG in Rajasthan" *Indian Journal of Agricultural Economics,56{3).*
- Menon, Nidhiya, (2006).'Non-Linearity in Return to Participation in Grameen Bank Programmes', *Journal of Development Studies,Vol. 42,l>io.S,* Nov.
- Misra, Atul, (2011): "Coordination Failure in the Rural Credit Markets", *Journal of Microfinance,* http://marriottschool.byu.edu/microfinance/articles/pdf.
- Puhazhendij V. and K.J.S. Satyasai, (2002): " Microfinance for Rural People : An Impact Evaluation", NABARD, Mumbai, India.
- Satish, P., (2005):"Mainstreaming of Indian Microfinance", *Economic and Political Weekly (EPW), 40(17).*
- Sinha, Frances,(2005): "Access,Use and Contribution of Microfinance in India Findings from a National Study", *EPW,* April 23,.40(17).
- West, N.M., (2001): "Performance of SHGs with reference to SHG Bank Linkage Programme" *Proceedings of the Sixth Annual Conference of NEE A,* Guwahati.

International Journal of Advance and Innovative Research
Volume 6, Issue 2 (XII): April - June, 2019
ISSN 2394 - 7780

PRODUCTION OF BANANA IN INDIA

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ABSTRACT
Agriculture plays a predominant role in the economic development of a country. Bananas are the fifth largest agricultural commodity in world trade after cereals, sugar, coffee and cocoa. Banana is also a very important staple food for many developing countries for their food security. It is one of the most important major fruit crops grown in India. In respect of area banana ranks third and first in production only after mango and citrus. India occupies the highest area under banana cultivation in the world. The export of Indian banana is mainly to UAE, Saudi Arabia and other Gulf countries. The productivity per hectare in India is more than twice of the world. The state of Maharashtra is largest producer of banana in the country with 27 per cent of total Indian production and it has the highest productivity.

Keywords: Production, Uses of banana, Export, Import

INTRODUCTION
Agriculture plays a predominant role in the economic development of a country. It is the primary sector of an economy that provides the basic things, This sector provides livelihood to about 65 per cent to 70 per cent of the labour force agriculture not only provides food for growing population but also contributes around 14.60 per cent of country's GDP with tremendous domestic and export potential (Meena, et al., 2014; Kumari et al., 2015 India is the second largest producer of fruits (75.82 million tonnes) after China (122.184 million tonnes) and ranks first in production of mango (39per cent), banana (29per cent), papaya 38 per cent). Banana is the main fruit in international trade and the most popular once in the world.

Banana is reported to be grown in 130 countries in the world with a total production of 79 million tonnes in 2009. However, production, as well as exports and imports of bananas, are highly concentrated in a few countries in the world especially India, China, the Philippines, Brazil and Ecuador alone produced more than 60 per cent of total world banana production. This concentration of banana production has increased over time although showing a different regional distribution. India ranks first amongst the banana cultivating countries of the world with an annual production share of 27.74 per cent of the total harvest (2009).

WORLD SCENARIO
Bananas are the fifth largest agricultural commodity in world trade after cereals, sugar, coffee and cocoa. India, Ecuador, Brazil and China alone produce half of total production of the world.

The major banana exporting countries are Ecuador, Colombia, Costa Rica and Philippines and the major importing countries are USA, Belgium, Germany and United Kingdom. According to FAO estimates, It may be noted that 11 per cent of the total global area under banana belongs to India. India ranks first in banana production, contributing about 23 per cent in world of banana production. The export of Indian banana is mainly to UAE, Saudi Arabia and other Gulf countries. India is the predominate producer of bananas with 17 million tonnes of global production, followed by Uganda with 14 million tonnes.

It is one of the most important major fruit crops grown in India. In respect of area banana ranks third and first in production only after mango and citrus. India leads the world in banana production with an annual output of about 29.78 million tonnes from 0.83 million hectors with an average productivity of 35.9 tonnes per hectors during the year 2010-11 (Anonymous, 2011).

NATIONAL SCENARIO
Banana crop is widely grown in India and has great socio-economic and religious significance. The major banana crop producing states of India are Tamil Nadu, Maharashtra, Karnataka, Gujarat, Andhra Pradesh, Assam and Madhya Pradesh.

The productivity per hectare in India is more than twice of the world. The state of Maharashtra is largest producer of banana in the country with 27 per cent of total Indian production and it has the highest productivity, 420 per cent higher than that of the world average and 225 per cent higher than that of the country's average. Even though nearly 23 per cent of total world output is produced in India, the export is negligible when compared to other countries. Banana cultivation is considered quite profitable, fetching net returns of Rs 40,000 to Rs 60,000 per acre in Indian farmers with two genera namely Musa and Ensete. Musa, orginated from Indo –

ISSN 2394 - 7780

china and South East Asia has commercial significance. In India and has greater socio-economic significance accounting for 31.7 per cent of total fruit production.

HEALTH BENEFITS

Banana is the most important fruit crop. Being a rich source of potassium, banana is recommended for patients suffering from high blood pressure. It is being used to prepare squashes and juices. Despite 75 per cent water content, banana has not been used for long to prepare juice because when compressed, it simply turns to pulp. Banana is a good source of vitamins C and B6. It has a high content of carbohydrates/fibre, but is fat-free and low in proteins. The high content of carbohydrates makes banana a very good source of energy. Also, banana products and by products find many uses and applications. Banana is a nutritious goldmine.

MEDICINAL USES

All parts of the banana plant have medicinal application: the flowers in bronchitis and dysentery and on ulcers: cooked flowers are given to diabetes: the astringent plant sap in cases of hysteria, epilepsy, leprosy, fevers, haemorrhages, acute dysentery and diarrhoea, and it is applied on haemorrhoids, insect and other stings and bites: young leaves are placed as poultices on burns and other skin affliction: the astringent ashes of the unripe peel and of the leaves are taken in dysentery and diarrhoea and used for treating malignant ulcers: the roots are administered in digestive disorders, dysentery and other ailments: banana seed mucilage is given in cases of diarrhoea in India. Antifungal and antibiotic principles are found in the peel and pulp of fully ripe bananas. The antibiotic acts against Mycobacteria.

Banana fruit is extremely high in potassium (about 4673 mg) and low in sodium salt (one mg), having a perfect ratio for preventing high blood pressure and making it lower the blood pressure level. Sodium and potassium should be in balance to maintain blood pressure level and even and stroke also. Too much sodium salt raises the blood pressure

level. Blood pressure patient they can take banana instead of tables. Banana is body's fluid level, body cells and controlling in blood pressure.

One of the quickest ways of curing a hangover is to make a banana milkshake, sweetened with honey. The banana calms the stomach and, with the help of the honey, builds up depleted blood sugar levels, while the milk soothes and re-hydrates your system.\

Table-1: Major Banana Producing Countries in the World during 2013-14

Country	Area (In hectare)	Production (In metric tonnes)	Productivity per hectare (In tonnes)
India	802566	29724548	37.0
China	400000	10550000	26.4
Philippines	454179	9225998	20.3
Ecuador	210894	7012244	33.3
Brazil	481116	6902184	14.3
Indonesia	105000	6189052	58.9
Angola	115749	2991454	25.8
Guatemala	66000	2700000	40.9
United Republic of Tanzania	422190	2524740	5.7
Mexico	72617	2203861	30.3
Others	1883780	26823720	14.2
World + (Total)	**5034091**	**26823720**	**21.2**

Source: FAO Website Department of Agriculture & Co

Major Banana Producing Countries

The table 1 indicates major banana producing countries in the world during the

2013-14. the highest area under cultivation of banana was in India 802566 hectares and while it was lowest in Guatemala in 66000 hectares. The productivity was highest in Indonesia and while it was lowest in India.

Objectives

As against the background, a study on banana is undertaken with the following Specific objectives is given below.

1. To examine the trends in an area, production and productivity of banana in India.
2. To measure the Contribution of area and yield in change in production of Banana in India

ISSN 2394 - 7780

3. To analyse the export and import performance of banana in India

REVIEW OF LITERATURE

Jeya kumar (2010) in his Study on "Banana in India – largest producer and exporter in the world", this place of pride was achieved from within an area of 15 percentage of the world, harvested area under banana. In production of banana, India was the largest producer with 21 percentage of world output followed by Brazil (9 percentage), china (9 percentage), Philippines (9 percentage), Ecuador (8 percentage) and Indonesia (7 percentage). The remaining 122 countries contributed 37 percentage of the world output. Indian exports have risen from 8629 tonnes in 2000-01 to Rs.11.71 crores in 2003-04. It went up to Rs.23.36 crores in 2005-06.

Uma gowri and kavitha (2016) in their article Forecast of banana – An economic analysis showed that banana is a globally important fruit crop with 97.5 million tonnes of production In India it supports livelihood of millions of people with total annual production of 16.91 million tonnes from 490.70 thousand hectors with national average of 33.5 tonnes per hectors. Banana contributes 37 per cent to total fruit production in India.

METHODOLOGY

Collection of Data

This study is based only on secondary data. The particulars regarding the area, production and productivity of banana in India export and imports banana were collected from the published source which is presented beneath the respective tables.

The data on area, production and productivity of banana were collected for the period from 2004-05 to 2014-15. The data were collected from season and crop report of Tamil Nadu, Ministry of agriculture CMIE (Centre for Monitoring Indian Economy) and kissan world.

Tools of Analysis

The following tools were employed to analyse the data with reference to Objectives of the study.

(i) Estimation of Growth Rate

Several Methods are available to estimated growth rates. In this study exponential function was used to estimate compound growth rate by taking time as the independent variable area. Production /productivity is a dependent variable. This exponential trend equation gives constant rate of increase or decrease per unit of time and they are termed as geometric or compound growth rate compound growth rates were estimated by fitting exponential trend equation of the following type.

$$\mathbf{Y= ab^t .. \dots \dots (1)}$$

Where

Y= area / production / yield / agricultural export / import as the case may be t = time variable in yerars

a = constant

b = (1+i)

Where 1 = compound Growth Rate

The equation (1) takes the linear forms by taking logarithms of both sides of the equation As follows.

$$\mathbf{Log\ Y = Log\ a + X\ Log\ b}$$

Compound Growth Rate is compound using the following formula. Compound Growth Rate (CGR) = (Antilog (log b) – 1) x 100.

ii) Growth of Banana Production an- Analysis by Component Elements

The production of any crop will be increased by way of increasing either area under the crop or both. In banana more area has been brought under cultivation during the last few years. Similarly, yield also has increased considerably. Ultimately the production of potato also increased over the years. The relative contribution of area, yield and their interaction in increased in production of crop can be estimated using the following measure

$Q0 = A0\ Y0$

$Qn = A\ n\ Yn$

Also, $Qn = Q0 + \Delta Q$, $An = A0 + \Delta A$ and $Yn = Y0 + \Delta Y$

Therefore $(Qn + \Delta Q) = (A0 + \Delta A)(Y0 + \Delta Y)$

ISSN 2394 - 7780

$= A_0 Y_0 + A_0 \Delta Y + Y_0 \Delta A + \Delta A \Delta Y$

$\Delta Q = A_0 Y_0 + A_0 \Delta Y + Y_0 \Delta A + \Delta A \Delta Y - Q_0$

$\Delta Q = A_0 \Delta Y + Y_0 \Delta A + \Delta A \Delta Y$

Yield Effect Area Effect Interaction Effect

The first term ($A_0 \Delta Y$) can be considered as the yield effect, the second term ($Y_0 \Delta A$) as the area effect and the third ($\Delta A \Delta Y$) as the interaction effect. The total change in production can thus be decomposed into three-effect viz., yield effect, area effect and the interaction effect. Of Couse, it would appropriate to indicate the limitation of the technique. This technique of analysis is based on only few years' information viz., the base and current periods information and as such, do not necessarily reflects the actual trend for all the years in series.

Table-2: Area, Production and Productivity of Banana in India during the Period from 2005-06 to 2015-16

Year	Area	Production	Productivity			
	Thousand Hectares	**Indices (Base period2014-15)**	**Thousand Tones**	**Indices (Base period 2005-06)**	**Kg/hectares**	**Indices** (Base period 2005-06)
2005-06	424	100	12105	100	28.6	100
2006-07	477	112.5	16609	137.21	34.8	121.68
2007-08	533	125.71	17647	145.79	33.1	115.74
2008-09	709	167.22	26217	216.58	37.0	129.38
2009-10	770	181.61	26470	218.67	34.4	120.28
2010-11	830	195.76	29780	246.02	35.9	125.53
2011-12	796	187.74	28455	235.07	35.8	125.18
2012-13	776	183.02	26509	218.99	34.2	119.59
2013-14	803	189.39	29725	245.56	37.0	129.38
2014-15	822	193.87	29221	241.39	35.5	124.13
C.G.R	**7.48**	-	**9.12**	-	**1.51**	-

Source: Ministry of Agriculture and Farmers Welfare, Govt. of India

RESULTS AND DISCUSSIONS

The data related to area, production and productivity of banana in India during the period from 2005-06 to 2014-15 is provide from in Table 2.

Area

The area under banana in India had increased from 424.thousand hectares from 2005- 06 to 822 thousand hectares in 2014-15. The estimated indices of area under banana have showed a fluctuating trend. The index was higher in during year 2010-11 (195.76 per cent) it was lowest in the year the 2006-07 (112.5 per cent) The production of banana in India had increased from 12105 thousand tonnes in 2005-06 to 29221 thousand tonnes during 2014-15. The indices of production of banana showed a fluctuating trend. The indices was high during the year 2010-11 (246.02 per cent) and it was low during the year 2006-07 (137.21 per cent) The productivity of banana in India had increased from 28.6 tonnes per hectare 2005-06 to 35.5 tonnes per hectares in 2014-15. The indices of productivity of banana showed a fluctuating trend and it was high during the year 2008-09 (129.38 per cent) and while it was low during the year 2007-08 (115.74 per cent).

Table-3: Relative Contribution Area and of Yield Production Banana

SL. No	Country	Period	Ao	Yo	ΔA	ΔY	Area effect	Yield effect	Interactio effect
1	INDIA	2005-06 2014-15	424	28600	398	6900	17.15	66.74	16.10

Table 3 shows effect production; area and interaction of banana in India during 2005-06 to 2014-15 are calculated. The total production which 66.74 due to increase in productivity 17.15 Area effect, productivity effect more than yield effect in change of total production in banana. State-wise area under banana in India during the period from 2005-06 to 2014-15 is presented in Table 4. All the states level of fluctuating trend.

ISSN 2394 - 7780

The table 4 shows that the area under banana was highest in Tamil Nadu (130 thousand hectares) during 2011-12 which was followed by Karnataka (112 thousand hectares) and Andhra Pradesh (93 thousand hectares) Madhya Pradesh which was lowest (15 thousand hectares) which was followed by Bihar (28 thousand hectares).

Table-4: Area under Banana in Important State's in India (In 000' hectares)

State	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	C.G.R
Andhra Pradesh	61	72	75	80	81	79	83	93	90	79	**3.10**
Assam	47	43	44	48	53	48	49	52	51	51	**1.66**
Bihar	28	29	31	31	32	32	32	33	34	35	**2.16**
Gujarat	49	53	58	61	62	65	65	71	67	67	**3.51**
Karnataka	56	58	71	75	104	112	92	97	103	103	**7.38**
Kerala	56	59	62	60	51	NA	53	61	34	84	**-2.74**
Madhya Pradesh	15	15	15	29	33	38	25	26	24	28	**7.12**
Maharashtra	73	73	80	80	85	82	82	82	83	74	**0.71**
Tamil Nadu	95	102	114	124	114	125	130	111	118	NA	**-21.46**
West Bengal	28	32	37	40	41	42	44	45	46	NA	**-14.66**

Source: Ministry of Agriculture and Farmers welfare, Govt of India

Table-2: Area, Production and Productivity of Banana in India during the Period from 2005-06 to 2015-16

Year	Area	Production	Productivity			
	Thousand Hectares	Indices (Base period2014-15)	Thousand Tones	Indices (Base period 2005-06)	Kg/hectares	Indices (Base period 2005-06)
2005-06	424	100	12105	100	28.6	100
2006-07	477	112.5	16609	137.21	34.8	121.68
2007-08	533	125.71	17647	145.79	33.1	115.74
2008-09	709	167.22	26217	216.58	37.0	129.38
2009-10	770	181.61	26470	218.67	34.4	120.28
2010-11	830	195.76	29780	246.02	35.9	125.53
2011-12	796	187.74	28455	235.07	35.8	125.18
2012-13	776	183.02	26509	218.99	34.2	119.59
2013-14	803	189.39	29725	45.56	37.0	129.38
2014-15	822	193.87	29221	241.39	35.5	124.13
C.G.R	**7.48**	-	**9.12**	-	**1.51**	-

Source: Ministry of Agriculture and Farmers Welfare, Govt. of India

RESULTS AND DISCUSSIONS

The data related to area, production and productivity of banana in India during the period from 2005-06 to 2014-15 is provide from in Table 2.

Area

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ISSN 2394 - 7780

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Table-4: Area under Banana in Important State's in India (In 000' hectares)

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Assam	47	43	44	48	53	48	49	52	51	51	**1.66**
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Gujarat	49	53	58	61	62	65	65	71	67	67	**3.51**
Karnataka	56	58	71	75	104	112	92	97	103	103	**7.38**
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Tamil Nadu	95	102	114	124	114	125	130	111	118	NA	**-21.46**
West Bengal	28	32	37	40	41	42	44	45	46	NA	**-14.66**

Source: Ministry of Agriculture and Farmers welfare, Govt of India

Table-5: Production of Banana in Important State's in India (In 000' tonnes)

State	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	C.G.R
Andhra Pradesh	1529	2173	2631	2804	2820	2775	2900	3243	3167	3573	**7.15**
Assam	NA	NA	NA	NA	805	724	745	837	858	907	**-61.96**
Bihar	959	1125	1329	1374	1435	1517	1580	1702	1436	1527	**4.71**
Gujarat	2499	2913	3158	3572	3780	3978	4048	4523	4225	4225	**5.95**
Karnataka	1399	1559	1793	1919	2132	2282	2352	2530	2676	2711	**7.63**
Kerala	443	802	892	473	406	484	419	516	528	1160	**1.71**
Madhya Pradesh	616	599	788	1498	1460	1720	1379	1701	1735	1813	**13.51**
Maharashtra	4609	4622	4963	4960	5200	4303	4315	3600	4831	3789	**-2.19**
Tamil Nadu	4648	5019	6117	6667	4981	**8253**	6736	5136	5650	3382	**-1.42**
West Bengal	545	464	892	954	982	1010	1054	1078	1098	1124	**8.73**

Source: Ministry of Agriculture and Farmers Welfare, Govt. of India.

Table 5 indices that the production of banana in Tamil Nadu was highest (8253 thousand tonnes) which was followed by Maharashtra (5200 thousand tonnes) and Gujarat (4523 thousand tonnes). The production of banana in West Bengal was lowest (464 thousand tonnes) which was followed by Kerala (419 thousand tonnes).

The estimated compound growth rate showed that Madhya Pradesh (13.51 per cent), which was followed by West Bengal (8.73 per cent), Karnataka (7.63 per cent), Andhra Pradesh (7.15 per cent), and Gujarat (5.95 per cent).The negative growth rate was observed in Assam (-61.96 per cent).

ISSN 2394 - 7780

Table-6: Export of Banana from India during the Period from 2005-06 to 2014-15

Years	Quantity	Value
2005-06	11475.00	2336.10
2006-07	11475.00	1606.10
2007-08	16662.54	2607.95
2008-09	30401.46	5545.47
2009-10	54319.24	13025.45
2010-11	57539.29	10232.22
2011-12	45573.24	9154.22
2012-13	50004.00	13064.00
2013-14	52108.00	15683.00
2014-15	54155.00	17256.45
CGR	**20.90**	-

Source: DGCIS, India, Indian Horticulture Board.

Table 6 shows that export of banana in India during from 2005-06 to 2014-15. The export of banana had increased from 11475.00 million tonnes in the year 2005-06 to 54155.00 million tonnes of banana it implies export of banana was tremendeous growth of an economy in 2014-15. The compound growth rate of banana was positive with 20.90 per cent. The value of term the export of banana in India had increased from 2005-06 to 2014-15. 2336.10 lakhs to 17256.45 during the reference period.

Table-7: Import of Banana from India during the Period 2005-06 to 2014-15

Years	Quantity (tonnes)	Value (in lakh)
2005-06	3839.46	1101.18
2006-07	4003.80	1126.73
2007-08	3977.91	1254.89
2008-09	3779.33	11203.17
2009-10	54319.24	13025.47
2010-11	57539.31	10232.23
2011-12	45573.23	9154.22
2012-13	55573.31	10232.23
2013-14	46574.41	9269.21
2014-15	48639.25	9735.65
CGR	**44.50**	-

Source: DGCIS, India, Indian horticulture board.

The table 7 shows the imports of banana in India during the study period 2005-06 to 2014-15. The import of banana had increased from 3839.46 tonnes in during 2005-06 to 48639.25 tonnes in 2014-15. The estimated Compound Growth Rate import of banana in India was 44.50 per cent.

The value of imports of banana from India had increased from 2005-06 to 2014-15 and 1101.18 lakhs to 9735.65 during the reference period.

CONCLUSION

India is the largest producer of banana in the world and with a 23 per cent share, in production and also a biggest exporter of banana. In terms of area, production and productivity it shows on increasing trend and a minor fluctuation also seen during the reference period of study. Major variation could be seen in production of banana, all the states so government should consider the regional disparities of production of banana by way of increasing production (or) Productivity

ISSN 2394 - 7780

REFERENCES

- **Achoja Felix Odemero** (2013), "Factor Analysis in Small scale Banana Production in the Rain Forest Zone of Data State, Nigeria" **Journal of National Sciences Research**, vol. (1), Pp. 1-7.
- **Hazarika (2009)**, "Banana cultivation**" kissan world** Vol:36 (3), Pp: 56- 58.
- **Jaya Kumar** (2010) "Banana in India largest producer and exporter in the world" **kissan world** Vol (37) (5), Pp: 6-7.
- **Rageshkumar, Sonu Jain, Lokesh Kumar Meena and Chandra Sen** (2015) "Resource Use Efficiency and Constraints in Production and Marketing of Tissue Culture and Sucker Propagated Banana**" International Journal of Agricultural.** Vol (5), Pp: 1-1
- **Sanjay Dhanwate and Sangolkar** (2011), "Performance of Banana and Export in India"
- **Southern Economist,** vol. (1) Pp. (23-34).
- **Sarasudevi** (2015) "A Comparative study of production of banana and paddy in Tirunalveli district" **International Journal of Scientific Research.** Vol. 4, Pp. 1-5.
- **Uma Gowri and Kavitha** (2016) "Forecast of banana –An economic analysis".
- **International Journal of Forestry and Crop Improvement.** Vol (7), PP: 132-136.

International Journal of Advance and Innovative Research
Volume 6, Issue 2 (XII): April - June, 2019
ISSN 2394 - 7780

A STUDY OF USING MODELLING TOOLS IN AGRICULTURE: A CASE STUDY OF KRISHNA DISTRICT, ANDHRA PRADESH

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ABSTRACT
The quality product at competitive price is the challenge to all the researchers across the India. In order to achieve high quality products at reasonable cost, industries are moving towards automation. One of the challenges in these industries is the ability of the machines to change the tools automatically during its wear or damage in Krishna. In general tool failure contributes about 7 % to the down time of the machining centres. Most tools fail either by fracturing or by gradual wear. Therefore, on-line monitoring of tool wear is an important phenomenon in producing quality products at reasonable cost. This also increases the production rate in the industries and states that even though more methods have been developed to monitor tool wear, none of them has achieved significant use in the industry. One of the best methods acknowledged by researchers for on-line quality assessment of machine tools is tool condition monitoring using acoustic emission technique (AET). The natural resources available to us are finite however the population it has to support is ever increasing. This puts intense pressure on land and therefore production activity and also productivity. It is the need of the hour to provide knowledge to not only farmers but also policy and decision makers, especially in Andhra Pradesh.

Keywords: Using Modelling Tools, Agriculture, Crop Models, Production.

INTRODUCTION
Crop production is made up of an aggregation of individual plant species grown in a unit area with the aim of having an irreversible increase in the growth, sizes and volume of seeds or consumables from these plants, which are harvested for economic purposes. Future requirements can be ascertained through the use of appropriate models by simulating characteristics of the environment in which the crops grow over a short time period. Aspects like yield and growth, temperature and climate changes, levels of carbon dioxide etc. can be studied with the help of crop models. To give an example, changes in climate towards humidity might cause a certain plant disease to accelerate and the result would be loss to farmers. Existing natural systems are complex and many do not have boundaries. A lot of difficulty is faced while coming up with a simulation that embodies all the essential elements and mechanisms of that real world system. It is even more demanding, when the complex systems encountered in environmental management. The bio-system is made up of a complex interaction among the soil, the atmosphere, and the plants that live in it. Modification in any of these elements would have either an augmenting or an adverse effect on the crops being grown. The strategy is to minimize the adverse effects and reach the desired goal. The use of mathematical modelling is essential. Among the different modelling techniques, the technique that enables one to predict the behaviour of design while keeping the expense at a minimum is mathematical modelling. Agricultural systems are basically modified ecosystems and managing these systems is very difficult.

MODELLING TOOLS IN AGRICULTURE
A radical change in agriculture has been brought about by the new agricultural strategy since the mid-sixties. The farming community is vibrating with new energy and pulsating with new hopes. The package of measures which helped to improve agriculture includes the adoption of HYV seeds, fertilizers, pesticides, machinery, irrigation, improved implements, soil conservation, etc. Even though there has been a dramatic increase in output, the new agricultural strategy necessitated assured irrigation, big farms, huge capital and institutional credit and extension services. The success story differed from area to area within a particular region and between different regions of a country. Irrigation is one of the most fundamental inputs as it helps to relieve.

IRRIGATION
Agriculture which hitherto was a gamble in monsoon and events like severe famine and semi-famine conditions. Moreover optimum utilisation of land and resources can be obtained only with assured water supply and multiple cropping could be undertaken only with better irrigation. Irrigation helps in ‘increasing production per unit of land, particularly when used in appropriate combination.

FERTILIZER
Intensive use of land leads to depletion of nutrients in the soil which has to be replenished with the use of manures and fertilizers to increase soil productivity. Mellor estimated that 53 per cent of the incremental food

ISSN 2394 - 7780

grain production in India during 1973-74 was attributable to fertilizer use and its contribution was expected - 84.16 to increase to 79 per cent during 1983 An Food and Agriculture Organisation (FAO) annual study has described the importance of fertilizer use as a spearhead of agricultural development. Because wherever efforts are made to raise agricultural efficiency and production for expanding populations, more fertilizers and manures have been invariably needed. The Intensive Agricultural District Programme (IADP) and High Yield Variety Programme (HYVP) increased the importance of fertilizers to compensate for the nutritional loss. The use of fertilizers has increased from 1.20 million tonnes in 1966-67 to 5.4 million tonnes in 1988-89.

MECHANISATION

Farm mechanisation is another essential input for increased agricultural productivity. Assured irrigation at appropriate time and quantity, uniform application of fertilizers, seed-bed preparation of a good quality and early harvesting and threshing to sow the next crop with well adapted machinery and implements can only lead to timely farm operations of satisfactory quality. Much headway is made in this direction in States like Punjab, Haryana, Uttar Pradesh, Andhra Pradesh and Tamil Nadu. Economists differ as to the possible loss and gain of farm mechanisation.

REVIEW OF LITERATURE

Pereira, 1987 The art of simulating is as old as man. From the origin of the civilization, man had to struggle to use modern technology in agriculture, even if unconsciously, simulations of real future process to be ready for life.

Wu et al., 1996 Simulation is, therefore, an analogy with the reality, being common in many areas. For example when an athlete undergoes training, they simulate the situation that would be present at the real competition or through the use of prototypes a pilot can simulate the conditions in the air. In agriculture, the simulation is important to forecast the results of a certain system management or of a certain environmental condition.

Crowther, 1995; Procter, 1995 Model is a word that admits several connotations, among which the following can be mentioned: (i) the representation of some entity, usually in smaller size than the original; (ii) a simple description of a system, used to explain it or to perform calculations.

METHODOLOGY & SAMPLING

Designing a suitable methodology and selection of analytical tools are important for a meaningful analysis of the study. This section is devoted to describe the methodology which includes choice of the study area, sampling procedure, period of study, collection of data, method of analysis, tools of analysis and measurement variables. A reconnaissance of the study area was undertaken to form a crystal clear picture of the process and activities involved in rice cultivation under actual farming conditions. Based on the information gathered a farm level, a detailed schedule was drafted, pre-tested and used in the field-survey.

OBJECTIVES OF THE STUDY

1. The study was clearly explained to the farmers personally Using Modelling Tools in Agriculture in Krishna District.
2. The details regarding the general characteristics of the sample farmers Using Modelling Tools in Agriculture in Krishna District.
3. The aspects relating to the Using Modelling Tools in Agriculture in Krishna District of the study were collected from the sample farmers through the direct personal interview method.

RESULTS AND DISCUSSION

Table-1: Characteristics of Using Modelling Tools in Agriculture in Krishna District

S. No	Item	Farm extension in Krishna District	Developing and evaluating technologies	Investing in agricultural development projects that support sustainable intensification	Management support for precision agriculture	Supplying food products that meet corporate sustainability goals
1	Farming system	Small-holder	Small-holder	Small-holder	Commercial crop	Commercial crop
2	Information user	Farm adviser	Agricultural research team/program	Analyst/adviser	Management consultant	Corporate analyst

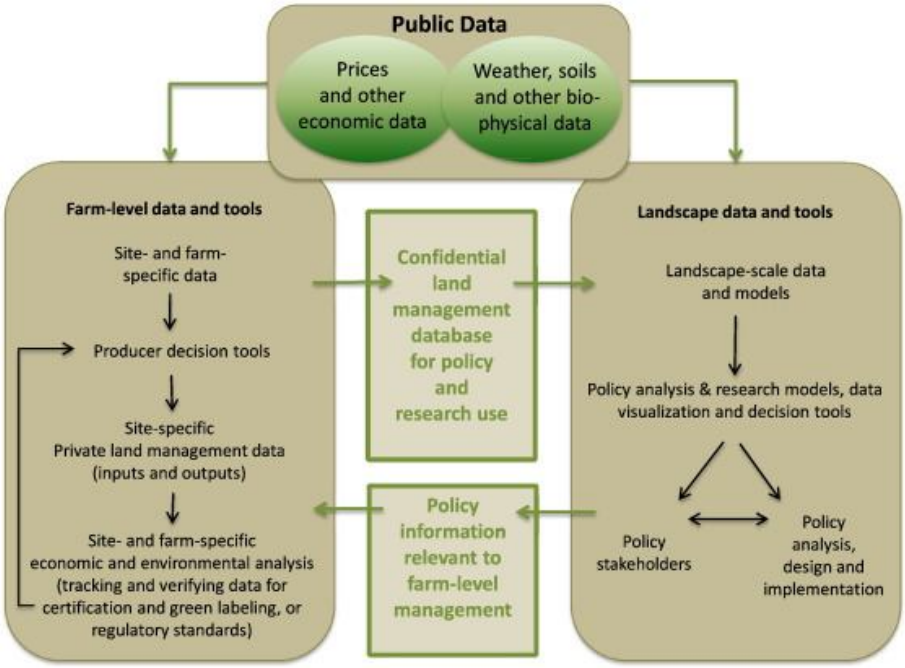
ISSN 2394 - 7780

3	Beneficiaries	Farm family	Research institution/farm population	NGO & clients	Farm business	Agri-business firm
4	outcomes	Improved livelihood (income, nutrition, food security)	Improved technology	Sustainable technology	Income, soil conservation & water quality	Profit, risk management, sustainability objectives

Source of Data: Primary

Above table Characteristics of Using Modelling Tools in Agriculture Small-scale semi-subsistence farms typical much of Krishna District and other regions in Andhra Pradesh, many of which produce a mix of subsistence crops, cash crops, livestock, and, in some areas, aquaculture. Large-scale commercially-oriented crop farms typical of the industrialized countries including the District.

Table-2: The aspects relating to the Using Modelling Tools in Agriculture in Krishna District



Above table the aspects relating to the Using Modelling Tools in Agriculture in Krishna District Prices and other economic data and weather, soils, bio-physical data of Krishna District and other regions in Andhra Pradesh, many of which produce a mix of subsistence confidential land management database for policy and research and policy information.

Table-3: Latest modelling Techniques and Methods of agriculture in Krishna District

ISSN 2394 - 7780

In above pictures by 2030, the Krishna district will have 65 % urban population and economy will be highly modernization in agriculture. We can definitely say that apart from demanding more food, the future generation will also demand food that is nutritious, safe, accessible and also affordable. Agriculture, considered to be backbone of Indian economy, would be more important in days to come as it would not only provide food but also raw material for industries, fuel through biomass and also be able to use the waste water. At present, India holds the second position in the world in agricultural production. It also contributes a major share in the Gross Domestic Product (GDP) of the country. In addition, the sector recruits about 50 % of the entire manpower.

CONCLUSION

Efficient and effective research planning that identifies and fills the gaps in our knowledge can be achieved through development of models and their implementation. Strong and good physiological data can be used by models that result in effective understanding of the real world; however, mostly models are either poorly tested or not tested at all. This can be seen because of the difficulty in validating the models, whereas creation is a much simpler process. It is easy to get discouraged while model building because of the inevitable errors that might arise during testing or because of the sheer fact of complexity. Subsequently, the usefulness of crop models in agronomy has been under a lot of doubt. Unfortunately, this confusion is caused partly by those who are naively optimistic that crop modelling is the panacea for agricultural problems and apply crop models indiscriminately. Because most agronomists do not fully understand the concept of crop growth modelling and systems-approach research, training in this area is required. An intensely standardized and assessed model can be used to effectually conduct research that would in the end save time and money and significantly contribute to developing sustainable agriculture that meets the world's needs for food.

REFERENCES

1. Assioura JB (1973). Sense and nonsense in crop simulation. J. Aust. Inst. Agric. Sci. 39: 181–183.
2. Porter JR (1994). AFRCWHEAT. Pages 25–29 in GCTE Focus 3 Wheat Network: 1993 model and experimental meta data. Global Change and Terrestrial Ecosystems, Canberra, Australia. Rep. No. 2
3. Penning de Vries FWT, Brunsting AB, van Laar HH (1974). Products, requirements and efficiency of biological synthesis, a quantitative approach. J. Theor. Biol. 45: 339-377.
4. Shewmake S (2008). Vulnerability and the Impact of Climate Change in South Africa's Limpopo River Basin. IFPRI Discussion paper 00804. http://books.google.com.gh/books?id Accessed 1st August 2012
5. Allen, S.G., S.B. Idso, B.A. Kimball, J.T. Baker, L.H. Allen, J.R. Mauney, J.W. Radin & M.G. Anderson, 1990. Effects of air temperature on atmospheric CO2-plant growth relationships. Report TR048. U.S. Dep. of Energy/U.S. Dep. of Agriculture, Washington DC, USA.
6. Chen, J., 1984. Uncoupled multi-layer model for the transfer of sensible and latent heat flux densities from vegetation. Boundary-Layer Meteorology 28: 213-226.
7. Cure, J.D., 1985. Carbon dioxide doubling responses: a crop survey. p. 99-116. In: Strain, B.R. & J.D. Cure. Direct effects of increasing carbon dioxide on vegetation. DOE/ER-0238. U.S. Dep. of Energy, Washington D.C., USA.
8. Cure, J.D. & B. Acock, 1986. Crop responses to carbon dioxide doubling: A literature survey. Agric. For. Meteorol. 38: 127-145.
9. De Temmerman, L., J. Wolf, J. Colls, M. Bindi, A. Fangmeier, J. Finnan, K. Ojanpera and H. Pleijel, 2002. Effect of climatic conditions on tuber yield (Solanum tuberosum L.) in the European 'CHIP' experiments. Europ. J. of Agronomy 17: 243-255.

International Journal of Advance and Innovative Research
Volume 6, Issue 2 (XII): April - June, 2019
ISSN 2394 - 7780

DYNAMICS OF LAND USE CHANGES IN THE PERI-URBAN ENVIRONMENT- AN ANALYSIS OF BENGALURU PERIPHERY

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ABSTRACT
Bengaluru is one of the fast growing cities of India. With urbanization and increase in population, people are migrating from other states to Bangalore city causing urban sprawl. Peri-urbanization has brought some important changes in the fringe areas of Bengaluru. Land use land cover changes is a major challenge of Bengaluru periphery. Land use in urban and peri-urban areas has grown with the increasing population and urbanization.In order to meet the growing demands of urbanisation, the fringe areas are converted into industrial residential and commercial establishments. Land use changes have brought some important changes in the peri urban environment .The first is the considerable land use changes for the industrial ,residential and commercial purposes, and Second the long-term, impact of rise in land prices associated with the increased demand for land . The proposed research focuses on land use land cover changes in Peri-Urban Bengaluru since 2000 to 2017. The study area covers the area beyond 198 wards .To assess the extent and pattern of Land use changes in the peri urban area , 2 peri urban sites are selected .In this research a selection of multispectral and multi temporal images are used for the study. Adopting a time interval of 5 years suggested by GIS experts and a spatial resolution of 30m , the investigation is carried out. In this study ERDAS software is used at different stage for analysis and map production. A supervised classification is used to facilitate land use change detection. The time period for the analysis is 2000 to 2017 in Hoskote and Kanakapura Taluks. The analysis showed that the extent of agriculture and cultivation is reduced in the periphery of the city , there is active land transactions in the urban fringe and the agricultural land is being converted into non-agricultural purposes at a rapid rate.

I. INTRODUCTION
Peri urban areas are transition zones. This transition leads to the several other changes ,especially changes in the land use pattern . The land in fringe areas subject to frequent changes. Peri urban areas are those areas which are not the part of the city nor the rural ,but it is considered as a buffer zone where dynamic changes takes place. The urban land uses results in roads, industries, power stations, urban recreational amenities, amusement parks, residential complexes and even dumping grounds and treatment plants for urban wastes. The entire economic structure of the region is often challenged due to the frequent transitions . Land use change invites new occupational options. Occupational diversification sets in as the city offers highly paid jobs. On the other hand sometimes the traditional occupation structure of the villages undergo rapid changes . The dynamic changes results in the rapid transition of the fringe areas and sprawls the city to the country side. These changes in the peri urban areas has resulted in loss of agricultural lands, open green spaces and depletion of ground water. A study by McGee (2009) reveals peri-urban area is an interaction zone surrounding built-up area that is made up of built-up extension of the city, approximately 30-50 km beyond urban edge and its landscape features are subject to rapid transformation.

Peri-urban literature shows land use changes at the peri-urban area is a complex and dynamic process that involves both natural and human systems. Land use change is a major driving force of global environmental change. Land use in urban and peri-urban areas has grown with the increasing population and urbanization. Prior to the industrialization, studies in land use in urban and peri-urban had little meaning, however the modern cities of the 18th, 19th and 20th centuries sprawled into the countryside, resulting in the structural changes due to the demands of urban dwellers. The peri urban areas exhibit an intimate relationship between the city and its surroundings. Studies carried out to analyse spatial and temporal changes of megacities, with a focus on peri-urban land use changes are very few and are dominated by few scholars such as Bell & Irwin, Theobald, Huang, Zhang, & Wu,). Hence the research gap shows there is a need for studies that analyses the spatial transformation of the peri-urban locales that contributes to understanding of the spatial and temporal changes of the land use pattern. This will provide an assessment of its spatial patterns with the help of GIS and Remote Sensing, and helps to measure the impacts of future changes in the land use land cover pattern in the rapidly changing peripheries.

Land
Land is considered as a resources or real estate rather than just land. The supply of land is fixed. Land plays a fundamental role in the economic activities as well as social and cultural process. According to Singh, Jasbir

ISSN 2394 - 7780

(1997) land has the following entities: namely the terrain, climate, soils, water resources and forest cover. Hence all the natural resources are associated to the land resource.

Land Use (LU)
Land use include the arrangements, activities and inputs people undertake in a certain land cover type to produce, change or maintain it. According to FAO land use concerns the function or purpose for which land is used by the population; it can be defined as "the human activities that are directly related to land, making use of its resources or having an impact on them."

Land Cover (LC)
The definition of land cover is fundamental, because in many existing classifications and legends it is confused with land use. *Land cover is the observed (bio) physical cover on the earth's surface,*

II. LITERATURE REVIEW - LAND USE CHANGES IN THE PERI – URBAN INTERFACE
With an unprecedented population growth and urbanization there is considerable changes in the land uses especially the peri urban areas of metropolitan cities such as Delhi, Mumbai and Bengaluru. Literature review shows that some of the causes of the peri-urban include - population growth, economy, patterns of infrastructure and service sector growth etc. The direct implication of such peri-urban sprawl is the change in land use and land cover of the region.

A Study by Verburg (2006) shows the land use change is a dynamic process; as it involves rapid spatial and temporal pattern change .Various studies sketch the spatial and temporal changes in the lulc pattern with the help of GIs. According to Zheng (2012) modeling land use changes as a function of biophysical and socio economic driving factors is one technique to unravel the complex relationships in the land use changes systems and it provides insights into the extent and pattern of lulc changes.

GIS is used to monitor and evaluate the spatial expansion. There are various studies which used gis in order to capture and analyse spatial and temporal changes of urban growth (Bally and Xie 1994, Batty et.al.1997; White and Engeless 2000). Samat (2011) incorporated Gis with the Markov Cellular automata model to evaluate land use change and to forecast future land use pattern. Urban land use dynamics with the quantification and pattern analysis is done (T.V.Ramachandran et.al 2012) using land scape metrics.

Theories on Land Use
Most of the land use models have incorporated economic theory in its framework especially the micro-economic theory of consumer behaviour, the optimal allocation which has its origins in the group of spatial interaction models. This approach is related to the description of individual choice behavior and subsequent aggregation to the level of a market segment. Alonso (1964) used the utility maximization framework to describe the urban land market. He has constructed his model based on land uses installation in the city as a reflection of differences in land uses rents. According to him distance is a major factor leads to land prices. Several activities that constitute uses structure vary according to intensive competition between lands prices and rents. Alonso model inspired many (urban) land use models (Mills,1972 ;Fujita,1989) that, applied to mono-centric cities, provide a well known concentric land use patterns. These models that apply utility maximization all have derived from the spatial econometric models. However a more general, macro-economic approach is used in the equilibrium models that consider the balancing of supply and demand. Models that concentrate on more than one market (housing and agriculture) and more than one region are referred to as special general equilibrium models.

Classical theories on land use change
According to Meyer (1992) population is a key driving force of land use change. Studies by Bilsborrow and Ogendo (1992) Boserup (1965) and Grigg (1979) show that with the increased food requirements due to a rapidly growing population, the first reaction of farming communities in developing countries is gradual spreading of the cultivated area into unused land. Economists like Thomas Malthus, David Ricardo and Ester Boserup have explained the land use changes. Malthus (1798) argued that agro ecological zones have a certain population carrying capacity which must not be exceeded. Malthusian view shows a finite stock of suitable land is thus assumed to lead to a strict competition between land uses and, eventually, to a shortage of productive land, with negative welfare impacts. Authors like Lambin (2012) and Ricardo (1817) added that land being limited will be the main barrier to agricultural growth. In the neo-Malthusian view, population growth is accorded primary importance in most land use change. However in the work of Boserup (1975), a static view of carrying capacity is thus disputed. Agricultural development is attributed to the pressures from a growing population .Blaikie and Brookfield (1987), argue that population growth results in land use changes and to great extent it leads to environmental damages.

ISSN 2394 - 7780

Foley (2005) and De Fries (2004) have presented a land-use transition model with a sequence of land-use stages including the changes in the natural ecosystems, subsistence agriculture, and small scale farming, intensifying farmland production, characterized by expanded urban areas, intensive agriculture.

This classic bid rent model developed by William Alonso. However Von Thunen (1826) model of agricultural land use is the cornerstone of land use theory. The very first analysis of land use is by Johann Von Thunen (1826) and subsequent refinements to his work done by Alonso (1964) . The land market model ALMA by Alonso (1964) is represented as a two-side matching market. It shows both the demand side and supply side of the land transactions. According to this model households choose locations at a certain distance from the central business district (CBD) by means of maximizing utility they get from the joint consumption of a spatial good (land lot or house) and a composite good (all other goods) under their budget constraint (income less transportation costs).Market access is an important criteria because it lowers costs. The best market access is at the CBD which is a centre of population and transportation. The above mentioned models shows distance plays an important role in the land use changes.

Key Drivers of Land Use Changes in the PUI

According to Kumar (2001) socio-economic drivers of peri urban transition in India reflects a metropolitan region, comprising urban Agglomerations or cities and their outgrowths.

The spilling over of population from India's major cities into these areas has occurred since the 1990s, lead to the housing demand that has caused the population to move to the outskirts of the city where land is cheaper. The rapid population growth in the main CBD results in increased demand for land for land in and around peripheries .The land value is high at the CBD, hence the outward movement of people from the main city to the city fringes, where the land price is cheap. This phenomenon is now happening in several metropolises in India Bengaluru, Hyderabad, and Chennai etc.

Increase in urban population and the need for better connectivity to cities, in turn, fuel the growth of urban related infrastructure. This drives up land prices and changes land use patterns. As a consequence, land in the periurban areas gradually becomes monetized (Brook et al., 2003; Kumar, 2001). This process is a common phenomenon in major Indian cities where a real estate boom has transformed the pace of development. One such typical example is the growth of Bengaluru Metropolitan. There has been a massive land acquisition process; land has been acquired by the state and private corporations for several industrial, residential and recreation purposes, changing land use away from agriculture and allied activities. There is rapid transition of farm lands to commercial spaces in areas such as South Bengaluru and East Bengaluru and places like Whitefield.

An industrial development is a major factor contributing to the growth of UAs in India. The failure of effective land policy and administration, coupled with the increasing pressures of investment agencies, Multi National Companies (MNCs) and Trans National Corporations (TNCs) has resulted in peripheral areas facing the brunt of relocation of polluting industries. The Supreme Court of India has often issued directives for the closure of hazardous polluting industries in the urban core areas and their relocation in periphery areas, preferably in the extended metropolitan zones or the periurban regions (Kumar 2001). Neo-liberal policies gave greater space to private enterprises and large transnational corporations which lead to the expansion of peripheries and setting up of innumerable commercial establishments.

Land speculation coupled by active land transactions with the growth of the real estate developments is prospect of rapid urban growth and the land use change. Speculators hold on to land in and around the city, expecting land values to increase. There is more land transactions in the peripheral areas with the advent of IT revolution. People who need land for residential or productive purposes must therefore find land further from the centre (UNFPA, 2007). Changes in the structure and location of economic activity contribute greatly to peri-urban growth. Better communications and transportation networks make outlying areas increasingly accessible. Globalization encourages economies of scale in production and distribution, which, in turn, encourage large facilities occupying large tracts of land.

There is spill over –growth in and around the peripheries. This is mainly because growing workplaces and workforces can no longer find space in city centres. Periphery offers cheaper infrastructure, land and labour, which encourage further periurbanization. This particular phenomenon is found in the major cities. Industrial expansion played an important role especially supporting economic activities, while the IT boom was an important factor shaping the expansion of Metropolitan cities.

ISSN 2394 - 7780

Land Use as a Challenge to Sustainability and Agriculture

Lulc change is a challenge to the sustainability and biodiversity, it causes other environmental impacts. LUCC change could lead to natural resource degradation – which affect the poor the most since they heavily depend on natural resources for their livelihood. Lulc changes shows a decline in agricultural land as the economy grows and subsequently an increase built up land, this used to be a phenomenon in most countries. Forest extent and density and biodiversity also reveal an environmental Kuznets curve pattern. Rates of agricultural expansion are decreasing globally however still expanding in sub-Saharan Africa (SSA) and Latin American countries. Literature Review shows the lulc pattern of countries like Brazil, DRC and Indonesia. These studies show the rapid decline in farm lands and increase in agricultural lands. This resulted from the growth of the city beyond its carrying capacity and the disconnect between urban and environmental planning. One of the most conspicuous manifestations of urban expansion and its implications for natural resource use is the irrevocable loss of agricultural land (Douglass, 1992). The reasons for this loss of agricultural land include the following.

1. Conversion of agricultural land for non agricultural purposes.

2. Land purchases for speculative purposes and Real Estate

3. Productivity decline due to the heavy pollution of soil and water by industries

4. Degraded soil quality because of the use of fertilisers, pesticides and insecticides

Land degradation in the areas surrounding agricultural land is a major problem. Fringe areas where land use was predominantly agricultural become sites for rapid, unplanned urban development (Malaque 2007). Land use change is a basic driver of periurbanization processes and with it, emerge changes in access to other natural resources such as water, engendering further socio-economic changes in livelihoods, migration, social composition of the population. The appropriation of land for urban expansion has been a constant reality in the expansion process of all major Indian cities (Shaw, 2005). Land acquisition for urban expansion has been noted to be a cause of great dissent among peri- urban residents against urban authorities in periurban Gurgaon (Narain, 2009a). Studies on south Indian cities shows there is an expansion/ encroachment onto the peripheral land, and the restructuring of existing development there. Though the peri urban developments has lead to considerable developments it has lead to the decline in the extent of farmlands and leading to land conversion at a rapid rate.

Impact of LULC Change

In order to meet the growing demands of urbanisation, the fringe areas are converted into industrial residential and commercial establishments. It leads to haphazard growth and poor city planning inadequate housing, slums, overcrowding, ill-health, social- polarization, traffic congestion and environmental pollution, etc. The land use land cover change has led to changes in the local climate. City growth curbs the fringe areas and leads to uncontrolled expansions.

Land-use has enormous effects through fragmentation of natural habits (Tuner et.al. 2003; Verburg at. Al 1999; Vitousek, 1994). Researches on Bengaluru shows that built up area increased up to 28% in the Bangalore Metropolitan City. Bangalore is an international technological hub known for its industrial and IT growth; however this growth has lead to deterioration of the green cover and reduced the environmental quality .Such changes can clearly be attributed to land-use change. The present land use change imposes mounting pressure in the city.

According to a study by IISc the built-up land is increasing (from 1973 to 2010) in all directions with the decline of vegetation. In 1973 built-up is high in NNE directions whereas in 2010 built-up has increased in NNE, SSW directions due to compact growth of residential areas, commercial complex areas. Infilling in these regions during 1973 to 2010 due to conversion of open spaces and vegetated areas in to built-up. The urban land has increased in all directions due to increase in residential and commercial areas like Gandhi nagar, Guttahalli, Wilson Garden, KR Market, Kormangala (some of the IT industries are located in this region) etc. Infilling urban growth in the region and increase in built up land is due to more commercial/financial services/activities.

Large chunk of population from all parts of the country is migrated to cities and they live in and around peripheries similarly there is high demand for housing and other services and agricultural land is being converted for residential ,industrial and commercial activities. Setting up of industrial and IT corridors in the peripheries leads to the growth of the economy and it contributes to the state domestic product. The growth of services and exports exceeds the output from primary and secondary sectors. The changing type of land use is the direct outcome of the changes of land prices, ability to pay and the extent of exploiting the piece of land.

ISSN 2394 - 7780

Peri urban centered real estate market influences land price considerably. Hence the land use change impact the city growth, spatial changes and land values.

III. LULC ANALYSIS

Most empirical studies on land use change have depended on the application of remote sensed data and GIS for analysis (Aronoff, 2005; Ademiluyi, Okude, &Akanni, 2008). Several change detection techniques have been identified in literature; the commonly used techniques include principal component analysis (Turan, Kadiogullari, &Gunlu, 2010). The analysis in this study uses GIs data .Further econometric analysis is done using land use data.

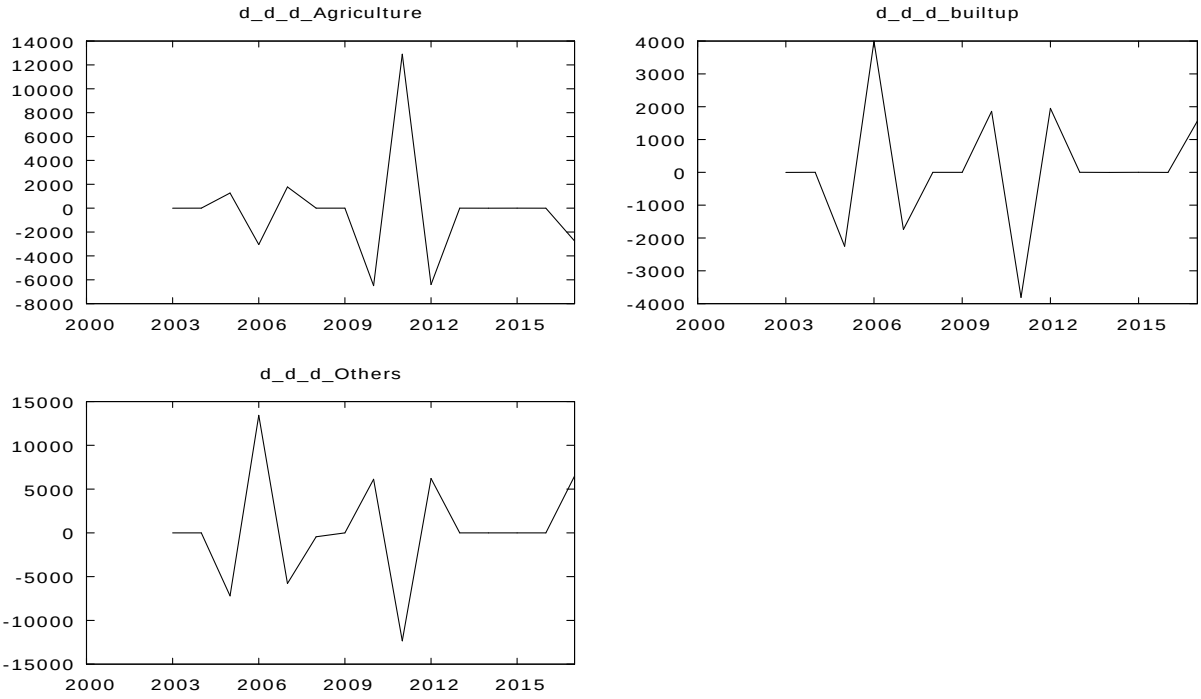
Data and Methods

To assess the extent and pattern of Land use changes in the peri urban area, 2 peri urban sites are selected .In this research a selection of multispectral and multi temporal images are used for the study. Adopting a time interval of 5 years suggested by GIS experts and a spatial resolution of 30m, the investigation is carried out. In this study ERDAS software is used at different stage for analysis and map production. A supervised classification is used to facilitate land use change detection. The time period for the analysis is 2000 to 2017 in Hoskote and Kanakapura .In order to facilitate land use change detection in this research , five classes of land uses were generated Habitation, Water body, Agriculture ,Vegetation and Others which include Fallow Land or Waste Land .Level 1 of classes will be used to generate change statistics.

Table-1: Data Used and Sources

Acquisition Date	*Satellite Number*	*Sensor Type*	*WRS Path/Row*	*UTM Zone*	*Datum*	*Spatial Resolution (m)*
26/10/2000	*Landsat 7*	*ETM*	*144/051*	*43 N*	*WGS84*	*30*
17/01/2005	*Landsat 5*	*TM*	*144/051*	*43 N*	*WGS84*	*30*
31/01/2010	*Landsat 5*	*TM*	*144/051*	*43 N*	*WGS84*	*30*
23/03/2017	*Landsat 8*	*OLI*	*144/051*	*43 N*	*WGS84*	*30*

Structural changes in the land use pattern in Hoskote Taluk



The above time series plot shows the structural changes in the three different landcovers. Among the two Taluks taken for the study Hoskote Taluk shows more lulc change.

ISSN 2394 - 7780

The chow test is conducted using the time series data of three land covers .The results showed that there is a structural break in the land covers in 2010.Hence it can be concluded that Hoskote Taluk shows a structural transition .The above time series plot shows there is a structural break in the lulc pattern . Most of the farm land is transformed into built up; barren land in Hoskote has been converted as industrial clusters. The growth of Hoskote from 2010 is attributed to the following reasons. Hoskote is a peripheral area laying at the intersection of National Highway (NH) 4 and NH 207.Hoskote has close proximity to Whitefield, Hoskote has the presence of nearly 200 industrial units including VOLVO, Honda etc.Hoskote has superb connectivity with Whitefield (14 KM), Outer Ring Road (ORR) and lies on the growth corridors of NH- 4 that connects Pune-Bengaluru-Chennai. The location has close proximity to Peripheral Ring Road that connects areas such as Whitefield, Hoodi, and Marathahalli etc. The growth and developments in Hoskote is rapid since 2010.

CONCLUSION

The structural break in the land cover pattern is analysed with the help of GIS, time series analysis, land experts opinion and chow test. The study focused on the trends in the lulc pattern in Hoskote Taluk from 2000 to 2017. A significant structural break in three land covers is observed in the year 2010 because of the significant increase in the industrial, residential and commercial land uses. These findings have implication on the city planning in the context of changing peri-urban environment.

REFERENCES

1. Bhag, R. (2011): Emerging pattern of Urbanization in India. Econ Polit Weekly, 46: 10-13. Census of India (2011) Retrieved in 2012 from http://www.censusindia.net.
2. Comput Environ Urban, 33: 179–188. Turner, B. L. (1994): Local faces, global flows: the role of land use and land cover in global environmental change.
3. Denga, J., Wanga, K., Hong, Y., and Qi, J. (2009): Spatio-temporal dynamics and evolution of land use change and landscape pattern in response to rapid urbanization.
4. Dewan, A., and Yamaguchi, Y. (2009) Landscape Urban Plan., 92: 187–198.: Land use and land cover change in Greater Dhaka, Bangladesh: Using remote sensing to promote sustainable urbanization. Appl. Geogr., 29: 390–401.
5. Degrad Dev. 5: 71–78. United Nations (2012): World urbanization prospects. The 2011 Revision. New York
6. RanjitKumarPaul et al (2014) Research Article Structural Breaks in Mean Temperature over Agroclimatic Zones in India
7. Ramachandra T.V(2012),Montoring spatial patterns of urban dynamics in Ahemedabad City Textile hub of India
8. Seema Rani (2014) Monitoring Land Use/Land Cover Response to Urban Growth of the city of Jalandhar using Remote Sensing Data Centre for the Study of Regional Development, School of Social Sciences, Jawaharlal Nehru University, New Delhi , International Journal of Advanced Research , Volume 2, Issue 6, 1122-1129
9. Taubenböck, H., Wegmannb, M., Roth, A., Mehl, H., and Dech, S. (2009): Urbanization in India-Spatiotemporal analysis using remote sensing data.
10. Samat et al.(2011) Modelling Land use changes using gis and cellular automata model .Journal of sustainable development.
11. FAO,definition
12. Mohan et a.l.2011,Dynamics of Urbanization and Its Impact on Land-Use/Land-Cover: A Case Study of Megacity Delhi , Journal of Environmental Protection 2(09):1274-1283
13. Ganasri et.al.,2013 , Different Approaches for Land Use Land Cover Change Detection: A Review
14. Batty et.al.1999)Modelling urban dynamics through GIS based cellular automata model
15. Elbarmelgy (2011) Economic Land Use Theory and Land Value in Value Model
16. Narain et all (2013) Peri-urbanization in India: A review of literature and evidence.saciWaters

ISSN 2394 - 7780

17. Alam et.al.(2018)Rapid urbanization and changing land values in mega cities: implications for housing development projects in Dhaka, Bangladesh.The Journal Of Global South
18. Sustainable land use for the twenty first century. Sustainable Development 21
19. Land use change and transformation study on Bangalore Metropolitan region and plan for sustainable development, Hajangi et.al.
20. Settauru et.al.(2011) Peri urban to urban landscape pattern: Elucidation through spatial landscape metrics

International Journal of Advance and Innovative Research
Volume 6, Issue 2 (XII): April - June, 2019
ISSN 2394 - 7780

ECONOMIC VIABILITY OF PADDY CULTIVATION UNDER DIFFERENT TYPES OF LAND HOLDINGS – A COMPARATIVE STUDY BETWEEN ORGANIC FARMING AND INORGANIC FARMING IN TAMIL NADU

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ABSTRACT
This paper makes an attempt to analyze the economic viability of paddy cultivation under different types of land holdings in organic farming and inorganic farming in Tamil Nadu. The major issue of inorganic farming is involved to dominate the cost of production, reducing micro-organism below and above the soil of agricultural land, disturbing environmental ambience, and farmers' suicide in agricultural scenario. But in the case of organic farming system is expressed that, how the farmers are efficiently working into maximize their production level with minimum quantum of inputs in primary sector. Further, the practice of organic farming is reveal that to enhance the intensive technical knowledge and especially the farmers are involved to indicate the live-stock management, and cultivating inter-cropping system in agricultural sector. More specifically, the practice of organic farming system is a way to replace their traditional wisdom in agricultural sector. As a result found that the practice of organic farming under the cultivation of paddy crop shows that the per acre net return from organic farming is relatively higher than that of working under conventional farming practices. Hence the present study focuses on to encourage organic farming cultivation is to promote sustainable production in agricultural scenario.

Keywords: Organic Farming, Inorganic Farming, Cost, Production Efficiency, Profit, Sustainable Development

INTRODUCTION AND STATEMENT OF THE PROBLEM

After introducing the green revolution in the form of new agricultural technology in 1966, the farmers are applying high yielding varieties of seeds, irrigation, higher doses of fertilizers like urea, potassium, DAP, pesticides and weedicides. Further, the application of inorganic fertilizers resulted in reducing micro organism above the soil and below the soil. One may notice that the usage of modern agricultural inputs involve the farmers spent on huge amount of costs, the farmers are pushed into indebtedness. In Indian agricultural era, most of the Indian farmers are marginal and small scale land holders, the production sustainability and cost viability of conventional agriculture have become highly challengeable for them. To overcome all the problems from economic, ecological, and environmental perspectives, organic farming has emerged as an alternative practice in Indian agriculture. The term organic farming deals with the farm as an organism in which effective all components viz., micro organism, organic matter, insects, plants and animals and the soil minerals are interact to each other and it create a congenial ambience for sustainable production in agricultural sector (Murugan and Chithirairajan, 2015). It is concerned with the interaction relates to climate, environment, social, and economic condition, rather than considering farming as an business. However, under the organic farming system, irrespective of different categories of farmers, farming becomes viable from the cost and return perspective (Murugan *et al.*, 2014). Further, the annual growth rate has been reached about 20% for the last ten years (Lotter, 2003), and accounting for over more than 31 million hectares of area practicing under organic farming and its generating annual trade among 26 billion US dollars in worldwide (Pandey and Pandey, 2009). It may be brought to light that organic agriculture is being practiced in more than 171 countries with a total land area of nearly 45 million hectares in total agricultural land of the world. With regard to global level, Australia dominating first position to practicing organic agricultural land area, followed by Argentina, USA, Italy, and many other countries. At this juncture, the present research focuses on to analyse the economic viability of paddy cultivation among the comparison between organic farming and inorganic farming under wet land and dry land in Tamil Nadu.

OBJECTIVES

1. To compare and analyse the economic viability of paddy cultivation among organic farming and inorganic farming in different types of land holdings in Nagapattinam district.
2. To suggest the suitable measures to improve organic farming.

HYPOTHESIS

1. There is no significant relationship of paddy cultivation among different types of land holdings between organic farming and inorganic farming in Nagapattinam district.

ISSN 2394 - 7780

METHODOLOGY

The present research is focused on multi-stage sampling method and the information is collected through field survey method. In the first stage, Nagapattinam district is selected in Tamil Nadu, because more numbers of farmers are practicing organic farming in selected district. Followed by the second stage, two blocks have selected from Nagapattinam district viz., Sirkazhi block and Vedaranyam block. Among the two blocks, Sirkazhi block is wet land cultivation area, and Vedaranyam block is a dry land cultivation area. The next stage, a few villages have identified in selected two blocks. In Sirkazhi block, Nemmeli and Allivilagam villages have selected, and in Vedaranyam block, Kadinelvayal and Katharipulam villages have selected randomly. Among the fourth stage, 128 farmers are selected by using snow ball sampling method. About 128 farm households, 58 respondents are from organic farming households and rest of them 70 households are practicing inorganic farming households in selected region. Out of this 58 organic farming households, 30 farm households are selected from sirkazhi block (wet land) and the remaining 28 farm households are from Vedaranyam block (dry land). On the other hand inorganic farming households (70 respondents), 37 respondents are from sirkazhi block (wet land) and 33 farm households are from Vedaranyam block (dry land).

RESULTS AND DISCUSSIONS

Table-1: Economic Viability of per acre Paddy Cultivation in Organic Farming

Particulars	Wet land	Dry Land	Total
Seed	1034.89	1182.90	1124.76
VermiCompost	431.04	488.13	464.08
Neem Cake	806.56	878.92	842.74
Farm Yard Manure	1620.90	1698.90	1645.65
Panchagavya	100.65	115.90	106.20
Amirthakaraisal	49.50	39.50	44.45
Fish Meal	25.65	29.40	27.40
Pseudomonas	25.50	27.20	26.20
Azosperillum	30.50	30.35	30.30
Phosphobacterium	23.28	29.70	26.25
Agni Ashtram	51.75	54.65	52.80
Five Leaf Extract	31.55	17.95	23.90
Jipsam	-	15.90	07.80
Tricdhoderma	-	7.20	3.90
Other Organic Liquid	34.82	36.75	35.70
Diesel	545.66	636.50	596.30
Mechanical Labour	2616.12	2313.25	2464.65
Human Labour	4633.80	4257.50	4445.90
Total Operating Cost (A)	13887.58	14860.75	14289.72
Cost on Working Capital	1350.15	1475.25	1423.75
Rent	5000.00	5000.00	5000.00
Depreciation cost	200.85	320.65	276.95
Total Cost of Production (C)	24211.62	25765.45	25115.70
Gross Return	37183.27	36192.62	37490.15
Net Return	14895.90	12139.70	13517.59
Cost – Benefit Ratio	0.86	0.79	0.82

Source: Field Survey

Table 1 explained the economic viability of per acre paddy cultivation of organic farming under the comparison between wet land and dry land in selected district. This table includes total operating cost (A), total cost of production (C), gross return, net return, and cost-benefit ratio. The organic farmers are spent on more amounts for human labour. Human labour plays on important role for cultivating paddy production in both wet land and dry land. Followed by the organic farmers spent amount for mechanical labour, farmyard manure, organic fertilizers like vermi-compost, panchakavya, amirthakaraisal, fish extract and others. Further this table pointed out that, the dry land organic farmers are spent high level of amount for cultivating paddy production and the total cost of production at Rs 25765.45 as compared to wet land organic farmers at Rs 24211.62. Under gross

ISSN 2394 - 7780

return and net returns, the wet land organic farmers are gained huge amount than that of dry land organic farmers. As a result found that in cost-benefit ratio, the wet land organic farmers have benefitted high level (0.86 ratios) as compared to dry land organic farmers (0.79 ratios) and the pooled farmers' ratio at 0.82 in selected area.

Table-2: Economic Viability of per acre Paddy Cultivation in Inorganic Farming

Particulars	Wet land	Dry Land	Total
Seed	1015.78	1142.28	1079.30
VermiCompost	268.72	325.16	296.94
Neem Cake	209.82	193.53	201.68
Farm Yard Manure	1673.61	1337.44	1505.52
Urea	519.87	484.34	502.10
Potassium	749.07	541.30	645.18
Phosphorous	444.93	364.66	404.79
DAP	1236.55	1397.97	1267.26
Complex	799.22	733.67	716.45
Weedicide	646.65	590.53	598.59
Pesticides	841.36	746.53	793.95
Diesel	540.86	567.42	553.14
Mechanical Labour	3818.17	3541.83	3680.00
Human labour	959.15	960.29	959.72
Total Operating Cost (A)	12980.28	13116.45	13015.25
Cost on Working Capital	1395.85	1425.30	1400.75
Rent	5000.00	5000.00	5000.00
Depreciation cost	195.95	225.65	216.95
Total Cost of Production (C)	25213.67	26756.5	25715.10
Gross Return	39189.70	38165.72	38490.50
Net Return	15173.10	13491.53	14517.57
Cost – Benefit Ratio	0.81	0.74	0.77

Source: Field Survey

Table 2 analysed the economic viability of per acre paddy cultivation of inorganic farming under the comparison between wet land and dry land. This table examined the total operating cost (A), total cost of production (C), gross return, net return, and cost-benefit ratio. In view of this inorganic farming analysis, the farmers are spent on more amounts for mechanical labour and the labourers are depends on mechanically sound for cultivating paddy production in both wet land and dry land. Followed by the farmers are spent amount for human labour, inorganic fertilizers like urea, potassium, phosphorous, DAP, weedicide and pesticide and other inorganic fertilizers. Further it is noted that, the dry land farmers are spent huge amount for cultivating paddy production and the total cost of production at Rs 26756.5 as compared to wet land farmers at Rs 25213.67. Among gross return and net returns, the wet land inorganic farmers are returned huge amount than that of dry land inorganic farmers. As a result found that in cost-benefit ratio, the wet land inorganic farmers have benefitted high level (0.81 ratios) as compared to dry land inorganic farmers (0.74 ratios) and the pooled farmers' ratio at 0.77 in selected district.

By and large, the comparison between table 1 and table 2 in cost – benefit ratio of pooled farmers, the organic farmers are gained high level at 0.82 ratio and the inorganic farmers are returned only 0.77 ratio. It could be noted that per acre cultivation of paddy production, the organic farmers are spent low cost and low return as compared to that of inorganic farmers. It is interesting to noticed that, the organic farm respondents are benefitted high level among the ratio of cost-benefit measurements than that of inorganic farmers in Nagapattinam district of Tamil Nadu.

POLICY IMPLICATIONS

i. It is noticed that many of the organic farmers are lacking knowledge to prepare organic inputs such as vermi-compost, amirthakaraisal, and panchagavya in Nagapattinam district. Hence, Government should provide extension activities to in terms of training to prepare organic inputs.

ISSN 2394 - 7780

ii. The major views on organic farmers in Nagapattinam district, is that they are unable to get adequate price for the products. So, the role of the Government is required to provide support price for the organic products produced by the organic farmers.

iii. It is important to suggest that organic green marketing should be extensively opened and the organic products should be procured and sold by the Government of Tamil Nadu. If it is done, even more farmers will shift from inorganic farming to organic farming.

iv. It is seen that cattle rearing is one of the components of organic farming and the by-products of cows and goats help the organic farmers to prepare organic inputs. In this context, it is suggested that farmers should be made aware of the important of country cattle rearing in Nagapattinam district.

REFERENCES

- Murugan, D. and Chithirairajan, B. (2015). "**An Economic Analysis of Pattern of Physical Input use under Organic and Inorganic Farming in Nagapattinam district of Tamil nadu**". *Agricultural Situation in India,* LXXI (8).
- Murugan, D., Venkatesan, S. and Chithirairajan, B. (2014). "**A Comparative Analysis of Economic Viability of Organic and Inorganic Farming with special reference to Nagapattinam District, Tamil nadu**". *Agricultural Situation in India,* LXXXI (5).
- Pandey, J. and Pandey, U. (2009). "**Accumulation of Heavy Metals in Dietary Vegetables and Cultivated Soil Horizon in Organic Farming System in Relation to Atmospheric Deposition in a Seasonality Dry Tropical Region in India**". *Environmental Monitoring and. Assessment.* 148 (1-4): 61-74.
- Lotter, D. (2003). "**Organic Agriculture**". *Journal of Sustainable Agriculture,* 21: 1-63.
- Borker, P.A. (2008). "**Value Addition to Organic Produce – A Success Story**". *Indian Farming,* 58 (1): 38-39.
- Alexander. (1973). "**Environmental Consequences of Increasing Food Production**". *Biological Conservation,* 5(1).
- Dubgaard, A. "**Economics of Organic Farming in Denmark**". The Economics of Organic Farming – An International Perspective (ed) by Lampkin N.H and Padel S., CAB International Publishers, UK: 1994.
- Ghosh, N. (2004). "**Promoting Bio-Fertilizers in Indian Agriculture**". *Economic and Political Weekly, December, 25: 5617-5625.*
- Goulding, K., Stockdale, E., Fortune, S. and Watson, C. (2000). "**Nutrient Cycling on Organic Farms**". *Journal of Royal Agricultural Society of England,* 11: 5-75.
- Lampkin, N. "**Organic Farming and Sustainable Agriculture in Practice**". The Economics of Organic Farming an International Perspective, CAB International Oxford, UK: 1994.
- Lanting, H. "**Building a Farmers Owned Company (Chetana) Producing and Trading Fair Trade-Organic Products**". Processing of the National Workshop on New Paradigm for Rain Fed Farming, WASSAN, New Delhi: 2007.
- Save, B. (1992). "**Natural Farming-An Experience**". Somani and others (ed.), Proceedings of National Seminar on Natural Farming, Rajasthan College of Agriculture, Udaipur.
- Thippeswamy, E. (2014). "**Resource Use Efficiency in Organic and Inorganic Paddy Production in Southern Transition Zone of Shimoga District of Karnataka: A Farm Level Analysis**". *Indian Streams Research Journal,* 4(8):1-5.

International Journal of Advance and Innovative Research
Volume 6, Issue 2 (XII): April - June, 2019
ISSN 2394 - 7780

AN ECONOMIC EVALUATION ON TRENDS AND PATTERNS OF FOODGRAINS PRODUCTION IN INDIA

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ABSTRACT
India is predominantly an agrarian economy with more than 65% of its population living in villages and depending on agriculture and allied activities for their livelihood. In India, Agriculture is inheriting from forefathers to its next generation. International level, According to World Trade Organization (WTO) report 2012 on International Trade statistics shows that export and import of agriculture product is almost US$ 1.66 trillion & 1.82 trillion respectively at global level and the share of India in value is 2.07 % and 1.24 % respectively in export and import of agriculture products. Trends in Foodgrain Production in India. Food Grains include Rice, wheat, maize, coarse cereals and pulses. In 2014-15, India's estimated food grain production stands at 257 million tonnes with 103 million tonnes rice; 96 million tonnes wheat, 23 million tonnes maize and 18.4 million tonne of pulses.

The present study is based on secondary data (2001-01 to 20015-16). And data emphasized on Are, Production, Yield, and support price, production and population growth relation of foodgrains from India.

Keywords: Agriculture, Foodgrains, production, Consumption, Export, support price and population

1.1 INTRODUCTION

*"Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life."*1

Compared to other countries, India faces a greater food challenge having only 2.3 per cent share in world's total land area it has to ensure food security to about 17.5 per cent of the world's population.[2] The International Food Policy Research Institute (IFPRI) estimates that the country has added more than 270 million more mouths to feed (33 per cent increase in population) while increasing food production by 13 per cent in the past 15 years[3]; leading to a situation where in India's current population growth rates are fast out stripping food production capacity. At the same time, changing crop demands – brought about by increasing population, income and consumption pressures –have the potential to significantly increase the income opportunities of the agriculture dependent population. The current foodgrain demand in India, estimated at 234.26 million tones. India has been improved its ranking up to 10th at globally. India makes itself sufficient in agriculture sector (food grains) after the green revolution which makes it possible to export agriculture product. Due to favourable support of agriculture policy, India became stable in the export of agriculture product. The diverse branches of modern agriculture include agronomy, horticulture, animal husbandry, dairying, agricultural engineering, soil chemistry, and agricultural economics.

Grains are small, hard, dry seeds, with or without attached hulls, harvested for human or animal consumption. After being harvested, dry grains are more durable than other staple foods such as starchy fruits and tubers. This durability has made grains well suited to industrial agriculture, since they can be mechanically harvested, transported by rail or ship, stored for long period. Thus, major global commodity markets exist for canola, maize, rice, soybeans, wheat, and other grains but not for tubers, vegetables, or other crops.

II. REVIEW OF LITERATURE

Vijay Paul Sharma (2012) –analysis the trends in volume of food subsidy in the post reform period and then examines various components of food subsidy, which are under the control of FCI and those beyond the control of FCI and relative contribution of these components to total subsidy during the last decade. Broad policy options for containing food subsidy are also suggested in the paper.

Sonia Verm et.al (2015) - The paper analysed the correlation of the absorption of the heavy metals in wheat grains and the health risks it may cause for urban and rural populations. The findings show that there is a borderline hazardous health risk from the combination of the four hazardous heavy metals present. Although, the risks are lower for urban populations than rural populations it is yet to be determined if it would carcinogenic in the future.

III. SCOPE OF THE STUDY

The present study highlights the importance of food grain Production and export from India. It points out the reasons for low productivity and tries to increase them and it has covered the relationship between Production of

ISSN 2394 - 7780

food grains and Population growth as per the Malthusian Postulate in India. Production of food grains must be enhanced to generate employment and income.

IV. OBJECTIVES OF THE STUDY

The main objectives of the Study

1. To Examine the Annual Growth Rate of Total Area, Production and Yield of Food grains in India from 2000-2001 to 2014-2015.
2. a) To Highlight the Trend of Food grains Production in India from 2000-2001 to 2014-2015.

   b) To Evaluate the Trend of Food grains Production in India from 2000-2001 to 2014-2015.
3. To highlight the percentage share of Top Five States Producing Food grains in India from the year 2000-2001 to 2014-2015.
4. To Analyze the Relationship between the Total Population and Total Food grains Production in India during the period 2002-2003 to 2013-2014

V. DATA AND METHODOLOGY

The present study is based on secondary data and data has been collected from various annual reports like Agriculture data base, Ministry of Agriculture and Agricultural Situation in India – various Issues and different websites. The Data was analysed and interpreted using various appropriate statistical tools like as follows: Growth Rate, Trend Value, Percentage, Average, Simple Linear Regression and pictorial presentation.

VI. ANALYSIS OF DATA AND INTERPRETATION

Table-4.1: Agricultural Production and Food Grains Production in India since 1950-51 to 2012-13. (In million tonnes)

Year	Rice	Wheat	Coarse Cereals	Total Cereals	Pulses	Total Foodgrains
1950-1951	20.58	6.46	15.38	42.42	8.41	50.83
1960-1961	34.58	11	23.74	69.32	12.7	82.02
1970-1971	42.22	23.83	30.55	96.6	11.82	108.42
1980-1981	53.63	36.31	29.02	118.96	10.63	129.59
1990-1991	74.29	55.14	32.7	162.13	14.26	176.39
2000-2001	84.98	69.68	31.08	185.74	11.07	196.81
2010-2011	95.98	42.01	43.4	226.25	18.24	244.49
2011-2012	105.3	94.88	42.01	242.2	17.09	259.29
2012-2013	104.4	92.46	40.06	236.92	18.45	255.36

Sources: Ministry of Agriculture, Government of India.

The above **table 4.1** shows the Production of Rice in the year 1950-51 it was only 20.58 milliontonnes which increased in every decades 34.58 million tonnes in 1960-61, 42.22 million tonnes in 1970-71, 53.63 million tonnes in 1980-81, 74.29million tonnes in 1990-91, 84.98 million tonnes in 2000-01, 95.98 million tonnes in 2010-11, 105.30 million tonnes in 2011-12 and 104.40 million tonnes in 2012-13. Wheat shows also positively growth in its production it was only 6.46million tonnes in 1950-51, 23.83 million tonnes in 1970-71, 69.68 million tonnes 2000-01, 86.87 million tonnes in 2010-11 and 92.46 million tonnes in 2012-13. In case of Total food grains production data shows that production was 50.83 million tonnes in 1950-51, 82.02 million tonnes in 1960-61 and it increased tremendously in t 1970-71 up to 108.42 million tonnes, 129.59 million tonnes in 1980-81, 176.39 million tonnes in 1990-91, 196.81 million tonnes in 2000-01 but it increased very much up to 244.49 million tonnes in 2010-2011 and 255.36 in 2012-2013.

Table-4.2: To Examine the Annual Growth Rate of Total Area, Production and Yield of Foodgrains in India from 2000-2001 to 2014-2015.

YEAR	AREA	PRODUCTION	YIELD
2000-2001	-	-	-
2001-2002	1.43	8.15	0.52
2002-2003	-7.29	-17.89	-10.53
2003-2004	8.46	21.98	8.17
2004-2005	-2.73	-8.48	0.10

ISSN 2394 - 7780

2005-2006	1.28	5.16	2.13
2006-2007	1.74	4.16	1.52
2007-2008	0.23	1.70	3.40
2008-2009	-21.66	-7.10	-19.40
2009-2010	-0.89	12.10	-4.64
2010-2011	4.00	6.79	8.85
2011-2012	0.38	10.79	4.84
2012-2013	-2.30	-0.83	1.92
2013-2014	3.45	3.08	-0.17
2014-2015	-1.61	-4.66	-4.02

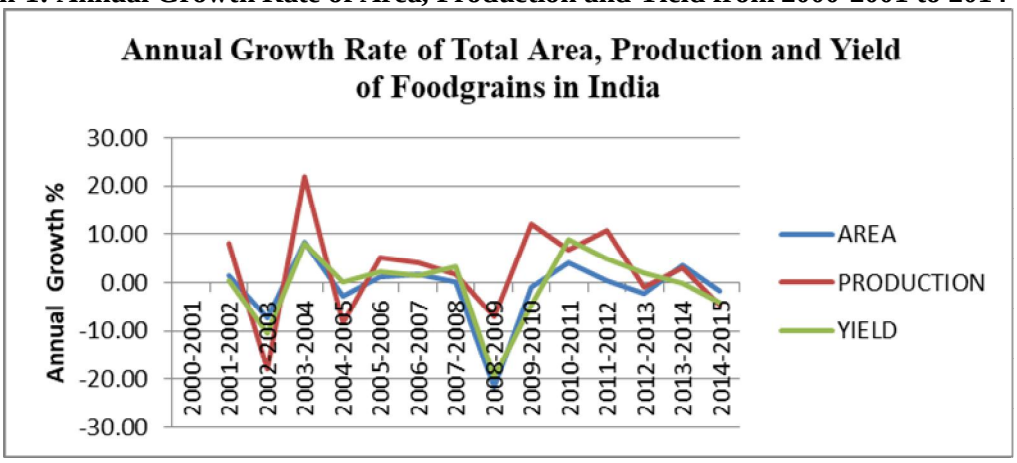
Source: Reserve Bank of India Statistics

The **table 4.2** shows the annual growth rate of area, production and yield of food grains in India. In 2002-2003 the annual area growth is negative. Again it starts to increase in 2003-2004. In 2004-2005 there is decrease in the area growth and in 2005-2006 the growth starts to increase and in 2008-2009 it falls at the maximum rate because of the world recession which hit USA and also has a negative impact on India.

In Production Annual growth Rate shows fluctuations initially and from 2005-2006 fluctuations are not seen much because of few reasons like due to the adoption of new dwarf, high-yielding and fertilizer-responsive varieties and marked increase in the area under cultivation. There is a decrease in Production in 2002-2003, 2008-2009 and 2012-2013.In 2012-2013 there is minimal decrease.

Yield increase in the average. Yield was made possible by a substantial increase in was because of fertilizer application, irrigation and pesticide application. There is a decreased in yield in 2002-2003 and then in 2008-2009.

Graph-1: Annual Growth Rate of Area, Production and Yield from 2000-2001 to 2014-2015.



Graph – 1 shows the annual growth rate of foodgrains production in India from period 2000-2001 to 2014-2015 shows fluctuations in the production of foodgrains. The growth rate of area under foodgrains was highest in year 2006-2007, the growth rate of production of foodgrains was highest in year 2013-2014 and the growth rate of yield is highest in the year 2007-2008.

Table: 4.2. (a) To Observe the Minimum Support Price for major Foodgrains in India (2006-07 to 2015-2016

Marketing Year	Paddy	Wheat	Jowar (Hybrid)	Bajra	Maize	Barley
	Grade "A"					
2006-2007	580(+Rs.40 bonus)	610(+Rs.40 bonus)	555	540	540	550
2007-2008	645(+Rs.100 bonus)	675(+Rs.100 bonus)	620	600	620	565
2008-09	850(+Rs.50 bonus)	880(+Rs.50 bonus)	860	840	840	650
2009-2010	950(+Rs.bonus	980(+Rs.50 bonus)	860	840	840	680

ISSN 2394 - 7780

2010-11	1000	1030	900	880	880	750
2011-2012	1080	1110	1000	980	980	780
2012-13	1250	1280	1520	1500	1175	980
2013-14	1310	1345	1520	1500	1310	980
2014-15	1360	1400	1550	1530	1310	1100
2015-16	1410	1450	1590	1570	1325	1150

Source: Food Corporation of India, 2015-16

The above **table 4.2(a)** highlights on the minimum Support price for the major foodgrains in India from the year 2006-07 to 2015-16 and in this ten year period minimum support price for Jowar is lowest in the year 2006-07 as Rs.555 per quintal and in recent year 2015-16 it is the highest minimum support price as Rs. 1590 compared to other foodgrains in India .Followed by bajra as Rs.1570 and wheat as Rs.1450, Paddy (grade A) as Rs.1410, Maize as Rs.1325 and lowest was for Barley as Rs.1150.It focuses on the minimum support price has increased over the years to support Indian Agricultural sector particularly foodgrains production and to encourage the farmers.

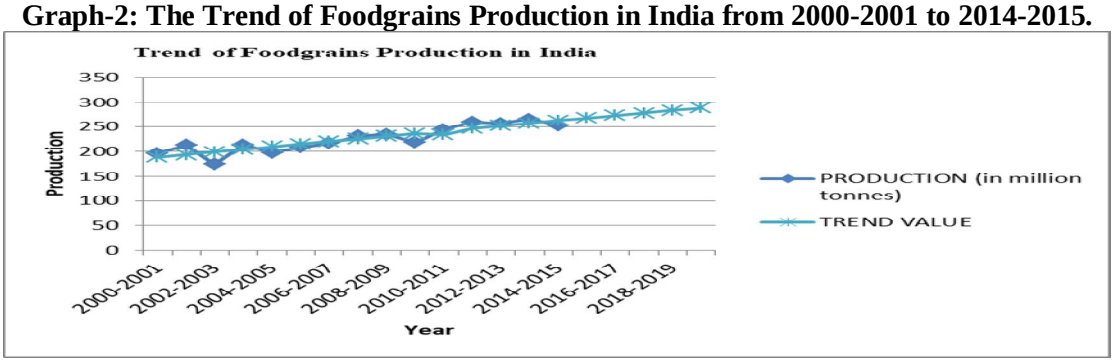
Table-4.3: The Trend of Food grains Production in India from 2000-2001 to 2014-2015.

YEAR	PRODUCTION (in million tonnes)	X	X2	XY	TREND VALUE
2000-2001	196.81	-7	49	-1377.67	188.7161667
2001-2002	212.85	-6	36	-1277.1	193.9839524
2002-2003	174.78	-5	25	-873.9	199.2517381
2003-2004	213.19	-4	16	-852.76	204.5195238
2004-2005	198.36	-3	9	-595.08	209.7873095
2005-2006	208.6	-2	4	-417.2	215.0550952
2006-2007	217.28	-1	1	-217.28	220.322881
2007-2008	230.78	0	0	0	225.5906667
2008-2009	234.47	1	1	234.47	230.8584524
2009-2010	218.11	2	4	436.22	236.1262381
2010-2011	244.49	3	9	733.47	233.8584524
2011-2012	259.29	4	16	1037.16	246.6618095
2012-2013	257.13	5	25	1285.65	251.9295952
2013-2014	265.04	6	36	1590.24	257.197381
2014-2015	252.68	7	49	1768.76	262.4651667
2015-2016		**8**			**267.7329524**
2016-2017		**9**			**273.0007381**
2017-2018		**10**			**278.2685238**
2018-2019		**11**			**283.5363095**
2019-2020		**12**			**288.8040952**
TOTAL	**3383.86**		**280**	**1474.98**	

Source: Reserve Bank of India Statistics

The trend of foodgrains production in India from period 2000-2001 to 2014-2015 shows fluctuations in the production. Following are the reasons: - Unreliable monsoon, Poor Techniques of Production and Pressure of Population on land

Graph-2: The Trend of Foodgrains Production in India from 2000-2001 to 2014-2015.



ISSN 2394 - 7780

The **graph-2** shows the Trend of Foodgrains Production in India from period 2000-2001 to 2014-2015 shows fluctuations in the production. The above graph shows that the production was least in the year 2002-2003 and 2010-2011. The production of foodgrains is expected to increase over the years. The trend line predicts the trend of foodgrain till 2019 -2020.the foodgrains are expected to rise beacause of Pace of urbanisation, distribution of income,effective demand, Agriculture Trade to be sound therefore the trend of foodgrains are expected to rise in future.

Table-4.4: Top Five Foodgrains Producing States in India from the Year 2000-2001 to 2014-2015. (In Million Tonnes)

Year	Madhya Pradesh	Uttar Pradesh	Punjab	Rajasthan	Andhra Pradesh	Others
2000-2001	5.32	22.31	13.23	5.25	8.37	45.52
2001-2002	6.55	21.26	11.99	6.74	7.15	46.31
2002-2003	6.33	22.48	13.84	4.44	6.28	46.63
2003-2004	7.67	21.27	11.89	8.65	6.58	43.95
2004-2005	7.29	19.54	13.26	6.28	6.92	46.72
2005-2006	6.47	19.83	12.36	5.62	8.32	47.41
2006-2007	6.45	19.34	11.88	6.67	7.62	48.04
2007-2008	5.33	18.6	11.85	7.1	8.53	48.59
2008-2009	5.77	20.45	11.96	7.3	8.94	45.58
2009-2010	7.54	20.33	12.68	5.81	7.2	46.44
2010-2011	6.27	19.81	11.68	7.9	8.52	45.82
2011-2012	8.05	19.84	11.2	7.68	7.24	45.99
2012-2013	9.45	20.24	11.38	7.33	7.44	44.16
2013-2014	8.88	19.33	11.39	6.92	7.6	45.89
2014-2015	10.27	17.11	11.06	7.96	7.03	46.57

Source- RBI Statistics

Table 4.4 shows that the Foodgrain Production in Madhya Pradesh is making giant strides to emerge as one of India's fastest developing states, and its achievement has been particularly noteworthy in the agriculture sector.Madhya Pradesh produced 22.5 million tonnes of grains in 2013-14, an impressive jump of from its previous best of 25 million tonnes in 2014-2015.

Punjab is the second highest contributor even in the drought year of 2007-08MT of foodgrain the state has contributed 26.5 MT of foodgrains. In 2013-2014 Punjab has also recorded the highest ever production of wheat at 164 lakh MT. Total domestic consumption of rice in Punjab is only 15%, which is far less as compared to other states, hence it contributes maximum to the Central pool.

Uttar Pradesh during 2014-15 crop years has once again topped its peers at about 42 million tonnes (MT).During 2009-10, 2010-11 and 2011-12, the state food grain production stood at 43.20 MT, 47.14 MT and 50.29 MT respectively.

This shows that there has been sustained increase in food grain output registered in UP over the years, for which it has been feted by the Centre.

Higher production has come about primarily due to improving productivity.

Paddy and wheat are the major kharif and Rabi crops, that account for the largest food grain basket in UP.

Rajasthan, with its diverse agro-climatic conditions is richly endowed with the cultivation of a variety of crops. Agriculture & allied activities make up for 20.67% of the State's GDP, with 62% of total working population of the State dependent on this for livelihood. In 2013-14, the total production of food grain of the State was estimated as 17 million tonnes (MT).

Table-4.5: Total Population and Total Food grains Production in India 2002-2003 to 2013-2014.

Year	Toatal Population (In Million)	Total Foodgrains Production ('000 Tonnes)
2002-2003	1056	174.77
2003-2004	1074	213.19
2004-2005	1089	198.36
2005-2006	1106	208.6

ISSN 2394 - 7780

2006-2007	1122	217.28
2007-2008	1138	230.78
2008-2009	1154	234.47
2009-2010	1170	218.1
2010-2011	1186	241.56
2011-2012	1202	259.32
2012-2013	1252	257.13
2013-2014	1292	265.05

Source: Economic Survey, RBI, Ministry of Statistics/Industry/Finance

Indian Research of Agricultural Council (ICAR)

Table-4.5 shows the Total Population and Total Food grains Production in India during the time period 2002-2003 to 2013-2014. Here, the Total Production is taken as the dependent variable and Total Population, the independent variable.

This objective has associated Total Population and total Foodgrains Production. The guideline for the same is from the 1st postulate of the malthusian theory related to population which did associate Food grains Production (that increase in arthmetic progression) and Population (that increase in geometric progression).

VII. CONCLUSION

The production of foodgrains has to be increased in the rainfed areas. In rainfed areas, there are large fluctuations in the production of foodgrains due to the variations in the rainfall. The incidence of insect pest/disease further causes huge cropped losses. So, there is a need to identify appropriate location specific management strategies to increase production of crops. The main challege in the foodgrains is the stagnation of yield level due to the limited use of HYV seeds, less and imbalance use of fertilizer and micronutrients due to which they could not benefit from harvest to desired level. Therefore, there is a need of efficient management of natural resources encompassing optimal use of water and chemical inputs. More than 80 percent of the total holdings are less half a hectare. These holdings are increasingly becoming economically non-viable. Another import challenge is to bridge the extension gap between the available technology and its actual adoption by the farmers. Besides, challenges that are facing agriculture in general and foodgrains sector in particular, the opportunities to reap benefits also in plenty. It can be concluded that major stress should be given on development irrigation, dissemination of new technology, pests and disease control measures for increasing production and productivity of crops.

VIII. REFERENCES

- FAO, World Food Summit, 1996.
- Department of Agriculture and Cooperation, (2011), Annual Report 2010 2011, Ministry of Agriculture, Government of India (http://agricoop.nic.in/Annual per cent20report2010 - 11/AR.pdf).
- Bansal, P.C (2002). “Economic Problems of Indian Agriculture.” CBS Publishers Distributors, New Delhi.
- Bhattacharjea, A. (2004), “Increasing Returns, Trade and Development.” in A. Bhattacharjea and S. Marjit (eds.), Globalization and the Developing Countries. Delhi: Manohar.
- Chand Ramesh, Raju S.S. and Panday L.M. (2007) “Growth crisis in Agriculture”, Economic and Political Weekly.
- Maraddi (2010) Analysis of farmers knowledge about selected sustainable cultivation practises in sugar cane, Karnataka, J.agric.sic, 20(3).
- International Food Policy Research Institute (IFPRI), 2007
- Isah Musa Ahmad (2015) - Trend of area, Production and Productivity of major cereals: India and Nigeria Scenario. Research Journal of Agriculture and Forestry Science , Vol. 3(2), 10-15, February
- Saraswati Poudel(2012)- Growth in area, production and productivity of major crops in Karnataka* Karnataka J. Agric. Sci.,25 (4) : (431-436) 2012
- Government of India: Agriculture: Centre for Monitoring Indian Economy (CMIE) Intelligence of Indian Economy Pvt. Ltd. New Delhi.

ISSN 2394 - 7780

- Singh R P and Nimmy Rani (2013): Journal of Economic & Social Development, Vol - IX, No. 1, ISSN 0973 - 886X
- World Development Report, 2008

WEBSITE

- GOI (www.goidirectory.nic.in)
- RBI (www.rbi.org.in)
- http://www.indiastat.com
- www.icar.nic.in
- https://rbi.org.in/Scripts/Statistics.aspx
- http://www.indiabudget.nic.in/vol1_survey.asp

International Journal of Advance and Innovative Research
Volume 6, Issue 2 (XII): April - June, 2019
ISSN 2394 - 7780

AGRICULTURE, EMPLOYMENT AND POVERTY: AN ANALYSIS OF ITS INTER-LINKAGE

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ABSTRACT
In India, agriculture sector is the largest employer of economy but has a declining contribution to the share of its GDP by comparing other sectors of economy. According to CIA (Central Intelligence Agency) Fact book, sector wise Indian GDP compositions in 2014 are as follows: Agriculture (17.9%), Industry (24.2%) and Services (57.9%). Total production of agriculture sector is $366.92 billion. India is 2nd larger producer of agriculture product. India accounts for 7.68 percent of total global agricultural output. Despite agriculture being employed highly, its contribution to GDP is low. But one cannot underestimate; still agriculture is the real source of livelihood to the poor and marginal group of people by providing employment to them. According to data released by the Planning Commission in July 2013, the percentage of the population living below poverty line in India decreased to 22% in 2011-12 from 37% in 2004-05. But dependency on agriculture is still high. Therefore, by developing agriculture, more employment can be generated and thus it can reduce poverty. The main objective of the study is to assess the dependency on agriculture and its effects on employment and poverty.

Keywords: agriculture, employment, economy, poverty

INTRODUCTION
Agriculture is the primary source of livelihood for about 58 per cent of India's population. Gross Value Added by agriculture, forestry and fishing is estimated at Rs 17.67 trillion (US$ 274.23 billion) in FY18. The Indian food processing industry accounts for 32 per cent of the country's total food market, one of the largest industries in India and is ranked fifth in terms of production, consumption, export and expected growth. It contributes around 8.80 and 8.39 per cent of Gross Value Added (GVA) in Manufacturing and Agriculture respectively, 13 per cent of India's exports and six per cent of total industrial investment. Total agricultural exports from India grew at a CAGR of 16.45 per cent over FY10-18 to reach US$ 38.21 billion in FY18. Between Apr-Oct 2018 agriculture exports were US$ 21.61 billion. India is also the largest producer, consumer and exporter of spices and spice products. Spice exports from India reached US$ 3.1 billion in 2017-18. Tea exports from India reached a 36 year high of 240.68 million kgs in CY 2017 while coffee exports reached record 395,000 tonnes in 2017-18.

In the long run we study that all the factors becomes variable and can be modified with accordance to the cost of production. Similarly, poverty in terms of agriculture can be reduced in the long run with the inputs like providing subsidies to farmers for fertilizer; pesticides along with irrigational facilities will have greater impact. This impact may not be seen in the short run but can be achieved in the long run. If such inputs are provided to the farmers living in the rural area will obviously help to reduce poverty. Therefore, the following study is been adopted to see that in the long run it can be achieved by providing certain facilities to the farmers especially poor and marginalized farmers.

REVIEW OF LITERATURE
Employment pattern in the developing countries has revealed that development of alternative employment opportunities in the rural non-farm sector is a necessity for productive farm employment of labour force under the rapid growth of population **(Chaudhry and Chaudhry, 1992)**. A process has been observed in China where growth of rural non-farm employment (RNFE) has revealed a significant impact on poverty reduction **(Janvry et al., 2005)**. The agricultural wages have also been used as a proxy for studying poverty and living standards in the rural areas **(Deaton and Drèze, 2002; Lanjouw and Murgai, 2008)**. The debate continues; in more recent literature on India, one finds claims that "rapid agricultural growth has benefitted all classes of the poor" **(Singh 1990)** and "acceleration in agricultural growth by itself is unlikely to make a dent in rural poverty" **(Gaiha 1995, 285)**.

OBJECTIVES
1. To examine agriculture growth and its employment share.
2. To analyse the inter-linkage between agriculture and poverty reduction.

HYPOTHESIS
- There is negative relationship between agriculture inputs and irrigation facilities to crop production in respect to poverty.

ISSN 2394 - 7780

RESEARCH METHODOLOGY

This paper is both qualitative and quantitative in nature. The secondary information is used for the analysis of the study. The secondary data on education of India is collected from Reserve Bank of India - Handbook of Statistics on Indian States, Government of India, World Bank-Data Bank, Census, NSSO, and Agriculture Statistics of India. Simple graphical analysis and statistical tools like regression, percentage, ratio, growth rate year on year, etc. are used for analytical study over the period of time.

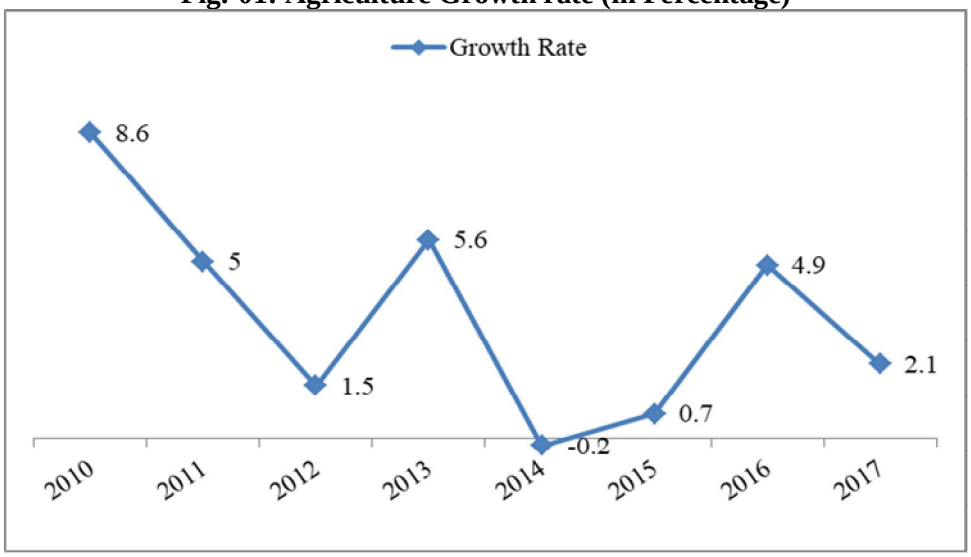
RESULTS AND DISCUSSIONS

In the following section we have discussed the role of agriculture and its share in employment of Indian GDP with relation to poverty. Simultaneously, hypothesis is tested on the bases of regression analysis to see the dependency of crop production on fertilizer and pesticides only along with irrigation facilities in the long run and to justify in regard to poverty reduction.

A) Agriculture Growth and its Employment Share

When a man considers himself to be very ill, he may distrust just about any prescription. But that is how not to get well. The gravity of the depressed state of the Indian economy could trivialize measures for its redemption. However, when properly considered, employment generation in agricultural industry has the capability and capacity to turn poverty to prosperity.

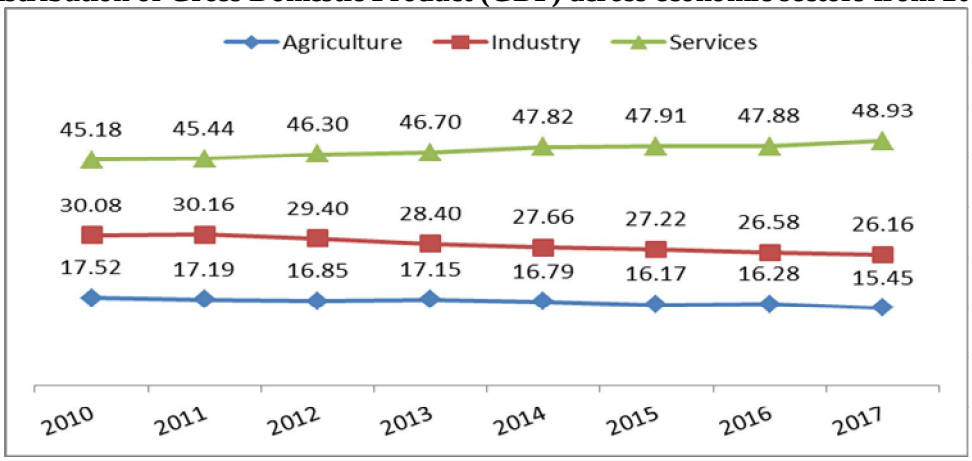
Fig.-01: Agriculture Growth rate (in Percentage)



Source: World Bank Report

The above **Figure-01** indicates agriculture growth rate from the period 2010 to 2017. It clearly depicts that over a period of time the agriculture growth is unstable. Even it has reached to the negative growth that is -0.2 percent in the year 2014.however the rest of the years are moving positively. In 2010, growth rate was measure to 8.6 percent declined to 5 in 2011. After the negative growth in 2015 it increased to 0.7 to 2.1 percent in 2015 to 2017 respectively.

Fig.-02: Distribution of Gross Domestic Product (GDP) across economic sectors from 2010 to 2017

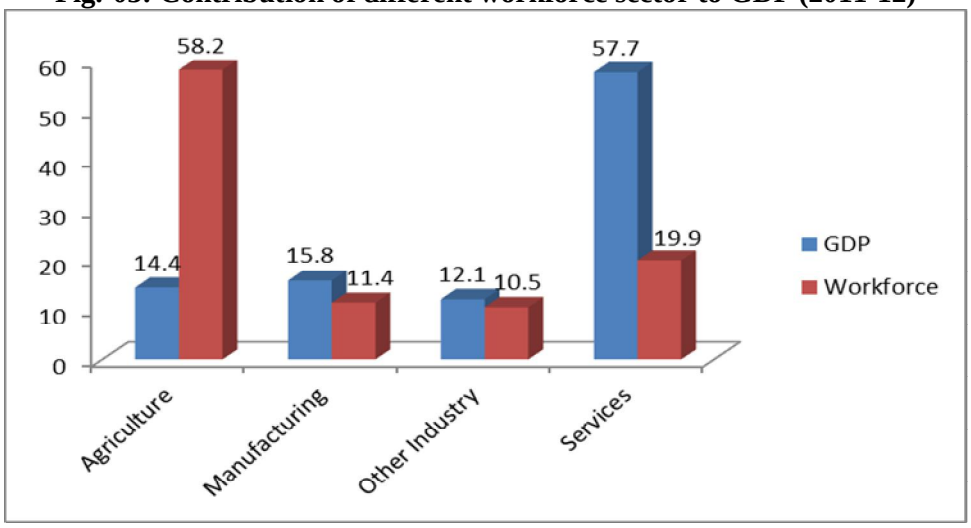


Source: World Bank Report

ISSN 2394 - 7780

The above **Figure-02** describes the share of GDP across three sectors. Over a period of time the share of agriculture sector is declining with the rise of Industry and Service sector. The agriculture share declined from 17.52 to 15.45 per cent from 2010 to 2017 respectively. The highest contribution of GDP can be seen in the service sector that has increased from 45.18 to 48.93 per cent in 2010 to 2017 respectively. However, manufacturing sector is not doing well where it declined from 30.08 to 26.1 percent in 2010 to 2017 respectively, except in the year 2011 it was 30.16 per cent. This shows that along with agriculture, manufacturing sector also requires attention. The same with the explanation of workforce is illustrated in the next Fig-03.

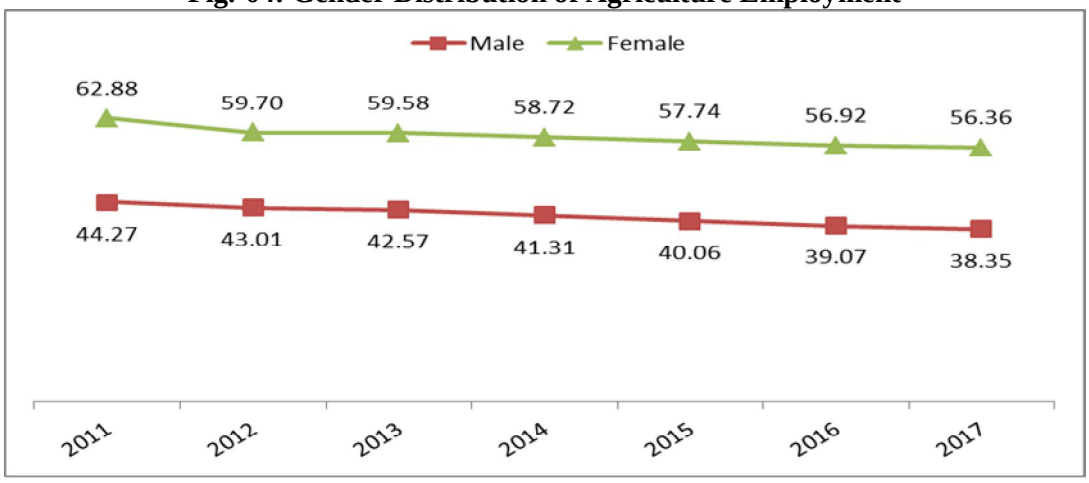
Fig.-03: Contribution of different workforce sector to GDP (2011-12)



Source: Reserve Bank of India - Handbook of Statistics

The above **Figure-03** explains the workforce and their respective contribution to national GDP. The highest workforce that is engaged is in the agriculture sector with 58.2 per cent indicating high dependency of population on agriculture with the 2nd least contribution 14.4 per cent after Other Industry with the workforce 10.5 per cent and GDP 12.1 per cent. However, the service secto is the highest GDP contributor to 67.7 per cent with the workforce of 19.9 per cent only. Similarly, the manufacturing sector 11.4 per cent of workforce with 15.8 per cent of GDP contribution. By examining this we can understand that the workforce is heavier engaged in agriculture sector that required a special attention since majority of population that comes from this are poor.

Fig.-04: Gender Distribution of Agriculture Employment



Source: ILO estimates

Above **Figure-04** indicates Gender employment share in agriculture. One can note that the share of agriculture in both male and female is declining over a period of time from 2011 to 2017. However, the share of agriculture activities among female is seen higher than that of the male. This is because male are engaged in other activities beside agriculture like industrial or service sector. But in case of female due to low opportunity to work beyond agriculture is not possible. Major constraints like social orthodox, educational qualification, family duty, etc. Female agriculture employment has declined from 48.80 per cent to 42.74 percent in 2011 to 2017 respectively. Similarly in case of male declined from 44.27 in 2011 to 38.35 per cent in 2017.

ISSN 2394 - 7780

B) Agriculture and Poverty Reduction

Around 55% people depend upon Agriculture in India and most of the poor people leave in villages. Therefore, Agriculture plays a major role to reduce poverty from India. Agriculture can generate employment at rural level with low investment like agriculture based industries, food park etc. Growths of agriculture and poverty reduction are two different issues. Growth of agriculture is essential for country's growth. Poverty reduction is based on employment and income. If the government facilitates, large agricultural holdings, then farmer's income can be increased, through the process of mechanised farming. But with small holdings, farmers cannot improve their income. If an investment in industries takes place, near the agricultural lands, and generates employments for small farmers, it is a different matter, but without it, poverty reduction is only a dream.

The major limitation of the study is that it has focused on fertilizer and pesticides as agriculture input on crop production along with irrigational facilities. We all know that poverty depends on various things but when it comes to agriculture poverty we can estimate that poverty is due to non availability of proper fertilizer and pesticides to the poor and marginalized farmers along with poor irrigation facilities. Thus, the study focuses on this to establish a relation to poverty.

Table-01: Poverty Rate in India (Persons in Millions)

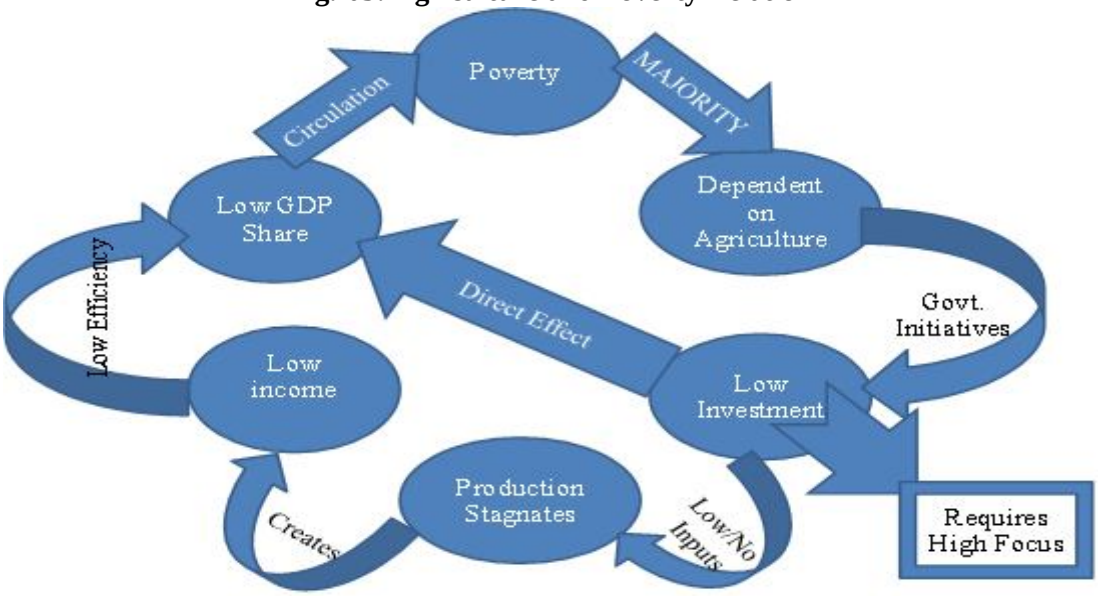
2004-05 (Based on MRP Consumption) #		**2009-10 (Based on MRP Consumption) #**		**2011-12 (Based on MRP Consumption) #**	
No. of Persons	Percentage	No. of Persons	Percentage	No. of Persons	Percentage
407.61	37.20	354.68	29.80	269.78	21.92

Source: Reserve Bank of India - Handbook of Statistics #Tendulkar Methodology

From the above **table-01** it can be noted that over a period of time the poverty rate is declining as per the report given by the Tendulkar Committee measured through MRP based Consumption. In 2004-05, he poverty rate was 407.61 million persons approximately 37.20 per cent of the population were below poverty line that declined to 21.92 per cent in 2011-12 based calculation.

With the above table one can understand that poverty rate is declining but at a diminishing rate. However, the graphs-03 analysed above it clearly depicts that population depended upon agriculture is very high but the share of its GDP is low compared to the Industrial or service sector. This shows that the workforce involved are unorganized with low or no skill to develop agriculture. Therefore, when such workforces are engaged with low skills create low income and fall in to the trap of poverty.

Fig.-05: Agriculture and Poverty Relation



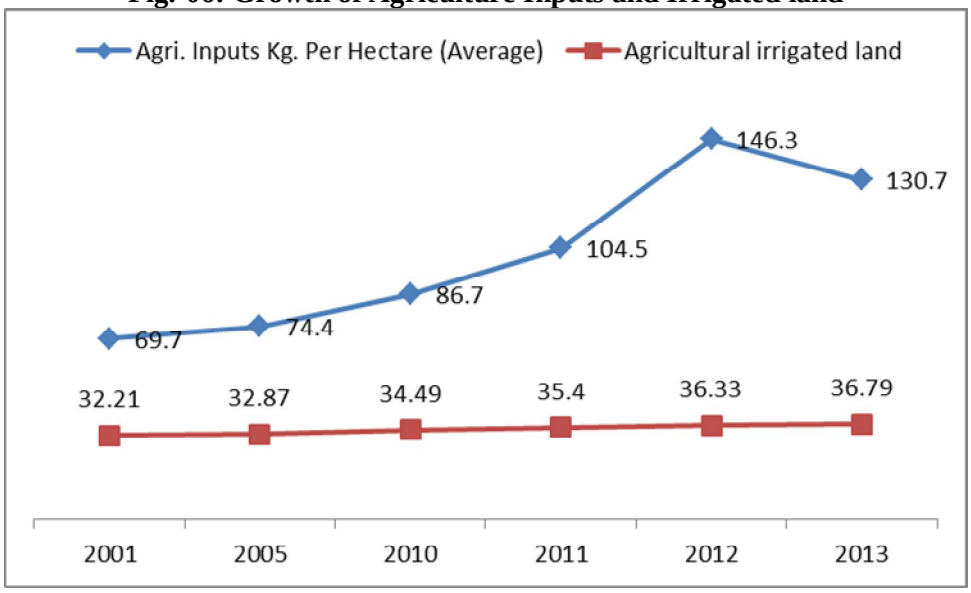
Source: Authors Graphical Representation

The above **Figure-05** represents how poverty is being developed from low investment made by government. In fact it is not right to say low investment but without effective implementation of it, poor farmers are unable to utilize various schemes that are available at their disposal. Since majority of the people of India are depended upon agriculture and other allied activities related to it, becomes very crucial to cater the needs of these farmers to develop themselves and to overcome from the trap of poverty.

ISSN 2394 - 7780

So, how poverty can be removed? A big question requires big attention. However, with small indicators of economic growth one can identify that poverty can be reduced to some extent but not completely since development cannot be achieved through some parts of economic growth. Below are some indicators that have been used to analyse poverty on the basis of crop production. With respect to this we can establish relation among them by saying that when crop production or food production level increases, the capability of farmers in terms of accessing basic needs get fulfilled. It is due to the fact that, if government provides inputs in the form of fertilizer and pesticides and that reaches to the farmers, enables them to grow more; hence growth of high income along with the irrigation facilities will increase the capability to avoid unconditional climatic behavior. With this farmers can raise their standard of living and thus can move out of poverty.

Fig.-06: Growth of Agriculture Inputs and Irrigated land



Source: Reserve Bank of India - Handbook of Statistics

In the above **figure 06** explains agriculture inputs (fertilizer and pesticides) and irrigated land over a period of time. In terms of agriculture inputs per hectare increased to the highest average of 146.3 in 2012 and declined to 130.7. In case of irrigated land is increasing at a diminishing rate. By the use of this we can say that agriculture growth takes place thereby reducing poverty.

TESTING OF HYPOTHESIS

1. **H_0:** There is negative relationship between agriculture inputs and irrigation to crop production in order to reduce poverty.

On the basis of the above established hypothesis following inference has been drawn to check whether there is positive or negative relation between agriculture inputs and irrigation facilities to the production of crops in order to reduce poverty. Hence, for the study linear regression tool was used where agriculture inputs and irrigational growth data collected from Reserve Bank of India - Handbook of Statistics and World Bank Report and regressed on individually with the help of SPSS package. The following is the econometric functional relation that is used in the study[1.]

[1.] Predicted variable (dependent variable) = intercept + slope * independent variable

CP=f (agri. Inputs+irrigation)

Where,

CP refers to Crop Production includes **agri. Inputs** that is fertilizer (f), pesticide (p), and irrigation.

Model Summary (Crop Production[a])									
					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
Agriculture Input [a]	.814[a]	.663	.633	10.97991	.663	21.653	1	11	.001
Irrigation [a]	.923	.852	.839	7.26938	.852	63.496	1	11	.000

Source: Authors calculation (SPSS Package)

ISSN 2394 - 7780

1. CP = 30.856 + (0.709) (Agri. Inputs)
Crop Production and Agri. Inputs relationship: R Square (R2) equals 0.6631. It means that 66.3% of the variance of CP is explained by Agri. Inputs. Correlation (R) equals 0.8143. It means that there is very strong direct relationship between Agri. Inputs and CP.

Goodness of fit-Overall regression: right tailed, F(1,11) = 21.6534, p-value = 0.0007013. Since p-value < α (0.05), H0 is rejected and states that Crop Production increases with the increase in Agri. Inputs.

2. CP = 22.782 + (0.099) (Irrigation)
Crop Production and irrigation relationship: R Square (R2) equals 0.8523. It means that 85.2% of the variance of CP is explained by irrigation. Correlation (R) equals 0.9232. It means that there is very strong direct relationship between Crop Production and irrigation.

Goodness of fit-Overall regression: right tailed, F(1,11) = 63.4956, p-value = 0.000006782. Since p-value < α (0.05), H0 is rejected and states that Crop Production increases with the increase in irrigation facilities.

Hence, from the above inference one can draw that agriculture inputs, irrigation to crop production are having positive relation. As agriculture inputs and irrigation facilities increases crop production also increases which prove that with the increase in agriculture production poverty can be reduced to some extent. *That is more production with low cost inputs enables to earn higher income since majority of population depends on agriculture as their livelihood will solve the problem of poverty to some extent.*

CONCLUSION

From the above discussion we can say that although agriculture has a declining share of GDP but the workforce that are engaged in this are high. These workforce are characterized as low and under develop since they cannot access to the basic needs and fall under poverty. In this study we have not focused on schemes and programme but analysed the impact of crop production to the poverty reduction. Generally we assume that if agriculture production increases the poverty reduces because poor and marginalized farmers are heavily depended upon farming. If agriculture progress farmers too progress as majority of poverty is seen among rural farmers.

REFERENCES

- Chaudhry, M.G. and Chaudhry, G.M. (1992), "Trend of rural employment and wages in Pakistan", *The Pakistan Development Review*, Vol. 31, Issue 4, pp. 803-815.
- Gaiha, R. (1995), "Does agricultural growth matter to poverty alleviation?" *Development and Change*, Vol. 26, Issue 2, pp. 285–304.
- Government of India (2004). Agricultural Statistics at a Glance 2002-03, Economics and Statistics Division, Ministry of Agriculture, (GOI).
- Janvry, A.D., Sadoulet, E. and Zhu, N. (2005), "The Role of Non-Farm Incomes in Reducing Rural Poverty and Inequality in China", Working Paper Series, qt7ts2z766, *Department of Agricultural & Resource Economics*, UC Berkeley. Available at: http://are.berkeley.edu/ ~esadoulet/papers/RNF-Nong.pdf.
- Lanjouw, P. and Murgai, R. (2008), "Poverty Decline, Agricultural Wages, and Non-Farm Employment in Rural India", *Policy Research Working Paper 4858*, the World Bank Development Research Group.
- National Sample Survey Organisation (NSSO, 2001). Results of the Fourth Quinquennial Survey on Employment and Unemployment (All India), NSS Fortythird Round (July 1987- June 1994), NSS Report no. 409, New Delhi.
- NITI Aayog (2017), "Handbook of State Statistics", *Government of India-NITI Aayog*, New Delhi.
- Santoso, M., Siahaan, H., & Kanto, S. (2016), "Structural Poverty of Farmers in Rural Area (a Case Study at Mlorah Village of Rejoso Sub District of Nganjuk Regency)", *Asian Journal of Humanities and Social Studies*, Vol. 4, Issue 6, pp.102-109.
- Singh, I. (1990), "The great ascent-the rural poor in South Asia", Baltimore, Md., U.S.A.: Johns Hopkins University Press for the World Bank.

International Journal of Advance and Innovative Research
Volume 6, Issue 2 (XII): April - June, 2019
ISSN 2394 - 7780

ROLE OF FDI IN AGRICULTURAL SECTOR IN INDIA

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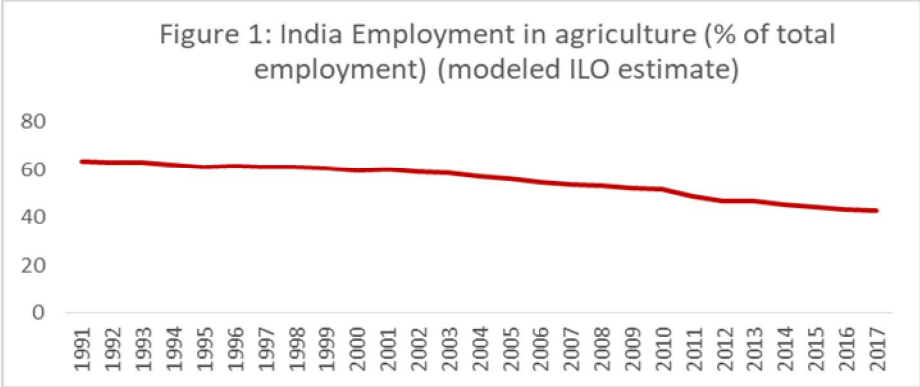
ABSTRACT
Agriculture is the most prominent sector in Indian economy where majority are engaged for livelihood. As per world development indicator 2018, 42 percent of India's population is engaged in agriculture and allied activities. The share of agriculture and allied activities in India's total gross value added in 2016-17 stood at 17.4 percent. Though agriculture sector plays vital role in India's economy yet it is unfortunate that the farmers be it small or marginal are facing serious difficulties in surviving in today's date. Either farmers has to depend on the middle man to sell their produce which does not even cover their cost of production or rely on the minimum support price by the authority. Farmer's doubling of Income is the focus of the government and it is high time that the scenario in agriculture changes which is a possible outcome by allowing FDI inflow in agriculture sector. The present study focuses on the role foreign direct investment in agriculture sector in India. The study is based on different government report and secondary data published by World Bank, Ministry of agriculture and farmer's welfare, Economic Survey report etc. Also, the benefit and challenges of FDI in India are discussed. Further this study aims to measure if there is any relationship between GDP at current price and FDI inflow in India using correlation analysis and the result of the study shows that there is strong positive correlation between FDI and GDP with 92 percent correlation result which shows as FDI inflow increases in India the GDP will also increase in India.

1. INTRODUCTION
India since pre-independence era has been agrarian economy. In India majority of its population is engaged in agricultural activities though it has been decreasing since 1991 from 63.58 percent to 42.73 percent as per World Bank Data 2018.



Source: World Bank Data, 2018

Table 1 shows the gross value added by agriculture and allied sector from year 2012-2017. The growth in gross value added in agriculture stood at 1.5 per cent in 2012-13, 5.6 per cent in 2013-14, and (-) 0.2 per cent in 2014-15, 0.7 per cent in 2015-16 and 4.9 per cent in 2016-17. Also the share of agriculture and allied sectors in total GVA at current prices declined to 17.4 per cent in year 2016-17 from 18.2 per cent in year 2012-13. From the data we can depict that Indian agriculture is basically depending on monsoon and due to that there is risk attached to the agricultural produce.

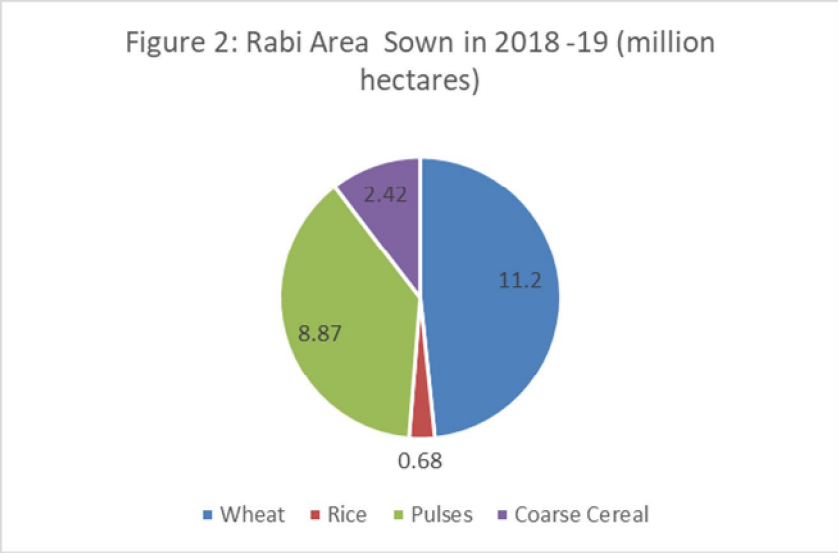
Table-1: GVA contribution by Agricultural sector

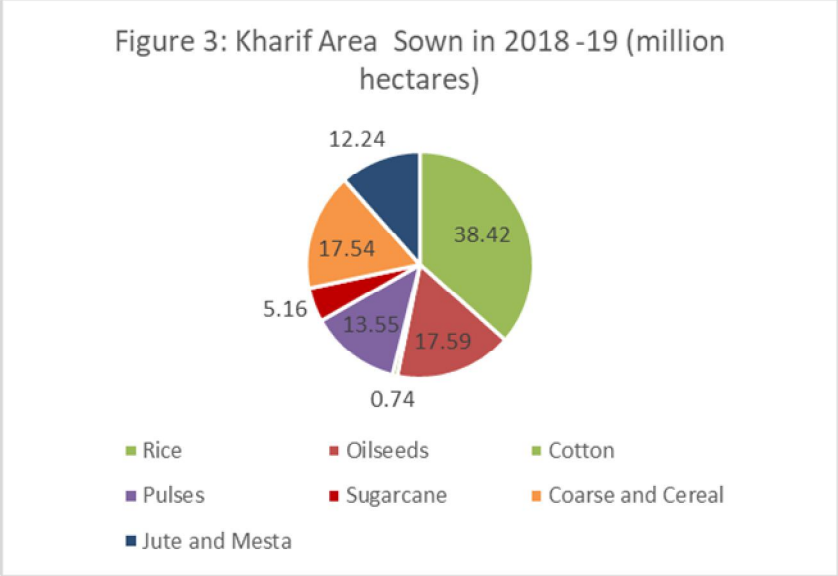
Item	2012-13	2013-14	2014-15	2015-16	2016-17 PE
Growth in GVA in Agriculture & Allied Sectors at 2011-12 prices (in per cent)	1.5	5.6	-0.2	0.7	4.9
Share of Agriculture & Allied Sectors in total GVA (in per cent) at current prices	18.2	18.6	18.0	17.5	17.4

Source: Economic survey 2017-18

In India there are two major season of agriculture, namely- Kharif and Rabi. Rice is the main crop in Kharif season which last from April to September and wheat is main crop of Rabi season lasts from October to March where wheat is the season's main crop. As of October1 2018, total area sown with Kharif crops in India reached 105.24 million hectares.

ISSN 2394 - 7780





According to the 2017-2018 economic survey, Indian agriculture contributes around 17-18% of the Gross Domestic Product (GDP). India is the second largest sugar producer in the world after Brazil. In tea production, India ranks first and 27% of total production in the world. Also, among the states, West Bengal is the largest producer of rice followed by Uttar Pradesh and Punjab. India is also the second largest producer and largest consumer of silk in the world. India exports Basmati rice, wheat, cereals, spices, fresh fruits, dry fruits, buffalo meat, cotton, tea, coffee, particularly to the Middle East, South East, and East Asian Countries.

With 9.6 percent of the global net cropland area (United States Geological Survey 2017) India ranks first and has potential to sustainable farming and improves economic activity through crop diversification. Though agricultural exports has increased from 12.14% in 2011-12 to 12.19 % in 2014-15 but agricultural imports has also increased from 4.66% to 5.88% during the same period. Increase in value of agricultural imports during this period was primarily on account of imports of vegetable oils, pulses, fruits, cashew nuts, spices, sugar and cotton which accounts for 5.63 % in 2015-16 from 3.16 % in 2013-14. India has been exporting rice, cotton, sugarcane, cashew nut, castor seed and groundnut to other countries. World Trade Statistics (WTO), data shows that the share of India's agricultural exports and imports in the world agriculture trade in 2015 were 2.26% and 1.74%, respectively.

2. OBJECTIVE

The current study is based on the following objectives:

- To examine the role of FDI in Agriculture sector in India
- To measure the relationship between GDP and FDI in India
- To address the advantages and disadvantages of FDI in India

ISSN 2394 - 7780

3. METHODOLOGY

This study is based on secondary data based on different published reports like Economic Survey 2017-18, World Bank data, and data from government websites. Also different reports are reviewed on FDI inflow in India and used for the study. To analyse the data, descriptive statistical technique and correlation test are used.

4. ROLE OF FDI IN AGRICULTURE

Foreign capital is essential for India's agricultural sector as it needs boost in terms of productivity and latest technology. In year 2017-18 agriculture and allied activities growth has declined to 3.4 per cent as against 6.3 per cent in 2016-17, hence it is necessary to implement government policies to improve agriculture growth.

Foreign Direct Investment in India flows from two routes, firstly, Automatic Route: where no prior approval of government is required for the inflow of capital. Secondly, Government Route: which requires prior approval of the Government and till May 24 2017, Foreign Investment Promotion Board (FIPB) was responsible for the same. 100 percent FDI has been allowed in floriculture, horticulture and cultivation of vegetables and mushrooms under controlled conditions, development and production of seeds and planting material. Similarly, 100 percent FDI is allowed in the planation sector as well. FDI inflows of Rs. 12,743 crores have been received in agriculture sector including agriculture machinery between April 2000 and September 2017. Agriculture machinery, plant protection services, cattle breeding and livestock rearing, cold storage and warehousing, development and production of seed and planting material, horticulture and nursery services were the focus of the investment.

Table-2: Amount of FDI Inflows

Name of the sector	(In Rs crore)	(In US$ million)	%age of Total Inflows
Agriculture services	10,568.04	2,040.74	0.52
Agricultural machinery	2,472.42	466.38	0.12
Fertilizer	3,239.09	592.37	0.15
Food Processing Industry	51,814.41	8,574.57	2.20

Source: Department of Industrial policy 2018.

Table 2 shows the amount of FDI inflows in agricultural services, agricultural machinery, fertilizer and food processing industry for April 2000 to June 2018. FDI inflows in the Indian agricultural services and machinery are allowed up to 100 percent and through automatic route in India. The foreign direct investment (FDI) inflows in agricultural services during April 2000 –June 2018 stood at Rs. 10,568 crore, Rs. 2472 crore in machinery sector, Rs. 3239 crore in fertilizer, Rs. 51814 in food processing industry. Also, percentage of total inflows in the Indian agricultural services, agriculture machinery, fertilizer and food processing industry stood at is 0.52 percent, 0.12 percent, 0.15percent and 2.20 percent.

5. MAJOR INITIATIVE IN FDI IN INDIA

Exporting Sugar to China: Indian Sugar Mill Association(ISMA) and China National Cereals, Oils and Foodstuffs corporations(COFCO), China's state owned food processing company entered into a contract in which India would export two million tonnes of sugar to China to cut trade deficit with neighbouring country in the early 2019 as per commerce ministry report.(Business Standards)

The first mega food park in Rajasthan: It was inaugurated in March 2018 at Roopangarh Village in Ajmer. The Park has been set up at a cost of Rs 113.57 crore and will benefit around 25,000 farmers in this as well as neighbouring districts. The main Focus of the investment is to boost agricultural sector by investing in food processing. This project is expected to be one of the major contributor to doubling farmers' income under the flagship scheme of 'Pradhan Mantri Kisan Sampada Yojana'and 'Make in India' initiative of the government. (Pib.nic.in)

Agrifood start-ups in India received funding of US$ 1,66 billion between year 2013-17 in 558 deals.: Indian AgriFood Startups raised a collective $1.66 billion during 2013 and 2017 compared to the $10 billion raised globally in 2017 alone, but it was spread across some 558 deals, which is around 10% of global deal activity during the same period. Due to lower cost base for running businesses in the country deal sized were smaller in India. (agfundernews.com)

18 Mergers & Acquisition (M&A) deals worth US$ 251 million in agriculture sector: In 2017, USD 8.7 billion of 18 M & A deal was announced by India. According to Grant Thornton's M&A, there were 49 M&A deals worth USD 8.71 billion in July, a nearly 22 old increase on a year-on-year basis, driven by two large outbound acquisitions valuing over USD 1 billion each. The year so far has registered 12 deals in the billion-dollar category and 33 deals valued at and over USD 100 million each. The telecom, e-commerce,

ISSN 2394 - 7780

manufacturing, energy, agriculture, banking and IT sectors led the deal activity, capturing 94 per cent of the total deal values in the January-July period. The start-up sector dominated the deal volumes with a 21 per cent share followed by manufacturing and IT together contributing 25 per cent. (Economic Times).

MoU's worth USD 13.56 billion signed by domestic & foreign investors: World Food India, a mega food event that took place in November 2017, brought together 75000 business visitors, from 61 countries , 75 International & National policy makers and Heads of State, 60 Global CEOs and 100 Indian CEOs; resulting in 5000 B2B meetings over a span of three days . At present, Global industry players such as GEA Group, Tetra Laval, Buhlar, Alfa Laval, Heat and Control and HRS process are reaping the benefits. (Make in India)

6. RELATIONSHIP BETWEEN GDP AT CURRENT PRICE AND FDI

One of the positive outcomes of foreign direct investment is believed to be improved economic condition of the economy. To asses if there lays any relationship between gross domestic product and foreign direct investment, correlation test is performed to measure the same. Secondary data from world development indicator 2018, World Bank is used from 1990 to 2017 where both GDP at current price (in US $) and FDI inflow (in US $) are collected and analysed using correlation test to measure their relationship.

Table-3: Correlation Result of GDP and FDI in India 1990-2017

	GDP at current Price (in US $)	FDI Inflow (in US $)
GDP at current Price (in US $)	1	
FDI Inflow (in US $)	0.921778	1

Source: World Development Indicator, 2018

From the correlation table it can be seen that gross domestic product at current price and foreign direct investment inflow of India shows strong positive correlation with 92 percent correlation test. This depicts with an increase on FDI in India the GDP will also increase of the country.

7. BENEFIT OF FDI IN AGRICULTURAL SECTOR

FDI has been proved to be beneficial in retail sector. 100 percent FDI inflows in agricultural sector is also beneficial in several ways:

- Improved income of the Farmers: Majority of the farmers in India commits suicide due to low income and hence to survive is a challenge for them. With FDI inflow they farmers get opportunity to sell their produce at a higher price and reports suggest it would be a hike of 10 to 30 percent in their income.
- Removal of middle man: With the introduction of FDI in the system, the farmers can now sell their produce directly without the middleman hence it is beneficial to them.
- Improved quality and productivity: Farmers are now able to utilize improved technology and improved seeds due to FDI which helps in improved quality and productivity.
- Lower cost if farm machinery: with FDI, the farmers would get agricultural tools and machinery at lower cost which will further reduce cost of production hence increasing their income.
- Contract Farming: the farmers and the buyer company will get into contract at a predetermined price. It would also offer the farmers to obtain loan from the buyer company.
- Improved rural economy: with FDI inflow, as huge investment is flowing to the rural economy, it is very much evident that the capital inflow would help in improving rural infrastructure like storage facility.

8. CHALLENGES OF FDI IN AGRICULTURAL SECTOR

Though FDI has been accepted by many as beneficial yet there are many who oppose FDI in agriculture section.

- Inflation: As FDI means involvement of foreign companies in the agricultural sector and they would invest to advertise in the market which will increase the cost of production and hence by rising the prices. This will lead to inflation in the economy.
- Negative impact on Economy: As per few, FDI will drain out the country's share of revenue to foreign counties which will have negative impact on our economy.
- Contract farming may lead to negative effect on farmer's income as majority of our farmers are illiterate and they might not understand the contract terms and condition and might end up getting less than what was committed by the company.

ISSN 2394 - 7780

- Seasonal impact: since Indian agricultural is majorly depending on monsoon, in case of bad season for consecutive terms, the foreign companies might go out of the contract and the farmer's in that case will be in worse situation.
- Loss of jobs: Small and marginal farmers might not be able to compete with big giants in the economy as it will be difficult for them to match with them. Hence they will lose their position in the market.

9. CONCLUSION

It is important to formulate policies based on the farmer's perspective of India. Majority of our farmers are illiterate and to provide them with the basic knowledge of FDI and it's functioning and providing them with training to deal with FDI is important. The government should take initiative to provide access to land, finances to all the farmers and make policies to save the positions of the small and marginal farmers so that they can earn their living. Also, it is important that the Government to provide proper guidelines to the multinational companies entering the agricultural sector to keep price in such a way that it do not trigger inflation in the economy. Foreign investment would help in improved quality of seeds and technology and enhance productivity since it is long term relationship between the nation and the foreign companies which go hand in hand. FDI has played significant role in the development of country's economy and it will be helpful in strengthening the rural economy of India. From the correlation test it is clear that FDI is essential for economic development as GDP of any country represent the country's economy and the correlation test shows that there is strong positive correlation between GDP and FDI inflow in India. Hence, it can be concluded that FDI inflow in India has positive outcome on our economy.

REFERENCES

- Adhana, D. K. (2016), "Foreign direct investment in Indian agricultural sector: opportunities and challenges", Kaav International Journal of Economics, Commerce & Business Management (KIJECBM), Vol. 3, No.2, pp. 32-47.
- Kumar, S. and Kavita, (2014), "Foreign Direct Investment in Indian Agricultural Sector: Opportunities and Challenges States" Indiastat.com, pp.1-13.
- Choudhary, A. (2016), "Role of Foreign Direct Investment (FDI) in the Growth of Indian Agricultural Sector: A Post Reform Study", Global Journal of Finance and Management, vol. 8. No.2, pp.119-129.
- Yadav, K., Sharma. D (2013), "Why Foreign Direct Investment in Agricultural Retailing in India", IRACST – International Journal of Commerce, Business and Management (IJCBM), Vol. 2, No. 6, pp. 453-456.
- Ambrsh (2014), "Impact of Globalisation and Indian Agriculture", Global Journal of Multidisciplinary Studies, Vol. 3, No. 12, pp. 137-147.
- IBEF (2017), "Report on Agriculture", pp.3-45
- World Development Indicator, (2018), World Bank.
- Singh, K., Walia, R.K. (2015), "Foreign Direct Investment (FDI) & Agriculture Sector in India", Indian Journal of Research, Vol. 4, No.3, pp. 6-8.
- Economic survey (2018), Ministry of Finance, vol.1 and vol2. 2017-18,
- Report of the Committee on Doubling Farmers' Income, (2018), "Comprehensive Policy Recommendations", Ministry of Agriculture & Farmers' Welfare. Vol. XIV, pp.1-225.
- https://www.business-standard.com/article/pti-stories/india-to-start-exporting-sugar-to-china-from-early-2019-targets-2-mn-ton-shipments-govt-118110801167_1.html
- http://pib.nic.in/newsite/PrintRelease.aspx?relid=178209
- https://agfundernews.com/breaking-exclusive-indian-agrifood-startups-raise-1-7bn-in-venture-capital-2013-2017.html

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Fox, S. (1984). Empowerment as a catalyst for change: an example for the food industry. *Supply Chain Management*, *2*(3), 29–33.

Bateson, C. D.,(2006), 'Doing Business after the Fall: The Virtue of Moral Hypocrisy', Journal of Business Ethics, 66: 321 – 335

- **Multiple author journal article:**

Khan, M. R., Islam, A. F. M. M., & Das, D. (1886). A Factor Analytic Study on the Validity of a Union Commitment Scale. *Journal of Applied Psychology*, *12*(1), 129-136.

Liu, W.B, Wongcha A, & Peng, K.C. (2012), "Adopting Super-Efficiency And Tobit Model On Analyzing the Efficiency of Teacher's Colleges In Thailand", International Journal on New Trends In Education and Their Implications, Vol.3.3, 108 – 114.

- **Text Book:**

Simchi-Levi, D., Kaminsky, P., & Simchi-Levi, E. (2007). *Designing and Managing the Supply Chain: Concepts, Strategies and Case Studies* (3rd ed.). New York: McGraw-Hill.

S. Neelamegham," Marketing in India, Cases and Reading, Vikas Publishing House Pvt. Ltd, III Edition, 2000.

- **Edited book having one editor:**

Raine, A. (Ed.). (2006). *Crime and schizophrenia: Causes and cures.* New York: Nova Science.

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Young, M. E., & Wasserman, E. A. (2005). Theories of learning. In K. Lamberts, & R. L. Goldstone (Eds.), *Handbook of cognition* (pp. 161-182). Thousand Oaks, CA: Sage.

- **Electronic sources should include the URL of the website at which they may be found, as shown:**

Sillick, T. J., & Schutte, N. S. (2006). Emotional intelligence and self-esteem mediate between perceived early parental love and adult happiness. *E-Journal of Applied Psychology, 2*(2), 38-48. Retrieved from http://ojs.lib.swin.edu.au/index.php/ejap

- **Unpublished dissertation/ paper:**

Uddin, K. (2000). A Study of Corporate Governance in a Developing Country: A Case of Bangladesh (Unpublished Dissertation). Lingnan University, Hong Kong.

- **Article in newspaper:**

Yunus, M. (2005, March 23). Micro Credit and Poverty Alleviation in Bangladesh. *The Bangladesh Observer*, p. 9.

- **Article in magazine:**

Holloway, M. (2005, August 6). When extinct isn't. *Scientific American, 293*, 22-23.

- **Website of any institution:**

Central Bank of India (2005). *Income Recognition Norms Definition of NPA.* Retrieved August 10, 2005, from http://www.centralbankofindia.co.in/ home/index1.htm, viewed on

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