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## **EDITORIAL**

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### **Dear Readers**

The current era is over saturated with cyber activities through qualitative and quantitative user mode. The trend has already entered into the veins of the community cutting across the class, gender and age lines. Extension education, service and extension work- all spheres are now filled with cyber guided interventions. The professionals, scholars and agents in this field are persuaded to sensitize themselves with this movement. On the other hand, the work field of these extension professionals is not so matched with this scenario. The culture driven peasant scenario of the rural landscape is perhaps a distance away from the advancement of the professional system. It is the challenge for the generation to minimize the cultural lag for efficient and useful application of extension methods and aids for the targeted rural client.

I got immense pleasure to release the current issue of Journal of Extension Education to the community. A lot of brain stormed efforts has been put behind the reincarnated look of the Journal. We sincerely hope that the effort will be appreciated by the readers. I am sure the literature shall be a fruitful document for the research in behavioral sciences.

**Dr. R. K. Raj**  
Chief Editor



# CONTENTS

Entrepreneurial Behaviour of Rural Women <i>B. Mishra, A Mishra, S. Das and M. Mohanty</i>	1-7
IT enabled Self-Sufficient Sustainable Seed System for Rice (4S4R) <i>G.A.K. Kumar, T. Mohapatra, Himanshu Pathak, &amp; B.N. Sadangi</i>	8-10
Adoption of Improved Tomato Production Technology Among The Farmers in Maihar block of Satna District (M.P.) <i>Azlan Khan, A. S. Chouhan, Sanjay Singh, Dharmendra and Toran Lal Nishad</i>	11-13
Attitude analysis of agriculture graduates towards Agriculture education <i>P. Laxmi Prasanna, P. Mohapatra</i>	14-17
Extension Issues in Adoption of Mechanical Transplanter in Rice Cultivation in Tamil Nadu State <i>Ravi Kumar Theodore, N. Venkatesa Palanichamy and V. Ravi</i>	18-24
Perceived Constraints and Suggestions by Rice Farmers for improvement in Implementation of BGREI Programme in Odisha, India <i>R.K. Behera, S.K. Mishra, H.K. Awasthi, B. Mondal and Lipi Das</i>	25-28
Self Help Group: An Effective Approach for Empowerment of Rural Women <i>Pragatika Mishra Ravi Shanker and Ritesh Dube</i>	29-32
Linking farmers collectives of hills to Markets : Opportunities and Challenges <i>Renu Jethi, ICAR-VPKAS Almora, Uttarakhand</i>	33-36
Socio-Economic Strategy for Empowerment of Farm Women Producers <i>Dr. B.P. Mohapatra, E Harshitha &amp; V Uma Mridula</i>	37-39
Gaps in Extension Services -A Case study of Meghalaya <i>Rohit Joshi, Atulya Narayan</i>	40-46
Information Dynamics of Tribal Rice Farmers Under NFSM In Kandhamal District of Odisha <i>Subha Laxmi Sahoo, M.A. Khan, N.C. Rath, Biswajit Sahoo</i>	47-50
Constraint Analysis of Self Help Group in Koraput District of Odisha <i>Tejaswini Nayak, Sujit Majhi, Shruti Nanda</i>	51-53
Utilization pattern of Kisan Credit Card among the small and marginal farmers in Rewa block of Rewa District (M.P.) <i>Toran Lal Nishad, Deepak Jaiswal, Sanjay Singh, Azlan Khan and Dharmendra</i>	54-57
Indigenous Technical Knowledge (ITK) of Pest and Disease Management by Tribal Farmers of Jharkhand <i>Pankaj Kumar, Priya Pallavi, Dr. B.K. Jha and Dr. Mukesh Kumar</i>	58-59



## Entrepreneurial Behaviour of Rural Women

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### ABSTRACT

*Entrepreneurship is regarded as an important tool of development in India for employment and income generation. The role of women in the mainstream of nation development is too less when compared to the nations. Many developmental initiatives were made by the Govt. and other agencies to empower the women in social, economical and political spheres. The present study carried out in Cuttack district of Odisha, revealed that majority (66%) of rural women had medium level of entrepreneurial behavior followed by 20% with high level and 14% with low level of entrepreneurial behavior. The reason for the high production efficiency could be “hands on training” undertaken in the common facility centre by the trainer effective planning of raw materials and processing of value added products.*

**Key words :** Entrepreneurial behaviour

Women Entrepreneurs do contribute to the GDP and play a key role in addressing social challenges and changing the norms in society. Though the number of women entrepreneurs in India remains relatively low, there has been a change in women entrepreneurship due to growth in education, urbanization, industrialization and awareness of democratic values. The Indian government had has also proposed, adopted and promoted the SHGs to uplift rural women and their families and community as a whole. In this context a study entitled “Entrepreneurial behavior of rural women” was conducted with following objectives.

#### Objectives

- To assess the level of entrepreneurial behavior of rural women entrepreneurs.

- To analysis the association between the profile of rural women entrepreneurs with their level of entrepreneurial behavior.

#### Materials and methods:

The study was conducted in Cuttack district of Odisha selected purposively due to ease of the investigation. Salepur block, two gram Panchayats namely Chanipur and Sauri and four villages namely Balabhadrapur, Sarada, Karamuan, Balia were also selected purposively based on the location and communication facility to conduct the research work. One hundred respondents were selected through disproportionate random sampling technique from selected villages.

#### Result and discussion

**Table 1 Distribution of respondents according to type of training received by women entrepreneurs**

(N=100)

Sl. No.	Types of training	Frequency and percentage
1	On campus training	93
2	Off campus training	95

Table 1 showed that 95% of women entrepreneur had taken off campus training where as 93% of respondents had taken off campus training. Through

training programme, one can gain better and appropriate knowledge on entrepreneurship and develop their level of confidence.



**Table 2 Distribution of respondents according to duration of the training received by women entrepreneurs****(N=100)**

Sl. No.	Duration of the training	On campus training	Off campus training
		Frequency and percentage	Frequency and percentage
1	<2 days	6	10
2	3 days – 1 week	68	67
3	8 days – 2 week	26	23

It was observed that among all the respondents, majority of women entrepreneurs had taken on campus training in comparison to off campus training in between 2 days to 1 week followed by 10% of the rural women had taken off campus training of less than 2 days in comparison to on campus training.

More respondents had undergone off campus training rather than on campus training and also they are

interested off campus training in future. Only few of them attended both on campus and off campus training due to dual workload at home and business.

Training programmes was conducted by the trainee to aware the rural women about new technology launched in the market, demand need of the market, social awareness etc.

**Table 3 Distribution of respondents according to kinds of training acquired by rural women entrepreneurs****(N=100)**

Sl. N o.	Kinds of training	Frequency and Percentage
1	Skill based training	96
2	Training on social awareness	95
3	Importance of group formation	89
4	Gender equality	82

From the above table, it is observed that majority (96%) of respondents were quite knowledge about skill base training which help them to develop their production activities followed by 95% on social awareness, 89% on importance of group formation and 82% had taken training on gender equality.

They had received different kind of training through which they can more aware about any matter like social, environmental, gender equality etc. They knew that they could earn money through any initiative as like men. In addition, they gave more importance to the group.

**Table 4 Participation of women entrepreneurs in entrepreneurial activities****(N=100)**

Sl. No.	Extension activities	Degree of participation				
		Regular (f)	Occasional (f)	Never (f)	Mean score	Rank
1	Training programme	73	28	1	2.72	I
2	Demonstration	72	27	1	2.71	II
3	Educational tour	0	25	75	1.25	VIII
4	Field day	6	28	66	1.40	VI
5	Group discussion	17	43	40	1.77	V
6	Film /slide show	18	46	36	1.82	IV
7	Campaign	36	61	3	2.33	III
8	Others	3	33	64	1.39	VII

There were various extension activities like training, demonstration, educational tour; field day, group discussion, film show, campaign etc. helped the women entrepreneur to understand the activities of value addition of the product. And from these activities, one can get a better exposure.

From table 4 it was revealed that most of the respondents were attending training programme whereas

very few of them were going to educational tour. High extension participation enables to gain exposure, information and create her interest for some income generating activities so that they can earn for her family.

Most the respondents did not participate in educational tour due to the responsibility of family, insufficient travelling allowances, etc.

**Table 5 Distribution of respondents according to mass media participation of women entrepreneurs**

(N=100)

Sl. No.	Mass media	Reading / listening / viewing habits				
		Regular (f)	Occasional (f)	Never (f)	Mean score	Rank
1	News paper	16	31	53	1.63	II
2	Extension literature	0	34	66	1.34	IV
3	Radio	4	51	45	1.59	III
4	Television	45	54	1	2.44	I
5	Books	1	26	73	1.26	V

Mass media implies to the means of communication that reaches large number of people such as newspaper, television, radio magazines etc. One of the best medium in which one can gain knowledge about entrepreneurship was mass media. It provides information on experiences of successful entrepreneurs through various channels like television, radio, newspaper, literature on extension activities and books, which reinforce confidence in other rural women to take up similar activities or try out new enterprises.

From the table 5 it was observed that most of the respondents watch television for their likeness it involved both audio and visual displays which stimulates interest. Simultaneously it also creates interest and even advertisement, which enhance their outlook on things happening around. Thus it was most influential factor towards attitude. Reading newspaper occupies the second position in this respect as it was cheaper, available in most houses and one can read it at anytime and anywhere. However, very few of them read books.

**Table 6 Confidence gained of women entrepreneur towards entrepreneurship**

(N=100)

Sl. No.	Activities	Frequency and percentage
1	Discussion with customers for product refinement	96
2	Purchasing of packaging materials	71
3	Finding out new markets for sale all product	51
4	Increasing the size of business	49
5	Problem solving capability	69

This table showed that women entrepreneurs have gained confidence through entrepreneurship. overallly increased day by day. Around 96% of women entrepreneurs had ability to discuss with customers for

product refinement followed by 71% purchasing of packaging material, 69% problem solving capability, 51% finding out new market for sale and only 49% of respondents had the ability to increase the size of business.

**Table 8 Credit seeking behavior of women entrepreneurs****(N=100)**

Sl. No.	Statement	Agree Frequency and percentage	Disagree Frequency and percentage
1	A rural woman should borrow money for starting any enterprise	98	2
2	It is difficult to secure credit for enterprise	78	22
3	Treatment given by the banks for credit	88	12
4	Credit seeking during last two years for the enterprise	58	42
5	Credit availability in time	64	36
6	Timely repayment of loan	87	13

The women entrepreneurs invariably need the capital to start any of the entrepreneurial activities to take up a venture so that they contact with the moneylenders, banks etc.

From the table 8 it was observed that majority (98%) of respondents thought that women entrepreneurs should

borrow money for starting any enterprise followed by 88% fairly treated by the institutional head, 87% repaying loan in the time given by the institution, 78% think that to seek credit for the enterprise is very difficult, 64% got credit in time and 58% seeking credit during last two years for the enterprise.

**Table 9 Improvement in decision-making behavior of respondents****(N=100)**

Sl. No.	Response	Frequency and percentage
1	Ability of solving family problem.	86
2	Contribution towards family saving	88
3	Deciding the time of marketing	88
4	Purchase of assets.	90
5	Deciding family expenditure pattern	89
6	Cosmopoliteness	85
7	Free to move out as and when required for the enterprise management.	35
8	Spending time outside home as required for business.	40
9	Attending training programme for skill up gradation (as required).	95
10	Own land for business	14
11	Member of any SHG	96

From the Table 9 it was observed that majority (96%) of women entrepreneurs had the member of self-help group followed by 95% had ability to attend training programme for skill up gradation, 89% of respondents had ability to decide family expenditure pattern i.e. food, cloth, education, cloth, health etc.

It showed that almost all women had ability to take decisions on their house. Their family needed their opinion or suggestion at the time of marketing, expenditure, saving, problem solving etc. very less number of people had no decision making ability due to low education.

**Table 10 Improvement of entrepreneurial behavior of respondents**

(N=100)

Sl. No.	Dimensions	Response continuum				Mean Score	Rank
		FA	A	SWA	LA		
PRODUCTION EFFICIENCY							
1	Ability to decide on the type of value added products for large scale production in order to get more profit.	16	45	38	1	2.76	I
2	Ability to decide the optimal combination of the resources to produce as per market demand.	15	37	42	6	2.61	IV
3	Ability to use optimum input ingredients as recommended by experts.	17	36	37	10	2.60	V
4	Updating on the recent changes in recommended technology skill.	19	30	38	25	2.37	VII
5	Ability to make plan and implement activities.	17	31	38	14	2.51	VI
6	Ability to work in team spirit with employees.	21	31	38	10	2.32	VIII
7	Ability to exchange and share information with other same type of entrepreneur.	22	36	33	9	2.71	II
8	Ability for timely procurement of inputs.	20	38	31	11	2.67	III
MANAGERIAL ABILITY							
1	Adopt other innovative value added products for achieving higher profits.	15	41	40	4	2.67	IV
2	Identification of market demand and supplying the products as per the orders placed by the buyers.	14	44	34	8	2.64	VI
3	Active involvement in monitoring of value addition process to reduce the wastage of resources.	14	31	47	8	2.51	IX
4	Ability to manage timely operations in preparation of value added products.	15	44	38	3	2.71	V
5	Involvement in capital investment and credit borrowing.	12	47	33	8	2.63	VIII
6	Personally inspecting the value added products periodically and adopting timely and appropriate standard measures.	17	35	41	7	2.62	VII
7	Planning to utilize time effectively and efficiently	25	34	35	6	2.78	II
8	Maintenance of records and updating accounts regarding expenditure and income in business proposal and transaction.	24	17	39	20	2.45	X
9	Participation in training and extension programmes periodically for updating skills	15	43	39	3	2.73	III
10	Maintaining cordial relationship and cooperation with other departments.	17	50	30	3	2.81	I
MARKETING							
1	Acquired knowledge on marketing trends on price of both ingredients and final products.	14	41	42	3	2.66	II
2	Ability in marketing the products outside the locality and farthest place.	12	39	38	11	2.52	IV
3	Careful grading and packaging for maintaining hygiene of value added product.	13	40	36	11	2.55	III
4	Deciding on the quantum of produce to be prepared and sold during different periods in a year.	11	37	42	10	2.49	V
5	Creating and use of storage and processing facilities.	19	35	43	3	2.70	I

**Table 11 Level of entrepreneurial behavior of respondents****(N=100)**

Sl. No.	Category	Frequency	Percentage
1	Low	14	14
2	Medium	66	66
3	High	20	20

From the table 10 it was observed that majority (66%) of samples had medium level of entrepreneurial behavior followed by 20% with high level and 14% with low level of entrepreneurial behaviour.

66% respondents had medium level production efficiency, medium managerial ability and medium market knowledge. The reason could be the skill acquired in entrepreneurship development (EDP) and exposure gained. The reason for the high production efficiency could be “hands on training” undertaken in the common facility centre by the trainer effective planning of raw materials and processing of value added products. The reasons for low entrepreneurial behavior could be attributed to their less involvement in production, management and marketing of products and their low personal, social, psychological characters.

Majority of them had acquired the ability to decide on the type of value added products for large scale production in order to get more profit followed by to make plans and implements, interaction and sharing of opinion on technology with other entrepreneur, production and marketing of value added product, adopting timely and standard measures and maintaining cordial relationship and seeking cooperation with other department and capital investment and credit borrowing.

As most of the women were aware of the market trends about selling and buying activities and taking a care on prepared products to separate the inferior products so that they get better price and make profit.

**Association between the profile of rural women entrepreneurs with their level of entrepreneurial behavior.**

**Table 12 correlation between the entrepreneurial behavior and personal and social-economic characteristics of women entrepreneurs****(N=100)**

	Age	Education	Income	Extension training	Entrepreneurial behaviour
Age					
Education	-0.745**				
Income	0.256*	-0.092			
Extension training	-0.400**	0.673**	0.053		
Entrepreneurial behavior	-0.512**	0.791**	-0.035	0.712**	

\*\* : Correlation is significant at the 0.01 level (2-tailed).

\* : Correlation is significant at the 0.05 level (2-tailed).

The above table showed that age was negatively correlated with extension training programme and entrepreneurial behavior. If age increased, then there was no relation with training and entrepreneurial behavior. In case of education, it was positively correlated with training and entrepreneurial behavior i.e. if education level

increased then there was increasing of training and entrepreneurial behavior. Annual income was not correlated with entrepreneurial behavior. However low income was also a determinant factor to impact entrepreneurial behavior.

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## IT enabled Self-Sufficient Sustainable Seed System for Rice (4S4R)

G.A.K. Kumar, T. Mohapatra, Himanshu Pathak, & B.N. Sadangi,  
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### ABSTRACT

*Since early 1960s, the formal system of seed production in India has been fulfilling the need of the farmers. However, the system faces a number of problems related to Quality, Quantity, Timeliness, Choice of variety, Cost of seed production and distribution. These problems have cropped up during last six decades due to the vastness of formal seed system and involvement of a number of individuals, seed growers and agencies both government and non-government dealing with seed. The solution lies in developing local seed system.*

**Key words :** Sustainable seed system

### Developing Local Seed Systems

In contrast to formal seed sector, local seed system, if strengthened, can offer solutions to overcome the constraints of formal (government) seed supply system. Local seed system can produce seed according to local farmers' need, in right quality, right quantity, with lower cost of production & supply and with timely delivery of seed to farmers.

### Self-sufficient Sustainable Seed System for Rice (4S4R) model

Accordingly, Self-sufficient Sustainable Seed System for Rice (4S4R) model was conceptualized at ICAR-NRRI during 2014 under the leadership of Dr. T. Mohapatra, the then Director of the institute and is being tested at Mahanga block of Cuttack, Odisha. However, the model itself is general in nature harnessing the advantages of advancements in IT sector at planning, execution, monitoring, capacity building, and marketing. The model combines best of the technologies and practices available with ICAR Institutions/Universities and IT Institutions. In order to reach at an efficient local seed system following interventions are being undertaken.

### Interventions for Improving Local Seed System

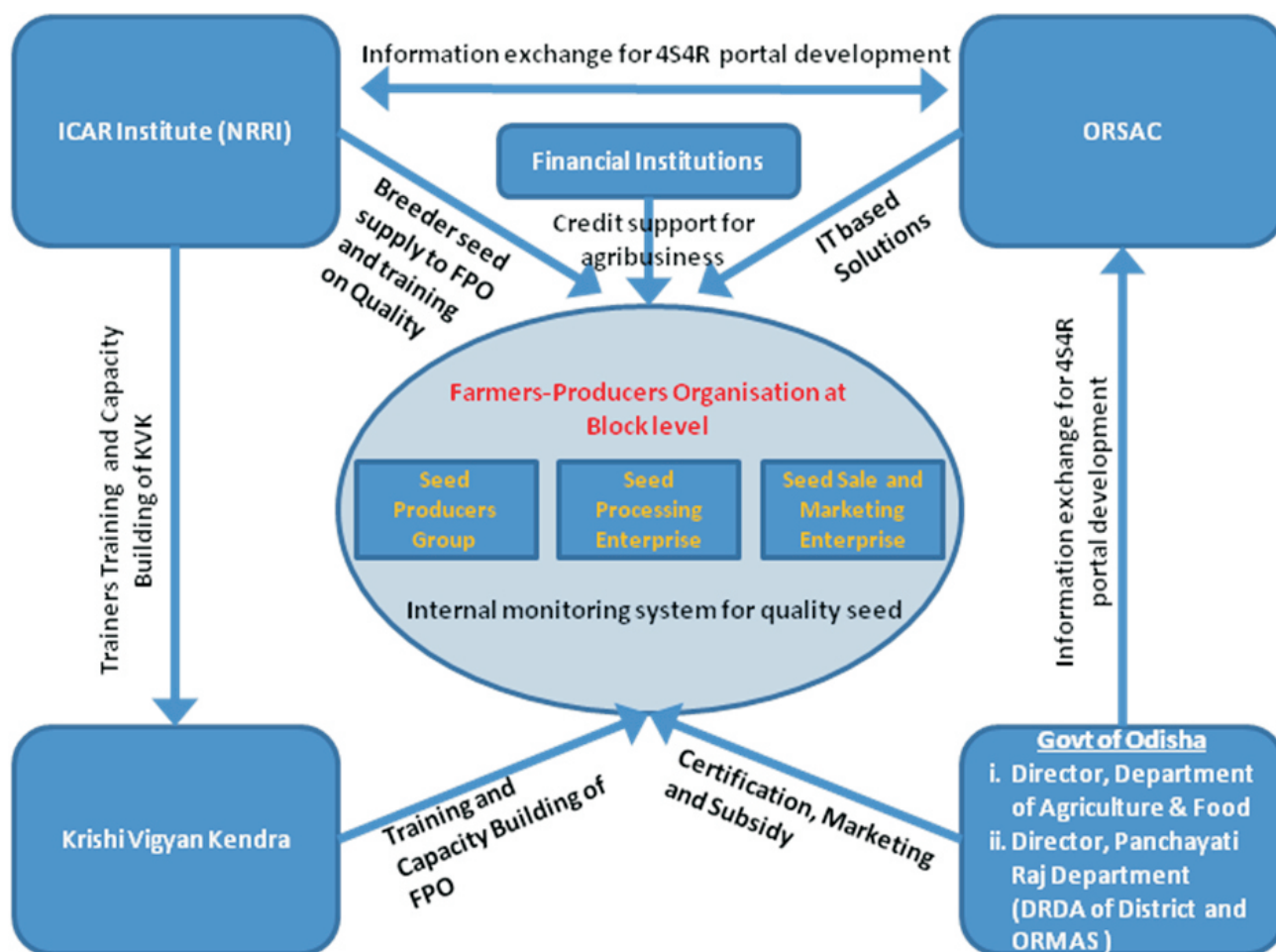
The existing formal seed system was studied and its constraints were identified and analyzed. It was observed that the root cause of all the constraints in formal system was involvement of multiple agencies and its vastness. Therefore, the local system was designed which is manageable due to its smaller size and area of operation. The constraints of formal seed system were systematically removed and strategies were developed with following interventions to evolve a strong local seed system, devoid of above stated constraints.

We facilitated

1. Farmers' access to seed through
  - a. Awareness

- b. Training and
  - c. Capacity building
2. Then introduced appropriate agricultural technologies in
  - a. Crop Improvement (Introduction of improved varieties)
  - b. Crop Production
  - c. Integrated pest and disease management
  - d. Seed health and storage management
3. Then improved disorganized local seed system through
  - a. Improved organization by starting Farmer Producer Organisation (FPO)
  - b. Registering FPO under Company Act 2013 (Old 1956) as Mahanga Agro Producers 4S4R Pvt. Ltd. on 30 April, 2017.
  - c. Providing support for establishment and sustainability
4. and provided IT based solutions for
  - a. Expert system of seed production – developed PaddySeed Xpert, which is available at Google Play Store.
  - b. Used remote sensing for identification of appropriate location for seed production.
  - c. Used remote sensing and GIS maps to determine the seed requirement of the area.
  - d. Linked financial institutions/KVKs of the districts to the Farmers Producers Organisation (FPO) and
  - e. Utilized GIS mapping technique for seed availability/marketing.





**Fig.1 Schematic diagram of Self-sufficient Sustainable Seed System for Rice (4S4R) model**

The 4S4R model has Farmers-Producers Organisation (FPO) in the centre of the activity at the block level. The FPO consists of i) seed producing farmers group, ii) seed processing enterprise and iii) seed selling and marketing enterprise, mainly catering the quality seed requirement of the block at local level. The seed producing farmers group produces foundation/certified seeds as per local demand from the breeder seed supplied by NRRI. Paddy seed processing and packaging machineries besides seed storage godown have been provided under RKVY scheme of Govt. of India implemented through Govt. of Odisha. The sale outlet is part of the processing unit. These two units have been developed through entrepreneurship development approach. A specialized training has been imparted in the area of FPO management and Paddy Seed Production which is followed by support to establish processing and marketing unit(s).

The pivotal role in this model is played by ICAR - National Rice Research Institute being the specialized institute for technology development in rice. NRRI is performing following specialized role.

1. Supplying breeder seed.

2. Providing production and post-production technologies for seed production.
3. Developing Trainers Training Module and imparting training to KVK personnel involved in this project.
4. Providing inputs for expert system development for seed production in Odisha to IT Institutions.
5. Supporting in developing GIS based tools for site (land) selection for seed production.
6. Organising workshops at planning stage, portal development stage and for capacity building to efficiently implement the project.
7. Coordinating various stakeholders in achieving the objectives of the project.

esides, OUAT is also supplying breeder seed to FPO as per the requirement of the farmers.

### Challenges

The major challenges faced in implementing this project are coordination among different stakeholders besides

setting up FPOs at block level and marketing of the paddy seed.

### **Benefits**

The Mahanga Agro Producer 4S4R Pvt. Ltd. required 30 lakhs as cost of the project but the Break Even Point(BEP) is achieved with 87 lakhs profit from second year onwards annually. As a result of local seed system 4S4R, Mahanga block farmers are getting seed in Right Quantity, of Right Quality, of Right Choice, at Right Time and at Right Cost.

### **Conclusion**

FPO is registered as Farmers Producer Company (FPC) under companies act. Here farmers start their own

business/agreprenurship as members and board of directors and eventually become the share holders of the company with their own management, administration and auditing facilities. This is practically observed at Mahanga block. Today, it operates as an individual company with five board of directors and rest of the fifteen members as share holders in the company. The company has the target of making 50 Farmers Interest Groups (FIGs) of 20 farmers each as member of the company who will be share holders and involve in seed business as growers and/or buyers of seed. The profits are shared among the shareholders as per the company act. Entire system operates on the zeal to maintain 'quality' seeds under their own brand name to create a trade mark for their Self-sufficient Sustainable Seed System – '4S4R'.

## Adoption of Improved Tomato Production Technology Among The Farmers in Maihar block of Satna District (M.P.)

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### ABSTRACT

*Tomato (Solanum lycopersicon Mill) is one of the most important solanaceous vegetable crop and cultivated throughout the world in tropics and subtropics countries viz, USA, Italy, China, Turkey and India. It is grown in kitchen gardens, commercial fields under green house, Poyhouse conditions and soil less culture or hydroponic systems. The present study was conducted in Satna district M.P. Satna district was selected purposively, since presently it has larger area under tomato crops. The study was carried out to assess the adoption of improved cultivation technology of tomato growers. It was found that the aspect improved variety (1.41) had highest mean adoption score followed by nursery management (1.30), seed rate (1.20), planting distance (1.11), disease management (1.10), chemical fertilizer management (1.03), seed treatment (1.01), weed management (0.95), use of staking (0.93), Picking (0.88), bio.fertilizer management (0.86). Mean adoption score was found to be lowest in case of Insect management (0.83). the study also revealed that the characteristics of the tomato growers namely, education, size of land holding, Farming experience, annual income, market orientation source of information, mass media exposure, contact with extension agencies, economic motivation, risk orientation and decision making had significant relationship with their adoption at 5% level of significance. The result also depict that age, social participation, size of family and caste of the farmers did not establish significant relationship with their adoption of improved cultivation technology of tomato at 5% level of significance.*

**Key words :** Adoption, tomato

### Introduction

Tomato (*Solanum lycopersicon* Mill) is one of the most important solanaceous vegetable crop and cultivated throughout the world in tropics and subtropics countries viz, USA, Italy, China, Turkey and India. It is grown in kitchen gardens, commercial fields under green house, Poyhouse conditions and soil less culture or hydroponic systems. In India, Tomato occupies an area of 791.00 hectare with a production of 17398 metric tonnes and average productivity of 22.0 tonnes per hectare. Major Tomato growing states in India are Bihar, Karnataka, Orissa, Maharastra Andhra Pradesh, Madhya Pradesh and Assam, In Madhya Pradesh the total area and production of Tomato are 70.23 hectare and 2177 metric tonnes. (NHB, Indian horticulture database 2015). The major Tomato growing district in Madhya Pradesh are Satna, Ratlam, Indore, Khargone, Dhar, Jhabua, Ujjain, Sagar, Raisen, Shajapur, Jabalpur and Chhindwara. The area under tomato in the district of satna is 436 hectare annual production of 8620 metric tonnes and productivity of 19.77 tonnes per hectare.

### Objective

1. To assess the extent of adoption of improved cultivation technology of tomato growers.

2. To determine the association between independent and dependent variables.

**Materials and methods:-** Satna district has been divided into nine block namely Maihar, Nagod, Sohawal, Ramnagar baghelan, Amarpatan, Uchehara and Majhgawa blocks. Satna district comprises 9 blocks out of which Maihar block will be selected purposively because in this block the large area under vegetable crop. Maihar block consists of 115 villages. Out of which 10 villages namely Berma, Bharauli, Bhaisasur, Barhi, Dhatura, Itma, Ghunwara, Jeetnagar, Piprakala and Lodhauti. The villages were selected on the basis of highest area of tomato crop. A list of farmers who were growing tomato crop as a major crop was prepared with the help of RAE0's and other official. From each selected villages namely Berma, Bharauli, Bhaisasur, Barhi, Dhatura, Itma, Ghunwara, Jeetnagar, Piprakala and Lodhauti. Tomato growers were selected by using proportionate random sampling method, to make a sample of 120 respondents.

### Result & Discussion

1. To assess the extent of adoption of improved cultivation technology of tomato growers.

**Table 1.1:- Extent of adoption of improved cultivation technology of tomato growers,**

Sl. No.	Practices	Extent of Adoption			Total score	Mean score	Rank
		complete	partial	Not at all			
1	Improved variety	70	30	20	170	1.41	I
2	Nursery management	58	40	22	156	1.30	II
3	Seed rate	52	30	38	144	1.20	III
4	Seed treatment	41	40	39	122	1.01	VII
5	Planting distance	55	24	41	134	1.11	IV
6	Weed management	40	34	46	114	0.95	VIII
7.	Chemical fertilizer management	45	34	41	124	1.03	VI
8.	Bio fertilizer management	36	32	52	104	0.86	XI
9	Use of staking	35	42	43	112	0.93	XI
10	Disease management	51	30	39	132	1.10	V
11	Insect management	40	20	60	100	0.83	XII
12	Picking	42	22	56	106	0.88	X

Table 1.1 it was observed that the mean adoption score was highest in improved variety (1.41) followed by nursery management (1.30), seed rate (1.20), planting distance (1.11), disease management (1.10), chemical

fertilizer management (1.03), seed treatment (1.01), weed management (0.95), use of staking (0.93), Picking (0.88), bio fertilizer management (0.86). and lowest mean score was Insect management (0.83).

**Table 1.2:- Overall adoption of improved cultivation technology of tomato growers,**

S. No.	Extent of adoption	No. of respondents	Percentage
1.	Low	36	30.00
2.	Medium	55	45.84
3.	High	29	24.16
	Total	120	100.00

The table 1.2 shows that out of total 120 respondents, 45.84 per cent exhibited medium level adoption of improved cultivation technology of tomato followed by 30.00 per cent had low and only 24.16 per cent

showed high adoption of improved cultivation technology of tomato.

**2. To determine the association between independent and dependent variables.**

**Table 2.1 Association between profile of the respondents and their adoption of improved cultivation technology of tomato .**

S. No.	Characteristics	$\chi^2$ value	d.f.	C	Degree of association
1.	Age	7.35	4	0.11	Negligible
2.	Caste	8.11	6	0.13	Negligible
3.	Education	14.85	6	0.33	Fair
4.	Size of family	7.89	4	0.14	Negligible
5.	Farming experience	11.16	4	0.30	Fair

6.	Size of land holding	21.39	4	0.35	Fair
7.	Social participation	5.32	4	0.16	Negligible
8.	Source of information	13.11	4	0.31	Fair
9.	Mass media exposure	13.29	4	0.34	Fair
10.	Extension with contact agencies	19.13	4	0.36	Fair
11.	Economic motivation	9.78	4	0.37	Fair
12.	Risk orientation	11.07	4	0.32	Fair
13.	Decision making	20.32	4	0.37	Fair
14.	Market orientation	12.03	4	0.30	Fair
15.	Annual income	11.65	4	0.31	Fair

### Significant at 5% level of probability

Table 2.1 depicts the 'r' value indicating the relationship between profile of the tomato grower with their adoption of improved cultivation technology of tomato. The characteristics namely, education, size of land holding, Farming experience, annual income, market orientation source of information, mass media exposure, contact with extension agencies, economic motivation, risk orientation and decision making had significant relationship with their adoption at 5% level of significance. The result also depict that age, social participation, size of family and caste of the farmers did not establish significant relationship with their adoption of improved cultivation technology of tomato.

### Conclusion

The study was carried out to assess the adoption of improved cultivation technology of tomato growers. It was

found that the aspect improved variety (1.41) had highest mean adoption score followed by nursery management (1.30), seed rate (1.20), planting distance (1.11), disease management (1.10), chemical fertilizer management (1.03), seed treatment (1.01), weed management (0.95), use of staking (0.93), Picking (0.88), bio fertilizer management (0.86). Mean adoption score was found to be lowest in case of Insect management (0.83). the study also revealed that the characteristics of the tomato growers namely, education, size of land holding, Farming experience, annual income, market orientation source of information, mass media exposure, contact with extension agencies, economic motivation, risk orientation and decision making had significant relationship with their adoption at 5% level of significance. The result also depict that age, social participation, size of family and caste of the farmers did not establish significant relationship with their adoption of improved cultivation technology of tomato at 5% level of significance.

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## Attitude analysis of agriculture graduates towards Agriculture education

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### ABSTRACT

*The present study was conducted to analyze the attitude of agriculture graduates towards agriculture education. It is very important to analyze the attitude of agriculture graduates towards agriculture education as this is the one of important sector to serve the farming community in future. The study was conducted in OUAT, Bhubaneswar with 60 numbers of respondents by random sampling method. It has been observed that most of the respondents belongs to general category, rural back ground, having good academic performance, interested to work as agriculture scientist and neutrally favorable towards agriculture education.*

**Key words :** Agriculture education, post graduates, attitude

### Introduction

Agricultural Education is the teaching of agriculture, natural resource, and land management through hands on experience and guidance to prepare students for entry level jobs and for further education to prepare them for advanced agricultural jobs. Agricultural education provides instruction about crop production, livestock management, soil and water conservation and other aspects of agriculture. In India, agriculture is the source of income for most of the people either directly or indirectly. Agriculture contributes the 15% of the total GDP of the nation. So, education in the area of agriculture is important to achieve the new dimension in the farming sector of the nation. Agriculture education provide the platform for developing new varieties, technologies, to envelop mechanization in farming, understand the rural community, their perception towards new technologies, to develop new and appropriate methods to transfer of technologies, to know their problems in overall development and to suggest them to solve the problem themselves. In order to answer these issues the present study designed and conducted with the following objectives.

### OBJECTIVES

1. To study the socio personal characters of the agriculture graduates.
2. To study the motivation behind to join in agriculture sector.
3. To study the attitude towards agriculture education.

### Materials and methods

The research design adopted in the study was ex-post- facto in nature. The research study was conducted in Orissa University of Agriculture And Technology which is providing education for state, national and international students in agriculture decipline. 60 number of students selected randomly for the study. The data were collected through a pre tested interview schedule, which comprised items related to personel, social, motivation to join in agriculture, attitude towards the agriculture. The collected data was analyzed through the statistical methods viz., mean and standard deviation.

### Result and discussion

#### A. Socio personal characters of the respondents

The following table depicts the map of socio personal characters of the respondents.

**Tabel-1 Socio personal profile of the respondents**

S.NO	VARIABLES	CATEGORIES	FREQUECY	PERCENTAGE
1	Caste	General caste	35	58.33
		Backward caste	10	16.66
		Schedule caste	3	5
		Schedule tribe	12	20

2	Birth order	First child	33	55
		Second child	21	35
		Third child	5	8.3
		Fourth and above child	1	1.6
3	Academic performance	Distinction	20	33.3
		First class	30	50
		Second class	10	16.66
4	Extracurricular activities	Participated	27	45
		Not participated	33	55
5	Family background	Rural	39	65
		Urban	21	35
6	Size of the family	Small	33	55
		Big	28	46.6
7	Family occupation	Agriculture	27	45
		Govt.services	29	48.33
		Private services(others)	4	6.66
8	Father educational status	Illiterate	12	20
		HSC	6	10
		UG	26	43.33
		PG	16	26.66
9	Mother educational status	Illiterate	31	51.66
		HSC	22	36.6
		UG	14	23.3
		PG	3	5
10	Family income	Low(below 2 lakhs)	13	21.6
		Medium(2-10 lakhs)	28	46.6
		High(above 10 lakhs)	19	31.6

Above table depicting the overall results of the socio personal characteristics of the Agriculture graduates. Distribution of the respondents across different castes showed that majority of the respondents(58.33)from general category ,very less number of respondents from scheduled caste(5). Majority of the respondents are first born child(55%) followed by second born child(33%),rest 8.3 and 1.6 were third and fourth borned child respectively. In the area of academic performance majority of the respondents are first class(50%) followed by the distinction(33.3) and very less number of respondents had second class(16.6%) in their academics

In extracurricular activities, 45% of the respondents are participated, 55% are not participated, which revealing

the half of the people are interested in entertainment along with academics. The above table indicating that most of the respondents (65%) rural background and few of the respondents (35%) having urban background, which is indicating that rural people are more interested in agriculture then compared to the urban people. Above table showing that 55% are from small family, 45% are from big family. Most of the respondent's family occupation is Govt. services (48.8%) and agriculture (45%), very less number of respondents having private services (6.66%) and others as their occupation. Majority of the respondents (46.6%) from medium level income followed by high family income (31.6) ,rest belongs to low level of family income(21.6%).



Education status of the parents plays important role in deciding the children's academic activities. Most of the respondents fathers are graduated (43.3%) followed by post graduates (26.6%) then illiterates (20%) and less number completed their high school (10%). Half of the respondents mothers are illiterates (51.55%) followed by

high school education (36.6%), graduation (23.5%), very less number had post graduation (5%). It is indicating that most of respondents fathers are graduates and mothers are illiterates.

#### **B. To study the motivation behind joining in agriculture:**

**Table no 2 Innovation behind joining in agriculture:**

S.NO	MOTIVES	TOTAL SCORE	MEAN SCORE	RANK
1	To get white color job in State or Central Government.	101	1.68	VIII
2	To join civil services through PSCs.	104	1.73	VII
3	To work as executive in private enterprises.	87	1.45	IX
4	To join as extension worker involuntary organization.	82	1.36	X
5	To satisfy parents wish	117	1.95	V
6	To make own status in society.	137	2.28	III
7	To make strong economic position in society.	144	2.4	II
8	To start own Agricultural farm/Enterprises.	130	2.16	IV
9	To start carrier as agricultural researcher/scientist/teacher in state Agricultural University	149	2.48	I
10	To provide consultancy in agriculture and allied field.	113	1.88	VI
11	To develop own farm	113	1.88	VI
12	No alternative	80	1.33	XI

The above table revealing that motivation to join in agriculture discipline, most of the respondents are joined in agriculture to become researcher or scientist or teacher in agriculture universities, which occupies first rank with 2.48 mean score, followed by to make strong economic position in society with mean score 2.4, to make own status in

society with mean score 2.28. And no alternative is occupied last preference with 1.33 mean score to join as a motive in agriculture discipline.

#### **C. Attitude of agriculture graduated towards education:**

**Table no 3 shows the attitude of agriculture graduates towards education**

S.N	Level of attitude	Categorizations	Range	Frequency	Percent
1	Strongly favorable	Above mean +SD	Above 102.76	13	21.66
2	Favorable	Between mean + 0.5 SD and mean + SD	Between 89.64 to 102.76	11	18.33
3	Neutral	Between mean - 0.5 SD and mean + 0.5 SD	Between 63.39 to 89.64	16	26.6
4	Unfavorable	Between mean - SD and mean - 0.5 SD	Between 50.26 to 63.39	10	16.66
5	Strongly unfavorable	Below mean - SD	Below 50.26	10	16.66
		Total		60	100

The above table showing attitude of the respondents towards agriculture .Above table indicating that most neutral (26.6%) followed by strongly favorable (21.66), favorable (18.33), unfavorable and strongly favorable (16.6).

**Conclusion:**

The findings of the investigation revealed that most of the respondents from general category, first born child,

not participating in Extra-curricular activities, family occupation is govt services, having medium level of income. In case of parental educational qualification most of the respondents father completed graduation, mothers are illiterate. To work as a scientist or teachers is most important motivation to join in agriculture .In attitude analysis most of the respondent are neutrally favorable towards agriculture.

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## Extension Issues in Adoption of Mechanical Transplanter in Rice Cultivation in Tamil Nadu State

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### ABSTRACT

*To boost rice production and productivity in the state, during June 2015, the Government of Tamil Nadu had announced the “Kuruvai (Kharif) Special Assistance 2015 for Cauvery Delta districts” programme. As part of this special package the 'Machine Transplantation' of rice seedlings was advocated as the primary component. For evaluating the impact of this programme, a study was conducted to assess the economics of mechanical planting versus conventional planting, cost and returns, and extension issues that emerged out of this new initiative. The comparative economics of conventional and machine planting revealed the following: yield increased by nearly 40.00 per cent; cost of cultivation decreased by 21.00 per cent; cost of production reduced by 43.00 per cent; and ultimately net return increased by more than four times (448.00 %), over the manually planted fields.*

**Key words :** Adoption, transplanter

### Introduction

Rice (*Oryza sativa* L.) is the predominant crop in Tamil Nadu, and is one of the leading rice growing states in India, cultivating rice since time immemorial as this State is endowed with all the favourable climatic conditions suitable for rice cultivation. During 2013-14, the total area under rice was 17,25,730 ha, with production of 71,15,195 tonnes, and productivity of 4,123 kg per ha (Department of Economics and Statistics, Chennai). The Cauvery Delta Zone (CDZ) in Tamil Nadu comprising of six districts viz., Thanjavur, Tiruvarur, Nagapattinam, Trichy, Ariyalur and Cuddalore is called as the Rice Granary of Tamil Nadu, due to its immense potential for rice production. Any disturbance in rice production in the CDZ will adversely affect the foodgrain production of the State of Tamil Nadu. For this reason, modernization of rice production is constantly pursued with fervor by the State Government machinery with the active support of the Tamil Nadu Agricultural University (TNAU).

Among the several state government initiatives, during June 2015 the State Government of Tamil Nadu launched the “Kuruvai Special Assistance 2015 for Delta districts” to boost rice production and productivity. One of the main components of this Kuruvai (June to September) special package was the promotion of 'Machine Transplantation' of rice seedlings, for which the State Departments of Agriculture and Agrl. Engineering took substantial efforts for mobilizing machine transplanters. Those farmers who went for Kuruvai rice cultivation were covered under this programme, whose fields were machine transplanted at subsidized rate. In order to assess the impact

of this machine transplantation programme, a study was conducted with the following objectives:

- To evaluate the economics of Mechanical Transplantation in rice cultivation, especially in terms of productivity and net profit advantages.
- To assess the extension issues regarding mechanical transplantation in rice cultivation, so as to understand the potential for sustained adoption.

### Materials and methods

The research was carried out as an Ex-post facto study in order to assess the impact of the Mechanical Transplanter in rice cultivation in the six delta districts of Cauvery river in Tamil Nadu viz., Thanjavur, Tiruvarur, Nagapattinam, Trichy, Ariyalur and Cuddalore, in which the “Kuruvai (Kharif) Special Assistance 2015 for Delta districts” was implemented by the Government of Tamil Nadu with an aim to further enhance rice production during Kuruvai season in 2015 selected purposively.

It was decided to select 25 per cent of the population as sample for the study, and accordingly a sample of 250 farmers was drawn from the six districts by following proportionate random sampling method. Followed by this, the selected 250 farmers were post-stratified into conventional and machine transplantation farmers. It was found that out of the 250 farmers, 72 of them had followed conventional planting also, and in order to compare the improvement, these farmers were also included for the study.

**Table 1. Selection of Sample Farmers**

S. No.	Delta Districts	Total No. of Beneficiaries as on 31-7-2015	No. of Farmers Selected (Sample)
1.	Thanjavur	113	28
2.	Tiruvarur	523	130
3.	Nagapattinam	181	45
4.	Cuddalore	101	25
5.	Trichy	48	12
6.	Ariyalur	40	10
<b>Total</b>		<b>1,006</b>	<b>250</b>

In accordance with the objectives of the study, the parameters viz., economics of conventional and machine planting, yield and net profit were studied, besides feedback of farmers on mechanical transplanting were also collected. The primary data were collected from the sample respondents through two rounds of survey. The first survey was conducted immediately after transplanting, and the second survey was conducted after harvest of the crop. The data collected were tabulated in Excel sheet. Percentage analysis was carried out for meaningful interpretation of the data generated.

## RESULTS AND DISCUSSION

This chapter highlights the findings of the study in terms of profile characteristics of the farmer respondents, economics of conventional and machine transplanted rice, cost and returns, and farmers' feedback.

### Personal Characteristics of the Respondents

Majority (54.00 %) of the respondents were in the

age group of 30-50 years, followed by 43.60 percent in the age group of more than 50 years. More than three-fourths (78.00 %) of the respondents had secondary, higher secondary or graduate level of education. Farming experience of a majority (58.00 %) of the respondents ranged between 21 to 30 years and above. More than one-third (36.00 %) of the respondents were large farmers, followed by medium farmers (34.40%), small farmers (26.65 %), and the rest (3.60 %) were marginal farmers. A large proportion (42.00 %) of the respondents were in the income category of less than one lakh rupees per year, followed by the income category of one to two lakh rupees per year (39.60%).

### Comparative Economics of Conventional and Machine Transplanted Rice

comparative economics of conventional and machine transplanted rice per acre is given in Table 2.

**Table 2. Comparative Economics of Conventional and Machine Transplanted Rice (per acre)**

Sl. No.	Particulars	Conventional Nursery		Mat Nursery		Purchase from Commercial Nursery
		Physical Quantity	Cost (Rs.)	Physical Quantity	Cost (Rs.)	Cost (Rs.)
<b>I.</b>	<b>Nursery Operational costs</b>					2300 to 2800
	Human Labour (Man days)	6.40	910.00	2.60	580.00	
	Machine Power (hours)	1.16	604.80	0.80	320.00	
	Seeds (Kg)	38.26	1247.20	19.96	624.20	
	Manures & Fertilizers (Kg) - DAP	17.00	360.00	2.20	36.00	
	Plant protection chemicals (ml)	118.00	120.00	56.00	58.00	
	Interest on working capital @ 7% - 12%	--	307.99	--	153.73	
	<b>Total cost</b>		<b>3549.99</b>		<b>1771.93 (1770-2550)</b>	

<b>II.</b>	<b>Main Field Operational costs</b>				
	Land Preparation (Bund clearing and cage wheel ploughing)	2 A type labour + 1.95 hours (tractor /power tiller)	3047.17	4 A type labour + 2.15 hours (tractor /power tiller)	4107.16
	Pulling of Seedlings and transportation to main field	5.71 A type labour	1750.00	--	--
	Planting	15.50 B type labour	1536.67	3 B type labour for gap filling	360.00*
	Manures and Fertilizers	160-180 kg	3307.50	144.83 kg	3127.50**
	Plant protection	480 ml	1659.83	367.33 ml	1163.50
	Weed management (Conoweeder as applied to mechanical transplanting @ Rs. 300-400 per labourer for 33 cents)	11.83 labour	2148.50	9 B type labour	2193.83
	Harvest (Combined Harvester)	1.30 hours	2609.00	1.27 hours	2593.17
	Interest on working capital @ 7% - 12%	--	1525.57	--	1286.79
	<b>Total Cost (after planting)</b>	<b>--</b>	<b>17584.24</b>	<b>--</b>	<b>14831.95</b>
<b>III.</b>	<b>(Grand) Total cost of cultivation (Summation of I &amp; II)</b>	<b>--</b>	<b>21134.23 (100.00)</b>	<b>--</b>	<b>16603.88*** (100.00)</b>
	Productive tillers /sq. metre		334.17		467.83
	Yield (Kg/acre)		1643.33		2281.00

\*Excluding the subsidy amount of Rs. 2375/- per acre for mechanical transplanter.

\*\*Excluding the subsidy amount of Rs. 315/- per acre for micronutrients.

\*\*\* Excluding the subsidy amount of Rs. 2690/- per acre for mechanical transplanter plus micronutrients.

### Nursery Cost

In this part of the analysis, three situations of seedling production were considered for computing the economics of nursery cost viz., (i) Conventional method of seedling production for conventional planting (traditional method), (ii) Mat nursery method of seedling production by farmers themselves for mechanical transplanting, and (iii) Direct purchase of seedlings from commercial nurseries for mechanical transplanting.

With regard to use of human labour in conventional nursery, for seven man days employed the cost incurred was Rs.910.00 per acre. Whereas, in the case of mat nursery seedling production, it was just three labour man days at a cost of Rs.580.00. Therefore, the net difference in human labour employed between conventional and mat nursery methods was four man days, which in monetary terms works out to Rs. 330.00 per acre.

Similarly, with respect to use of machine power (power tiller) in nursery, the cost incurred was lesser for mat nursery method (preparation of nursery beds) to the tune of Rs. 320.00, when compared to conventional method (Rs. 604.80).

In the case of seed rate, there was significant difference between seed rate followed in conventional method and mat system of seedling production. Under conventional method, the seed rate generally followed per acre is 35 to 55 kgs, whereas for mechanical transplanting, the seed rate required per acre is just 20 kgs. Therefore, the net difference in seed rate per acre was 20 to 35 kgs, equivalent to Rs. 600 to 1,050.00.

As far as application of fertilizers is concerned, on an average 20 kgs of DAP was applied in conventional nursery valued at Rs.360.00; and on the other hand just two kgs was applied in mat nursery method at a cost of Rs.36.00. As a result, there was a saving of Rs.324.00 due to mat nursery method.

In respect of use of plant protection chemicals, on an average 118 ml. of insecticides/fungicides was used in conventional nursery, which costs Rs.120.00. Compared with mat nursery method, the respondent farmers had used only 56 ml. of insecticides/fungicides costing Rs.58.00. This has resulted in a saving of Rs.62.00 under mat nursery method.



Further, the total cost of seedling production under conventional method of planting worked out to Rs. 3549.99. In the case of mechanical transplanting, the cost of seedlings worked out to Rs. 1771.93 per acre for mat nursery prepared by the farmers themselves, and Rs. 2300 to 2800.00 per acre for purchase of seedlings from commercial nurseries. Therefore, there was a saving of Rs.1778.06 (50.08 %) under own mat nursery method, and Rs. 1049.99 with purchase of seedlings (29.57 %).

### Main Field Cost

From Table 2 it is seen that seven major components were considered to work out the cost of rice cultivation in the main field viz., land preparation, seedling pulling and transportation to main field, planting, manures and fertilizers, plant protection, weed management and harvest.

The average expenditure incurred per acre on land preparation under conventional and mechanical transplanting worked out to Rs. 3047.17 and Rs. 4107.16 respectively. Under mechanical transplanting, the expenditure incurred on land preparation was 34.79 per cent higher than that of conventional method, since extra efforts were taken by farmers for land leveling.

Further, farmers who did conventional planting have spent about Rs. 1750.00 per acre towards pulling of seedlings and transportation to main field. This was one of the major cost components under conventional method of rice planting.

With respect to planting, the conventional method required 15.50 women labourers per acre at a cost of Rs. 1536.67 per acre. In the case of mechanical transplanting, gap filling was an additional activity to be undertaken after machine planting by employing about 2 to 3 women labourers per acre leading to an additional cost of Rs. 360.00 per acre.

The average cost of manures and fertilizers for conventional and mechanical planted rice crop per acre was Rs. 3307.50 and Rs. 3127.50 respectively.

As far as plant protection was concerned, the crop in the main field was found to be uniform and well established under machine planting when compared to conventional method due to optimum population coupled with young seedlings planted at shallow depth. Machine planting with optimum inter and intra row spacing also paved way for better micro-climate with good aeration, which led to less incidence of pest and diseases, and as a result less expenditure was incurred on plant protection (Rs. 1163.50/acre), which is 42.66 per cent less when compared to the conventional method of planting (Rs. 1659.83/- acre).

The study indicated that there was more expenditure on weeding in the case of machine planted fields (Rs. 2193.83 /acre) as compared to manually planted fields (Rs. 2148.50 /acre). The increase in expenditure on weeding under machine planting might be due to excess wages paid for the cono weeder operators ranging from Rs. 300-400 per person per 33 cents per time. But cono weeding is very much essential for better aeration besides facilitating formation of new roots thereby enhanced uptake of nutrients is made possible.

There was no significant difference on expenses incurred on harvesting since all the farmers have used the Combined Harvester.

The total cost incurred in the main field for conventional planting was Rs.17584.24. At the same time it was 14831.95 in the case of mechanical transplanting, with a saving of Rs.2752.29 (15.65 %) over the conventional planting.

The total cost of cultivation figures indicate that Rs.21134.23 has been incurred for conventional planting, while Rs.16603.88 has been incurred under mechanical transplanting, with a saving of Rs.4530.35 (21.44 %).

### Cost and Returns

The cost and returns with respect to conventional and mechanical planting methods are presented in Table 3.

**Table 3. Cost and Returns in Rice Cultivation**

Sl. No.	Particulars	Conventional Planting (Rs.)	Mechanical Transplanting (Rs.)	Sign
1.	Yield (productivity) in quintals per acre	16.43	22.81	More (+)
2.	Average Price received (per quintal)	1476.00	1476.00	Nil.
3.	Cost of Cultivation (Rs. per acre)	21134.23	16603.88*	Less (-)
4.	Cost of Production (Rs. per quintal)	1286.32	727.92*	Less (-)
5.	Gross return (per acre)	24250.68	33667.56	More (+)
6.	Net return (per acre)	3116.45	17063.68	More (+)

\*Excluding the subsidy amount of Rs. 2690/- per acre (Rs. 2365/- plus Rs. 315/-) for mechanical transplanter plus micronutrients.

It is seen from Table 3 that yield (productivity) increase of more than 38.83 per cent was reported in case of mechanically transplanted fields as compared to manually planted fields. Cost of cultivation was almost 21.44 per cent lesser in the case of mechanically transplanted fields as compared to conventionally transplanted fields because of reduction in cost of seed, manures and fertilizers and plant protection chemicals. The reduction or saving in the cost of cultivation automatically resulted in the fall of cost of production by 43.41 per cent in the case of machine planting as compared to conventional planting. Finally, it is observed that the gross return as well as net return were significantly higher, with 38.83 per cent increase in gross return and almost four times increase in net return (447.54 percent). The almost 40 to 50 per cent increase in number of

productive tillers per hill under machine planting would have paved way for increase in yield / productivity of the crop, which reflected in increased net income per acre.

#### **Extension Issues in adoption of Mechanical Transplanter**

The extension issues that emerged due to mechanical transplantation in rice cultivation were explored so as to understand the potential for sustained adoption. The analysis of extension issues are presented in Tables 4-8.

#### **Reasons for Adoption of Mechanical Transplantation**

The reasons for adoption of mechanical planting method were analysed and the results are presented in Table 4.

**Table 4. Distribution of Respondents according to Reasons for adoption of mechanical transplantation**

S. No.	Particulars	No. of Respondents	Percentage	Rank
1.	To overcome labour scarcity during planting season	250	100.00	I
2.	Significant yield increase	250	100.00	II
3.	To maintain perfect spacing (optimum plant population)	196	78.40	III

From Table 4 it is seen that cent per cent of the respondents had reported that 'to overcome labour scarcity during planting season', and 'significant yield increase' as the major reasons for adoption of machine planting arranged by the government. This was followed by 'to maintain perfect spacing between plants and rows which ensured optimum population' (as per recommendation), which resulted in good aeration and less pest and disease

incidence (there was no report of blast disease in machine transplanted fields, whereas blast occurrence was reported in conventionally planted fields).

#### **Level of Satisfaction on Mechanical Transplanting**

The level of satisfaction on mechanical transplanting as reported by the respondents were analysed and the results are presented in Table 5.

**Table 5. Distribution of Respondents according to Level of Satisfaction on Mechanical Transplantation Programme**

10	District	Level of Satisfaction				Total
		0-25%	26-50%	51-75%	76-100%	
1.	Thanjavur	--	03	21	04	28 (11.20)
2.	Tiruvarur	--	--	27	103	130 (52.00)
3.	Nagapattinam	--	--	22	23	45 (18.00)
4.	Cuddalore	--	--	04	21	25 (10.00)
5.	Ariyalur	--	02	07	03	12 (4.80)
6.	Trichy	--	--	02	08	10 (4.00)
<b>Overall Cauvery Delta</b>		<b>-</b>	<b>05 (2.00)</b>	<b>83 (33.20)</b>	<b>162 (64.80)</b>	<b>250 (100)</b>

It is inferred from Table 5 that nearly two-thirds (64.80 %) of the respondents had reported that they were 100 per cent satisfied with the machine transplantation programme of the state government. This was followed by 33.20 per cent of the respondents who expressed that their

level of satisfaction was 51 to 75 per cent due to the reasons that: it may not be a suitable method of planting during rainy season as the field requires extra care for the first 20 days after mechanical transplantation in terms of providing proper drainage facility, and irrigation should be given as



and when disappearance of water from the field. The rest (2.00 %) of the respondents were only satisfied up to the level of 26 to 50 per cent, since they felt that their fields were clayey in nature and machine planting the seedlings too deep in the soil caused delay in establishment of

seedlings during the initial period, moreover providing proper drainage in clay soil also becomes difficult.

#### Merits of Machine Transplanting

The findings on the merits of machine transplanting are given in Table 6.

**Table 6. Distribution of Respondents according to Merits of Mechanical Transplanting**

S. No.	Merits	No. of Respondents	Percentage
1.	Mental agony of rice cultivation reduced significantly	250	100.00
2.	Increase in number of productive tillers	250	100.00
3.	Reduction in seed rate resulted in decreased cultivation cost	250	100.00
4.	Reduction in time period of planting	214	85.60
5.	Timely planting made possible	196	78.40
6.	Possible to plant young seedlings	179	71.60
7.	Labour scarcity addressed	107	42.80
8.	Nursery management significantly reduced	45	18.00

From Table 6 it is seen that cent percent of the beneficiaries have reported that 'mental agony of rice cultivation reduced significantly', 'increase in number of productive tillers', and 'reduction in seed rate resulted in decreased cultivation cost' as the major merits in machine transplanting. This was followed by the merits viz., 'reduction in time period of planting' (85.60%), 'timely planting made possible' (78.40%), 'possible to plant young seedlings' (71.60 %), 'labour scarcity addressed' (42.80%), and 'nursery management significantly reduced' (18.00%).

#### Demerits of Machine Transplanting

The findings on the demerits of machine transplanting are given in Table 7. It is seen from Table 7

that cent percent of the respondents reported that 'skill involved in nursery preparation', and 'more care should be given after planting in main field' as the two major demerits in mechanical transplanting. This was followed by 'cost of gap filling as additional expense to be incurred by farmer' (82.00%), 'not suitable for rainy (wet) season' (71.60 %), 'not suitable for highly clayey soils' (46.40 %), 'non-availability of Cono weeder / power weeder' (since they have positive impact on tillers) (42.80 %), 'lack of expertise in mat / tray (cake) nursery making', 'proper drainage facility required', and 'proper land leveling necessary before transplanting' (35.60 %), 'uneven planting in deep clay soils' and 'difficulty in mobility of transplanter between fields (in small fields) and low lying lands' (10.80 %).

**Table 7. Distribution of Respondents according to Demerits of Mechanical Transplanting**

S. No.	Demerits	No. of Respondents	Percentage
1.	Skill involved in nursery preparation	250	100.00
2.	More care should be given after planting in main field (minimum 15 days extra care should be taken)	250	100.00
3.	Cost of gap filling as additional expense to be incurred by farmer	205	82.00
4.	Not suitable for rainy (wet) season (Thaladi season)	179	71.60
5.	Not suitable for highly clayey soils (fluffy soils)	116	46.40

6.	Non availability of Cono weeder / power weeder	107	42.80
7.	Lack of expertise in mat / tray (cake) nursery making	89	35.60
8.	Proper drainage facility required	89	35.60
9.	Proper land leveling necessary before transplanting	89	35.60
10.	Uneven planting in deep clay soils	27	10.80
11.	Difficulty in mobility of transplanter between fields (in small fields) and low lying lands	27	10.80

### Suggestions for improvement of the Programme

The analysis of the suggestions for improvement of the programme is presented in Table 8.

**Table 8. Distribution of Respondents according to Suggestions for improvement of the Programme**

Sl. No.	Suggestions	No. of Respondants	Percentage
1.	Subsidy may be extended for few more years to increase adoption rates	107	42.80
2.	Cono weeder and laser leveler may be made available at Agri depots and PACS (Primary Agricultural Cooperative Societies)	89	35.60

From Table 8 it is seen that two suggestions viz., 'subsidy may be extended for few more years to increase adoption rates' (42.80 %) and 'Cono weeder and laser leveler may be made available at Agri. depots and PACS' (35.60 %) were offered by the respondents for further improvement of the programme. Nagaraj et al (2013) have reported that more than 80 per cent of the respondents opined that the non-availability as the main cause for the non-adoption of cono weeder by paddy farmers of Raichur District.

Majority of the respondents had realized the importance of land leveling as a pre-requisite for machine planting. As a result, farmers have insisted government support in terms of monetary or subsidized custom hiring facilities in all revenue villages. Farmers have felt that Cono weeding under machine planted field improves the crop growth and productivity and hence, they have demanded supply of adequate number of Cono weeders through Government Depots under any subsidy scheme. It was also learnt that farmers need to be given hands-on training on mat nursery technology in their villages.

### Conclusion

The study revealed that nearly two-thirds (64.80 %) of the respondents were cent per cent satisfied with the machine transplantation programme, followed by about one-third (33.20 %) of the respondents who had expressed 51-75 per cent level of satisfaction. This clearly indicates the success of the initiative of the Tamil Nadu Government in ushering in the use of mechanical transplanter for rice cultivation in the state in large scale, which has resulted in increasing the efficiency of farm operations and solved the labour scarcity problem facing rice cultivation. Farmers have demanded that 'Subsidy may be extended for few more years to increase adoption rates', which was fulfilled adequately, as in the year 2016 the subsidy package was again implemented in the delta districts. Farmers have also expressed that 'skill involved in nursery preparation', and 'extra care should be given after planting in main field' as their major concerns in following mechanical transplanting, which needs to be addressed by the State Department of Agriculture for sustained adoption of the mechanical transplanter.

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## Perceived Constraints and Suggestions by Rice Farmers for improvement in Implementation of BGREI Programme in Odisha, India

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### ABSTRACT

*The present study was conducted during the year 2016-17 in Mayurbhanj and Bargarh districts of Odisha state to assess the constraints faced by beneficiaries during implementation of the government programmes like Bringing Green Revolution to Eastern India (BGREI). A total of 80 BGREI beneficiary farmers were selected as respondents for the study through stratified and random sampling methods from 8 villages of two districts in Odisha state. The data were collected with the help of structured interview schedule through personal interview and focused group discussion. Major constraints perceived by farmers were 'lack of extension supervision and technical guidance', 'lack of timely supply of inputs through the programme', 'biased attitude shown by government officials towards beneficiaries', 'lack of proper marketing facilities and transportation of produce', 'delay in payment of the produce sold by the farmers in mandies', 'lack of irrigation facility in Rabi season for farming' and 'lack of storage facility of the produce' as expressed by the beneficiaries. As suggested by the farmers, 'agricultural extension officials should monitor all these constraints related issues', 'ensure all these facilities' and 'should strictly adhere to the guidelines along with possible supports to beneficiary rice farmers' for effective implementation of the programme.*

**Key words :** Constraints, BGREI Programme, Rice Farmers

The programme of “Bringing Green Revolution to Eastern India (BGREI)” was launched in 2010-11 to address the constraints limiting the productivity of “rice-based cropping systems”. As per the BGREI Operational Guidelines-2016-17, BGREI comprised of broad categories of interventions such as 1. Block Demonstrations, 2. Asset Building, 3. Site Specific Activities, 4. Marketing support & post-harvest management, 5. Seed production & distribution, 6. Subsidy on Need-based Inputs, and 7. Training programme on Cropping System Based Demonstrations (Anonymous, 2017). As reported by Indra and Kushawaha, (2007) many causal factors such as lack of awareness, high cost of inputs, indifferent behavior in the administration, lack of guidance and technical supervision etc. affected effective implementation of any programme. Since the BGREI programme had already completed over 5 years of its implementation at the time of data collection, it was thought proper to study the constraints experienced and perceived by the farmers as well as suggestions made in implementation of the programme for necessary refinement to improve its effectiveness.

### MATERIALS AND METHODS

The study was undertaken in Bargarh and Mayurbhanj districts of Odisha state during 2016-17. Mayurbhanj and Bargarh districts were purposively selected for research work because BGREI programme has been running in Mayurbhanj and Bargarh districts since its

inception. Secondly, both districts are located in two separate agro-ecologies and very widely geographically apart, one i.e., Bargarh is located in the western Odisha, while the other i.e., Mayurbhanj is located in the northern Odisha. Two blocks from each district were selected, in such a way that each block was covered under BGREI programme prior to last 3 years. From each selected block, 02 BGREI-implemented villages and from each selected village, 10 numbers of beneficiaries were selected randomly for investigation. Thus a total sample size of 80 beneficiaries was selected as respondents for the study. Data were collected using a structured interview schedule and focused group discussions. For data analysis three statistical tools viz., Frequency, Percentage and Ranking were used to reveal the results.

### RESULTS AND DISCUSSION

The guidelines of the programme Bringing Green Revolution to Eastern India clearly spelled out well defined institutional arrangements assigning responsibility to each individual in the implementation process. Training programmes are also organized for all the stakeholders to have a clear understanding of the duties and responsibilities. But the study revealed that majority of the beneficiaries (91.25%) faced 'Lack of extension supervision and technical guidance' ranked 1<sup>st</sup>, followed by 'Lack of timely input supply through the programme' (66.25%) ranked 2<sup>nd</sup>, 'Government officials had shown biased attitude towards beneficiaries' (65.00%) ranked 3<sup>rd</sup>,

'Lack of proper marketing facilities and transportation of produce' (56.25%) ranked 4<sup>th</sup>, 'Delay in payment of the produce sold by the farmers in mandies' (51.25%) ranked 5<sup>th</sup>, 'Lack of irrigation facility in Rabi season for farming' (43.75%) ranked 6<sup>th</sup>, and 'Lack of storage facility of the produce' (42.50%) ranked 7<sup>th</sup> respectively. Some of the less important constraints were 'Lack of electricity facility at farm for pump operation to irrigate the field' (30.00%) ranked 8<sup>th</sup>, 'Input dealers are charging higher price than actual price for inputs' (28.75%) ranked 9<sup>th</sup>, 'Lack of proper knowledge in insect pest management' (18.75%) ranked 10<sup>th</sup>, 'The supplied seeds are of very poor quality' (16.25%) ranked 11<sup>th</sup> and 'The supplied seeds were of very poor quality' (12.50%) ranked 12<sup>th</sup> respectively (Table 1).

More than half (56.25%) of the beneficiaries expressed that 'marketing of produce' was a problem for them, which has a direct bearing on their family income. Most of the farmers of eastern Odisha were facing problem in getting minimum support price (MSP) for their produce. Whenever they sell at government outlets like LAMPs, Govt. officials were not cooperating with the farmers during the sale of their produce, rather saying that their produce was of low quality and gave them reduced/ less price for their produce. Storage of produce was also a major constraint for the farmers in western Odisha, as they produce a large volume of paddy for which they don't have the facility to store them in houses and finally they are forced to do distress sale locally at very less price even at the rate of less than Rs.800/quintal, which was almost half of the MSP. The similar trends in findings were also reported by Thyagarajan and Vasanthakumar (2000), and Rao *et al.* (2001).

**Table 1: Distribution of the beneficiaries according to constraints perceived by them during adoption of BGREI recommended technologies**

(n=80)

Sl.No.	Particulars/ Constraints	Frequency	Percentage	Rank
1	Lack of extension supervision and technical guidance.	73	91.25	I
2	Lack of timely input supply through the programme.	53	66.25	III
3	Government officials had a biased attitude towards beneficiaries.	52	65.00	III
4	Lack of proper marketing facility and transportation of produce.	45	56.25	IV
5	Delay in payment of the produce sold by the farmers in mandies.	41	51.25	V
6	Lack of irrigation facility in Rabi season for farming.	35	43.75	VI
7	Lack of storage facility of the produce.	34	42.50	VII
8	Lack of electricity facility at the farm for pump operation to irrigate the field.	24	30.00	VIII
9	Input dealers are charging a higher price than the actual price for inputs.	23	28.75	IX
10	Lack of proper knowledge in insect pest management.	15	18.75	X
11	The supplied seeds were of very poor quality.	13	16.25	XI
12	Lack of getting good exposure towards new technology	10	12.50	XII

Data pertaining to suggestions from the beneficiaries to overcome the constraints faced by them during adoption of BGREI interventions are presented in the Table 2. It was found that majority (93.75%) of the beneficiaries suggested 'Provision of timely guidance and support from Agricultural officials like VAWs, AAOs etc.

regarding rice production technologies, new schemes, credit, insurance and subsidies' ranked 1<sup>st</sup>, followed by 'Provision of input supply should be properly and timely' (72.50%) ranked 2<sup>nd</sup>, 'Effort should be taken to eradicate biased attitude of government officials towards beneficiaries' (71.25%) ranked 3<sup>rd</sup>, 'Marketing problems

and problems for selling of paddy should be shorted out and solved as soon as possible by the government' (62.50%) ranked 4<sup>th</sup>, 'Efficient and responsible govt. officials should be appointed in mandies' (57.50%) ranked 5<sup>th</sup>, 'Efficient irrigation techniques and facilities should be provided' (50.00%) ranked 6<sup>th</sup>, and 'Storage warehousing structures should be created by the government' (48.75%) ranked 7<sup>th</sup> respectively. Other less important suggestions were, 'Solar pump facility should be provided at farm' (36.25%) ranked 8<sup>th</sup>, 'Government should fix the input price of the produce

and also should nominate an official for continuous monitoring and evaluation' (35.00%) ranked 9<sup>th</sup>, 'Control measures for diseases and pests should be demonstrated and training should be given to the farmers' (25.00%) ranked 10<sup>th</sup>, 'Good quality seeds of high yielding and hybrid varieties should be provided' (17.50%) ranked 11<sup>th</sup> and 'Field Day, Kissan Mela should be organized seasonally' (13.75%) ranked 12<sup>th</sup> respectively. While assessing various agricultural programmes, Uphoff (2004), Singh and Varshney (2010) and Singh (2016) have also reported similar types of findings.

**Table 2: Distribution of beneficiary households according to their suggestions for more effective implementation of BGREI programme**

Sl. No.	Suggestions	Frequency	Percentage	Rank
1	Provision of in timely proper guidance and support from Agricultural officials like VAWs, AAOs etc. regarding rice production technologies , new schemes, credit, insurance, and subsidies.	78	97.50	I
2	Provision of input supply should be properly and timely.	58	72.50	II
3	Effort should be taken to eradicate biased attitude of government officials towards beneficiaries.	57	71.25	III
4	Marketing problems and problems for selling of paddy should be shorted out and solved as soon as possible by the government.	50	62.50	IV
5	Efficient and responsible govt. officials should be appointed mandies.	46	57.50	V
6	Efficient irrigation techniques and facilities should be provided.	40	50.00	VI
7	Storage warehousing structures should be created by the government.	39	48.75	VII
8	Solar pump facility should be provided at the farm.	29	36.25	VIII
9	Fixed price	28	35.00	IX
10	Control measures for diseases and pests should be demonstrated and training should be given to the farmers	20	25.00	X
11	Good quality seeds of high yielding and hybrid varieties should be provided.	14	17.50	XI
12	Field day, Kissan Mela should be organised seasonally.	11	13.75	XII



## Conclusion

The programme of “Bringing Green Revolution to Eastern India (BGREI)” was launched to address the constraints limiting the productivity of “rice-based cropping systems” and all-round development of the people and particularly rice farmers living in Eastern India. The constraints expressed by the beneficiaries indicated

that the guideline developed for the purpose has not been followed. Therefore, it is suggested that the Govt. officials of the Agriculture department have to monitor all the constraints identified and ensure all possible supports for the development of the rice farmers in Odisha and Eastern India as well, in order to develop socio-economic status of rice farmers.

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## Self Help Group: An Effective Approach for Empowerment of Rural Women

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### ABSTRACT

*The empowerment of women is crucial for the development of the country. Women empowerment is a process in which women challenge the existing norms and culture, to effectively promote their well being. Therefore, in this present study, an attempt has been made to determine Empowerment of rural women through Self Help Group approach. The particular research study was conducted in three panchayats of Godda block of Godda district of Jharkhand namely, Saidapur, Chilra and Nepura. About 240 women were selected randomly as respondents being member of SHG. Data were collected through survey method by using a pre-tested interview schedule and attempt was made to know the Empowerment of rural women through income generating activities to achieve quality family life. The output of the study reveals that 32.50% respondents doing income generating activities without training, subsidized inputs and exposure and from this their average monthly income is Rs. 2000. Major constraints in marketing are not getting proper price, selling the produce, depends on male member's cooperation and competition in locality. The suggestions came out for effective marketing are creation of local market, production as per market demand, better transport, infrastructure facility, creation of societies, easy availability of raw materials and skill training for better production. After involvement with the income generating activities the average growth rate in empowerment is 45.11%. Therefore, involvement of women in income generating activities is essential for their empowerment and better quality family life.*

**Key words :** Self Help Group, Empowerment, Rural, Women

### Introduction:

Women empowerment through self help group constitutes an emerging and fast growing trend towards social and economic development of the nation. Self Help Groups (SHGs) are one of the innovative and much needed schemes to accelerate the women entrepreneurship, women's self employment and women empowerment. The population of India is more than 1210.2 million out of which 833 million lives in rural areas. 48.6 percent of it is women (2011 Census). Till date the most economically and socially suffered are the women. They bear almost all responsibility for meeting basic needs of the family but still, they are not economically independent. To achieve economic independence, Income generating activities are essential for the rural women. Surekharao and Rajamanamma, (1999) indicated that, Empowerment is a multidimensional process, which should enable women or group of women to realize their full identity and power in all spheres of life. To achieve the Millennium Development Goal and to eradicate poverty, empowerment of women is necessity of the time. In this present study, an attempt has been made to determine Empowerment of rural women

through self help group approach to achieve quality family life as reflected in the following table

### Materials and methods

Three Panchayats (Saidapur, Chilra and Nepura) of Godda block of Godda district of Jharkhand covering five villages each were selected purposefully for the study. About 240 SHG members were randomly selected as sample respondents @ five from each SHG, Criteria was fixed for the respondents having experience as group member and having three years experience as a housewife with children in family. The data were collected through pretested structured interview schedule and relevant statistical measure were taken for analysis of data

### Result and discussion:

**Socio-economic profile of respondents:** The socio-economic information is very much essential to study the life style of an individual. Many researchers have found that socio-economic parameters have a great influence on rural women to take up any entrepreneurial activities. This present study has made an attempt to collect information on socio-economic profile of respondents as reflected in the following table.



**Table 1 Socio-economic parameters with significant difference**

Sl. No.	Variables	Range	Significant difference (%)
1	Monthly income	Upto Rs.10000	11.38
2	Social status	i) High	10.97
		ii) Medium	20.11
3	Occupation	i) Service	10.60
		ii) Farming	11.88
4	Caste	i) OBC	10.57
		ii) General	13.14
5	Family size	i) Large (7 and above)	10.22

Under the section of socio-economic profile of respondents, total nine variables were finalized. Out of these variables like monthly income upto Rs10000, high and medium social status, service and farming as occupation, OBC and general category castes and large

family size having more than seven members were found to be influencing factors for progressiveness of rural women having significant difference in percentage analysis. Therefore, it is indicative that the above mentioned variables may be considered for progressiveness of respondents.

**Table-2 Financial support**

Sl No.	Financial parameters	Salient factors	%
1	Amount of loan	Upto Rs. 50000	89.49
2	Rate of interest on bank loan	No idea about interest rate	85.39
3	Repayment period of loan	Within 1 year	47.95
4	Steps against non-repayment	Regularly paid	88.30
5	Finance by other agency than bank	No	96.67

Majority (89.49%) respondent's amount of loan for entrepreneurial activities is limited to Rs. 50,000 and 85.39% respondents had no idea about interest rate on their bank loan. Every government scheme / program has some norms or guidelines which have to be followed by the beneficiary. Likewise, bank has its own time period for

repayment of loan. Out of the total, 47.95% groups repaid the loan within 1 year and 88.30% respondents paid it regularly. As source of finance by other agencies than banks, only 3.33% groups get this facility against 96.67% who did not get this facility.

**Table-3 Training and exposure**

Sl No.	Training and exposure parameters	Salient factors	%
1	Training undergone	No	68.33%
2	Areas of training	Value addition to agricultural produce	19.73
3	Subsidized inputs	No	92.92
4	Exposure	No	95.83
5	Visits by political leaders	No	98.33
6	Developmental activities	No	90.00

The data in above table depicts that for capacity building, 31.67% had undergone trainings against 68.33% who had no training experience. With regard to areas of training only 19.73% respondents were imparted training on value addition to agriculture produces and 92.92% respondents did not provided with subsidized inputs. To

enhance the outlook of a person, outside exposure is a must but, above data indicate that, 95.83% respondents had no exposure visit and 98.33% groups are not visited and motivated by political leaders. The inference of data is that, out of 240 respondents, only 10.00% had taken up some developmental activities whereas 90.00% did not.

**Table-4 Entrepreneurial activities and income**

SI No.	Variables	f	%
1	<b>Self employment activities</b>		
	Have activities	78	32.50
	No activities	162	67.50
	<b>Total</b>	<b>240</b>	<b>100.00</b>
2	<b>Average monthly income</b>		
	Upto Rs. 2000	55	22.91
	Rs. 2001- Rs. 5000	22	9.17
	Above Rs. 5000	1	0.42
	No income	162	67.50
	<b>Total</b>	<b>240</b>	<b>100.00</b>

To enable women, to generate their own income, activities of SHG start with individual or group for income generation. Data in the above table indicates that, 32.50% SHGs were engaged in various activities for self employment against 67.50% who did not involve in any activities. About 67.50% of sample had no income from self employment activities, whereas rest (32.50%) had

some activities. Most of them (22.91%) earned upto Rs. 2000 per month followed by Rs. 2001 - Rs. 5000 (9.17%) and above Rs. 5000 (0.42%).As per Zaman (2001) Smoothing, providing emergency assistance, and empowering and making women confident by giving them control over assets and increased self-esteem and knowledge.

**Table-5 Marketing constraints and suggestions for effective marketing**

Constraints	Suggestions
1. No proper price	1. Creation of local market
2. Depends on local shops	2. Production as per market demand
3. Depends on male members cooperation	3. Better transport facility
4. Competition in locality	4. Infrastructure facility
5. Lack of marketing facility	5. Creation of societies
	6. Availability of raw materials
	7. Skill training

Entrepreneurship education and trainings can be helpful in inducing positive self concept, self reliance, self confidence and independence in rural women. Major constraints faced by the respondents for marketing of their

products are not getting proper price against the produce, depends on local shops for selling the produce, depends on male member's cooperation and competition in locality and suggestions made accordingly.

**Table-6 Extent of empowerment**

Extent of Empowerment						
Sl. No.	Areas of empowerment	Before	%	After	%	Increase
1	Autonomy in decision making	50	20.83	130	54.00	33.17
2	Social security	70	29.16	180	75.00	45.84
3	Personal autonomy	65	27.08	210	87.50	60.42
4	Economic autonomy	45	18.75	135	56.25	37.50
5	Political autonomy	30	12.50	170	70.83	58.33
6	Legal awareness	25	10.41	110	45.83	35.42
	Average		19.78		64.90	45.11

Before joining the group and doing income generating activities the average rate of empowerment is 19.78%. But after starting income generating activities and earning, it was 64.90% and the average growth rate is 45.11%. After involvement with the income generating activities women are more 60.42% empowered in personal autonomy followed by political autonomy (58.33%), social security (45.84%), Economic autonomy (37.50%), legal awareness (35.42%) and autonomy in decision making (33.17%).

#### **Conclusion:**

Maximum respondents take loan amounting up to Rs. 50,000 without knowing the interest rate and repaid it

regularly in time which is appreciable. Majority from the respondents doing income generating activities without training, subsidized inputs and exposure. From self employment activities average monthly income is Rs. 2000. Major constraints in marketing are not getting proper price, depends on local shops for selling the produce, depends on male member's cooperation and competition in locality. The suggestions came out for effective marketing are creation of local market, production as per market demand, better transport, infrastructure facility, creation of societies, easy availability of raw materials and skill training for better production.

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## Linking farmers collectives of hills to Markets: Opportunities and Challenges

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### ABSTRACT

*In Uttarakhand more than three-fourths of total population depends on agriculture for their livelihood and the economy is predominantly dependent on mountain agriculture. Larger part of this state is characterized by a difficult terrain, undulating topography, remote and inaccessible villages and small-fragmented land holdings with limited irrigation facilities. People in the hills have been primarily engaged in subsistence agriculture. In hills, agriculture is rainfed and there is not much surplus for the market. The topographical, infrastructural and environmental constraints do not allow proper utilization of resources available in the interior parts of this fragile region. As a result most of the able-bodied men have migrated to other places in search of employment. Out of the total reported area of 53.48 lakh hectare, only 7.66 lakh hectare (14%) is under cultivation. About half of the total cultivated land is submarginal and 21% of the landholding is between 0.5 to 1 hectare (GoU, 2014). But still agriculture is a prime source of livelihood for most of the hill community. Five major farming systems prevalent in Uttarakhand are (i) cereal based production system (ii) horticulture or agri-horti based production system (iii) vegetable and floriculture based production system (iv) livestock based production system and (v) agri-horti-silvi-pastoral based production system.*

**Key words :** Farmers, market

### Introduction

Although hill region of Uttarakhand is highly suitable for growing fruits and off seasonal vegetables but smallholder farmers growing it face multiple challenges due to unorganized and inaccessible markets. They are often forced to sell it to intermediaries at a very low price. To deal with increased instability and competition, smallholder farmers need to enhance their competitiveness (Best et al 2005). Various studies have highlighted the problems of smallholders farmers. The problem is more acute in hill areas, particularly Hindu Kush-Himalayan region (Jodha 2000, 2005; Schild 2007). In hill region, farmers face challenges in marketing of their agricultural produce due to remoteness, poor physical and economic infrastructure, high transport cost, low volume, inadequate information, poor access to credit and other institutional services and weak bargaining power (Pandey et al 2011, Choudhary et al 2012a, Hurni 2013). The paucity of effective and active farmers organisations, producer organisations is seen as a major obstacle to commercialization of mountain region (Chaudhary and Banskota 2009).

Many extension services, input providers, private firms choose farmers' groups/organizations to work with them in implementing their programs. These farmers' organizations provide an effective channel for both dissemination of technology to large number of small and marginal farmers and feedback to research-extension services. In rural areas in hills of Uttarakhand, farmers'

organizations (FOs) are the nearest and often only institutions providing essential goods and services to the rural poor and helping them to break out from the poverty cycle.

### Importance of farmers collectives

Aggregating primary producers into collectives is a universally accepted concept and most effective means to reduce the risk in agriculture. It improves access of small and marginal farmers to investments, new agriculture related technologies, markets etc. there are several thousand farmers organizations formal and informal, registered under different statutes such as Cooperative Act, trusts, federations and Companies Act. Farming communities are not homogeneous. There is a wide range in types of farmers based on their assets, natural resource base, farm size, expertise, technology use, access to markets and agricultural service, level of organization, and the types of products they produce. For transmitting the latest technologies to farmers, orienting them to establish better relationship with banks, adoption of latest post-harvest handling technology, value addition etc. and enjoy the benefit of collective bargaining power both for procuring inputs and sale of produce Farmers' Club Programme was initiated by NABARD in late 1982. Farmers' club is a grassroot level informal forum. It provides a platform for building a sense of community, social support, self confidence and sense of equality. Through these groups members can secure collective access to services that individual can not such as training,

credit, development schemes etc. In hilly areas where farmers are scattered geographically with limited transport and communication facilities these farmers' club become more important. Banks operating in rural areas (Commercial Banks, Regional Rural Banks, Cooperative Banks) NGOs, Panchayati Raj agencies, State Agriculture University, Krishi Vigyan Kendras, ATMA and Post offices can organize and promote farmers' clubs. Farmers clubs can be promoted to several types of Producers Organisations. Some are registered and some are not. There are different laws providing body corporate status to organization.

- 1) The Company Act: Under this law those organisations are registered whose aim is to earn profit and its control are proportionate to the investment made by the owners.
- 2) The Society Registration Act: for organisations whose aim is to help its members scientifically, culturally and politically etc. or to undertake charitable work for larger public. For these organization profit is not the aim and if profit is earned it can not be shared among members. All the members have equal voting rights.
- 3) The Cooperative Act: For the organisations whose aim is social and economic betterment of members through the use of service provided by the cooperative. In those organisations, profit is shared among members. All members have equal voting rights.

#### **Role of Government Institutions in Supporting FPOs**

- Department of Agriculture and Cooperation (DAC), Ministry of Agriculture, Govt. of India acts as a nodal agency for development and growth of FPOs.
- Small Farmers' Agribusiness Consortium (SFAC) acts as a single window for technical support, training, research, knowledge management and to create linkages with investment agencies and markets.
- DAC and its designated other agencies works with NABARD to cater working capital and infrastructure investment needs of FPOs.
- State government institutions make provision for easy issue of licenses to FPOs to trade inputs like seeds, fertilizer, farm machinery, pesticides etc.
- State government institutions make amendments in the APMC Act to allow direct sale of farm produce by FPO at the farmgate.
- FPOs can be used as implementing agencies for different development programme like NFSM, ATMA, RKVY etc. and can be benefited on preferential basis.

#### **Need of linking farmers to Markets:**

Traditional agricultural markets operating in hills of Uttarakhand faces a number of constraints. Due to limited transportation facilities, inadequate infrastructure for value addition, storage and agro-processing units and low crop productivity, farmers are at the mercy of the middlemen and commission agents. In these markets intermediaries exists at various levels between farmers and final consumers. In hill region, most of the farmers are small and marginal who are unable to effectively bargain for better price in the wholesale market. There is huge gap between producer and consumer prices. Some of the studies (NIAM, MANAGE, NCAP, 2008) indicate that the share of producers varies from 56 to 83 per cent in food grain and 79 to 95 per cent in pulses, 65 to 96 per cent in oil seeds and 33 to 75 per cent in case of fruits and vegetables depending upon the marketing channel. In general it is seen that the producer share is lesser in case of horticultural products due to perishability, which increases the market risks for intermediaries. The market channel is an important aspect affecting producers share in consumers price. The shorter the channel, lesser the market cost and cheaper is the products to the consumers. In this context, collective marketing by farmers groups can be an effective mean to shorten the marketing channel.

Several institutional model has been tried to integrate farmers in the value chain. The most common among them is producer's cooperatives. These cooperatives are registered with the Registrar of Cooperative Societies. Cooperatives are promoted by state with more emphasis on welfare rather than on business or profit making. A cooperative is a voluntary organization of 10 or more producer members who apply to the Registrar of Society for its formation. All the members of the cooperatives have the right to one vote irrespective of the share they contribute. Co-operatives across the developing world have been more of a failure than success and are alleged to have led to exclusion of really poor, elite capture of such bodies, promoting differentiation instead of equity in rural communities like in case of sugar co-operatives in Gujarat. In 2002, through an amendment in the Indian Companies Act 1956, the Government of India (GoI) enacted the Producer Companies Act by incorporating a new section IX A in the Indian Companies Act 1956 based on the recommendations of the Y.K. Alagh Committee. The producer companies are registered with the Registrar of Company (RoC). The main objective of such initiative was to formulate a legislation that would enable conversion of existing cooperatives into companies, while ensuring that the unique elements of the cooperative business remain intact in the new legislation. Producer Companies are formed with equity contribution by the members. General Body of Producer Company selects/elects the Board of Directors for a specific tenure.

According to this new law, only farmer – producers can be members of the Farmers Producer Companies (FPC) and the farmer members themselves will manage this



company. Paid staff can be employed to help the farmer producers run the FPC. These FPCs are promoted by the farmers, are run by the farmers and are for the benefits of the farmers. FPC is a hybrid between a private limited company and a co-operative society. It combines the goodness of a co-operative enterprise and the vibrancy and efficiency of a company. It accommodates the unique elements of cooperative business with a regulatory framework similar to that of a private limited company.

- Collective inputs purchase
- Collective marketing
- Processing
- Increasing productivity through better inputs
- Increasing knowledge of farmers
- Ensuring quality

#### **Addressing the challenges of farmers in hills**

In order to promote production of off seasonal vegetables in hills of Uttarakhand, the Centrally sponsored scheme of HMNEH was implemented in Uttarakhand state since 2003-04. The scheme was implemented for the holistic development of horticulture sector duly ensuring forward and backward linkages by adopting cluster approach, covering production, post harvest management, processing and marketing with the active participation of all the stakeholders.

Under the scheme, an action research was implemented by the ICAR-Vivekananda Parvatiya Krishi Anusandan Sansthan- a research institute under Indian Council of Agricultural Research. Institute adopted Bhagartola village in 2005 under HMNEH. Institute influenced farmers to use quality seeds, fertilizers, poly-houses, poly-tanks, improved soil health practices, improved farm implements through rigorous training on improved methods of vegetable cultivation particularly. Vegetable production was chosen as a vehicle for earning higher income. The climate of the region allow supply of fruits and vegetables during a period when very few other competitors are on the market. Prices of off-seasonal vegetables are higher than those during the main season. The main problem that especially limits the development of vegetable production in hills, is the lack of irrigation infrastructure (Kar, 2006). Therefore, poly house connected to poly tanks along with micro-irrigation system were constructed in the area with active participation of farmers. With the initiative of the institute, cereal and millet production has increased with decreased land requirement and presently there are more than hundred poly-houses and LDPE-lined tanks ranging from 10 cubic meter to 200 cubic meter capacity along with micro irrigation system. Farmers have constructed low-cost poly-houses (av. 100m<sup>2</sup> covered floor area) out of locally available pine wood and UV stabilized sheets and insect proof nets. In these poly-houses they are growing tomato, cucumber, capsicum, squash and cauliflower. Production of vegetable doubled

with the introduction of these poly-houses in Bhagartola. It was found that yields under protected condition in the case of cucumber, tomato and capsicum were recorded to be 651, 552 and 383 quintal per hectare which were 77, 372 and 251 percent higher than those under open condition. Earlier these farmers were engaged in mostly millet-cereal based farming system under rain fed condition, therefore production was below average.

For sustaining economic regularity, reduce local loan with high interest rate and disseminate improved vegetable production technology among farmers, farmers were organized into farmer's groups. These farmers and farmers groups have been acknowledged by ICAR, State Government and NABARD for adopting improved agricultural production technology in hill farming and their contribution in efficient transfer of technology to other farmers. These groups were transformed to Farmers producer Organisation (FPO) for production and marketing of seasonal and off-seasonal vegetables. These FPO members have backward linkages with research institute, government departments, input agencies for improve seeds, fertilizer, insecticides, pesticides, small agricultural implements and packing material. Producer organisations in hills of Uttarakhand have potential to become a seed provider for other region.

For credit purpose, most of the farmers are linked to cooperative banks, regional rural banks and also SHGs. It is of immense importance that farmers need to be regularly educated on seed varieties, suitability, package of practices for particular varieties, land preparation, pre-harvest, harvest and post-harvest processes, integrated pest management and nutrition management. Research institute is providing technical support to FPO and playing facilitative role in marketing of produce. FPO is also receiving financial support from NABARD for management of business activities. Although FPO is in its initial phase but has set up an example for other farmers in the region who are still striving for marketing of produce at reasonable prices. Although the whole process can be time consuming, costly, the action research strategy can be replicated in other region also to benefit resource poor farmers in hills.

#### **Advantages of collective marketing through Producer Co-operatives and Producer Companies**

- Reduction in marketing cost: various market related services are provided to the members at lower rates.
- Increased bargaining power of farmers: collective marketing of produce increase bargaining power of farmers as they are not forced to accept whatever price is offered by the middlemen or wholesalers in market.
- Infrastructural facilities: these cooperatives or producer companies have their own storage and warehousing facilities which prevent produce from damage and thus ensure better price.

- Market intelligence: these collectives obtain data on market prices, demand and supply of produce on regular basis which help them to assess market trends and demand pattern.
- Reach to distant markets: through farmers' collectives, the agriculture produce can be sold collectively in distant market at higher prices for the benefit of the farmers.
- Provision of finances at lower interest rates: these farmers' collectives also provides finance to the members at lower interest rates for input purchase and other farm related activities.
- Availability of agri-inputs at reasonable rates: these collectives also arrange for the supply of agri-inputs like fertilizers, insecticides, pesticides and improved seeds at reasonable rates in adequate quantity, even on credit.
- Profit sharing: the profit earned by the farmers' collectives is distributed among all the members of the society on the basis of the share they own, therefore, everybody takes interest in promoting the group.
- Capacity building of members: these collectives also arrange various capacity building programme for the member to upgrade them about the latest agriculture technologies, agri-marketing practices in consultation with experts or scientists.

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# Socio-Economic Strategy for Empowerment of Farm Women Producers

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## ABSTRACT

*Participation of women in agriculture in developing countries has been silently appreciated without much recognition and recording their contributions. There is a direct need to create congenial atmosphere in social, economic and cultural spheres for their development through empowerment. Poor knowledge and skill in all operations restricted them for which they were not involving in all the operational activities. It has been observed from many studies that majority of the farm women have little access with all types of family earnings including own earning. It is therefore necessary to bring them in to front by developing skill competency in the activities undertaken by the family so that they feel empowered to manage the activities and increase their control over family as well as own earning. Capacity building of the farm women on the suggested vocations should be done through skill trainings, exposure visit and other types of advisory support. . Sensitization programmes should be conducted among farm women to save out of their own earnings and also some from family earnings. Strong linkage and coordination has to be developed among all the related organizations for empowerment of farm women.*

**Key words :** Strategy, Empowerment, Women

## INTRODUCTION

In the agricultural production process, end users or farmers are very important. The farming community comprises three distinct groups – farmers, farm women and young farmers including boys and girls. Participation of women in agriculture in developing countries has been silently appreciated without much recognition and recording their contributions. They have not been prepared for active involvement in the development process. By and large, they are remained as invisible workers. Since 1970s, a global concern for the emancipation of women in general and farm women in particular has been expressed in so many ways aiming at improving the working environment of women and raising their standard of living.

Further, their farm activities are also changing due to mounting demographic pressure on land as well as environmental degradation resulting in increased rural poverty and male migration off the farm sector in search of employment. Therefore, improvement in the status of woman has now been recognized all over the world as an important aspect of national progress and development. It is also felt that, the problem of poverty can not be tackled without providing opportunities of productive employment to women for providing necessary economic base and improve their social status. But, it is still a fact that women in many countries are facing discriminating attitude in varying degrees on ground of gender in employment and working conditions.

Several programmes have been launched exclusively for the women at the central and state level over period of time for making women conscious for self

employment and generation of employment as well as income through vocational activities. Some of them are-

- State Social Welfare Advisory Board.
- Dowry prohibition act
- State Commission for Women
- Mahila Samities
- Rehabilitation of distressed women
- Condensed courses of Education for adult women.
- Vocational training
- Training & Extension for women & Family counseling centres.
- Awareness Generation Projects for rural and poor women.
- State Old Age Pension Scheme (SOAP)
- Mission Shakti
- Swayamsiddha
- Mahila Vikas Samabaya Nigam (MVSM)
- Integrated Child Development Scheme (ICDS)
- Kishori Shakti Yojana (KSY)
- Development of Women & Children in Rural areas (DWCRA)

- Rashtriya Mahila Kosh
- Support to Training & Employment of Women Programme (STEP)
- Indira Mahila Yojana
- Mahila Samridhi Yojana
- Self Help Group (SHG)

In spite of all efforts, the status of women particularly rural women and women from farm families still not developed much. The total contribution of women in rural work force is often perceived as lower than their actual contribution due to various forms of socio-cultural norms. The policy makers often highlight only the supportive role of farm women as farmer's wife than her productive role. The male head of the family shares all his experience with the planners for any farm activities there by devolving the touch of women experience and feedback. At the same time, due to restrictions on their movement and activities, the extent of exposure of farm women are meager leading to under employment. It has been commonly agreed that, unless the rural women particularly the farm women are empowered and engaged in productive activities with drudgery reducing technologies, neither agriculture nor the rural families can be improved and contribute for national development. For the reason, the level of empowerment of the rural women particularly the farm-women is to be identified and a suitable strategy should be formulated for their better empowerment and development.

#### **Situation Analysis of Farm women**

Indian women are hard workers, dedicated and share most of the duties and responsibilities of the family. In the process of agricultural modernization, major attention has been devoted to the farmers over looking to the role of farm women. It is the necessity to organize them and to increase self reliance to ascertain their independent right to make choice and control over resources which will assist in challenging and eliminating their own subordination. Therefore, there is a direct need to create congenial atmosphere in social, economic and cultural spheres for their development through empowerment. The present study has been designed for strategic development towards the empowerment of the farm women.

#### **Roadmap for empowering the farm women**

Various dimensions towards empowerment of the farm women have been analyzed by many authors, researchers and experts of the field to develop a suitable strategy for empowering them to become self reliance and there by contribute significantly for the family development. Some of the suitable measures are suggested herewith which may be considered by the planners, policy makers, executives and implementing agencies for women empowerment.

#### **Access to resources, earnings, and inputs-**

##### **a. Agricultural Resources**

This is a fact that the farm women have no adequate access to the agricultural resources. But, it is therefore suggested to develop technical competency so that they can feel empowered in managing all the agricultural resources of their families.

##### **b. Live stock Resources**

Farm women have usually more involved the live stock resources. But they have poor knowledge and skill in all management practices for which sufficient exposure to the technological developments with value addition and marketing is essential to develop their competency so that they become empowered and increase access to all the live stock resources of the families.

##### **c. House hold Resources**

Usually they have very limited access towards use of family and hired labour, savings and stored grains. It seems that the women are not being considered competent enough by their male counterparts or the women did not feel themselves competent to manage all the house hold resources. Since women are doing majority of the house hold works, they should be trained to take the lead role in managing all house hold resources and increase their full access to all house hold resources.

##### **d. Agricultural inputs**

Though the farm women have moderate access to seeds, planting materials, manures and fertilizers, but they have poor access to water management, credit and engagement of labourer. Poor knowledge and skill in all operations restricted them for which they were not involving in all these operational activities. Therefore, strategical measures have to be undertaken for developing managerial abilities in procurement and use of inputs.

##### **e. Institutional Personnel**

The farm women usually have meager access to the field functionaries working in their area. If it is so, naturally the farm women kept aside with the entire development programmes. Some strategic mechanism has to be implemented for separate treatment to the farm women to enable them for coming to the front and actively involving themselves in various developmental programmes.

##### **f. Health Centres**

Women are more conscious about the health of the family members. As observed from many research studies, majority of them have little access to any of the health centers except occasional access to primary health centre. Though, the Govt. engaged health counsellors in all most all villages, but no attempt had been made to make them conscious of health care. Special attention is needed to make them conscious through various advisory approaches.

#### **g. Self-earnings**

Access to income not only makes any body empowered, but enable to actively involved in all decision making process. It has been observed from many studies that majority of the farm women have little access with all types of family earnings including own earning. This makes the fact true about the male dominancy in the family. Since, women are not confident over their productive activities; they perhaps remained silent and all decisions taken by their male counterparts. It is therefore necessary to bring them in to front by developing skill competency in the activities undertaken by the family so that they feel empowered to manage the activities and increase their control over family as well as own earning.

#### **Conclusion**

Poor background of the farm women and low exposure could not able to make them confident to utilize their potentialities in agricultural activities. The following strategic measures are being suggested to make them empowered.

1. Organizing the farm women properly and more in tribal district through awareness campaign and sensitization programmes and other feasible educational approaches. Increase in education and social participation is the thrust area for tribal farm women. Increase in cosmopoliteness behaviour by the developmental workers should be the priority for non tribal farm women. Adult education programmes should be strengthened in the area.
2. Formation of different groups based on the resources, interest, capabilities, and select vocations on common agreement should be practiced.
3. Capacity building of the farm women on the suggested vocations should be done through skill trainings, exposure visit and other types of advisory support. Involvement in various farm related enterprises should be encouraged. Stress should be

given on goat/sheep rearing, pulse & oilseed cultivation, mushroom and piggery among tribal farm women. Special emphasis should be given on vegetable cultivation, rural craft, value addition and pisciculture for non tribal farm women.

4. Institutional extension personnel should have frequent contact with the farm women. Mass campaign should be organized by line departments for making awareness on various developmental programmes particularly on Indira Awas Yojana, Mission Shakti , DWCRA and ICDS. Health counselors should increase their rate of contact with farm women.
5. Marketing support need to be strengthened with regulatory marketing net work, establishing cooperative system.
6. Easy availability of inputs in time has to be ensured, with quality and fair price. Local cooperatives, village panchayat should provide inputs in timely and judicious manner.
7. Mechanism need to be developed to bring them courage and confidence and bring them to front. Sensitization programmes should be conducted among farm women to save out of their own earnings and also some from family earnings.
8. More exposure may be made to develop courage and confidence and bring them to front. Gender sensitization and awareness camps in the region can bring up attitudinal change among the community.
9. Strong linkage and coordination has to be developed among all the related organizations for empowerment and more in tribal district.
10. Competency has to be developed in farm planning, budgeting, accounting and record keeping. Farm women should take active part in decisions like asset creation, financial matters, procurement and marketing of produce.

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## Gaps in Extension Services -A Case study of Meghalaya

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### ABSTRACT

*In this study, we developed a performance monitoring model for public extension program made available by the government for farmers' welfare. This study considered many factors which may be predictors of farmers' requirement from the extension providers; understood the interplay of those factors using correlation and factor analysis and then regressed the components derived from the factor analysis with the farmers' requirement indicator variable- satisfaction level to derive package appropriateness factors. Those factor values, mainly farmers' perception of the service parameters are used within the model to figure out gaps in the requirement of farmers and the services being provided to them by the government organizations within Meghalaya state. Policy implications are derived from the identified gaps which included providing crops (subsidised inputs for the crop or just advice) based on forecasted demand and farmer's soil & weather type, easing access to financial products by reducing procedural complexities and enhancing information flow, providing more frequent and implementable trainings along with focus on providing trainings in the form of facilitation of knowledge rather than imposition of knowledge, and collecting farmer's feedback at regular intervals for continuous monitoring of the extension program and making it more need-based."*

**Key words :** Extension Services, Performance Measurement, Farmer's Satisfaction and Perception

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### Introduction

The Indian agricultural sector in Indian economy can't be undermined; it employs just a little less than 54.6% of the country's total workforce and generates 13.9% of India's Gross Domestic Product. The role of agriculture is further more important in the context of an agrarian state Meghalaya, as 80% of its population depending entirely on agriculture for their livelihood generating around 20% of the Gross State Domestic Product (as per advanced estimates of Central Statistics Office, New Delhi, 2011). The role of government organizations regarding agriculture is very crucial to empower farmers, provide employment and enhance income levels, along with improving productivity of the land. According to the Directorate of Agriculture, Meghalaya, their role is - "To promote holistic, sustained and equitable intervention for attaining food security; conservation, management, protection and sustainable use of natural resources for improved livelihood; generating gainful rural employment opportunities to alleviate poverty and striving towards an overall balanced economic development of the farming community."

### Materials & Methods

- I.A.a. Farmer's satisfaction level with the public extension services for various factors is selected as the indicator of farmer's requirements.
- I.A.b. Factors affecting farmer's satisfaction with the extension program are identified based on secondary research and talks with academicians and concerned government officials.
- I.A.c. Above identified factors are finalized based on interviews with the two government officials- Joint Director of Agriculture & Monitoring Cum Evaluation Officer, Government of Meghalaya.
- I.A.d. Two districts (East Khasi Hills & Ri Bhoi) with highest number of registered beneficiaries are selected for the survey purpose. List of all the beneficiary farmers is obtained from the respective District Office. 150 farmers are randomly chosen out of all the beneficiaries, and asked to respond to a structured and pre-tested questionnaire; containing statements (factors) on Likert scale to assess their perceptions, followed by some open-ended questions.

### Result and Discussion

- A. Cronbach's Alpha score (Table A.1) of 0.925 indicate very high sample's internal consistency.



**Table A.1: Reliability Statistics**

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	No of Items
.925	.934	30

**A. Correlation Analysis (refer Appendix 3)**

- Satisfaction is not found correlated with many of the farmer's personal attributes like years of experience in extension participation, farmer's age, education, and family members involved in other occupations. It is found positively related with the following at 95% confidence level with farm size, number of family members involved in agriculture, agri-input availability and agri-input quality.
- Satisfaction is found positively related with the following at 99% confidence interval:
  - Number of times training received
  - Frequency of contact between extension worker & farmer
  - Perceived improvement in agricultural productivity/yield
  - Perceived income growth
  - Need based nature of services
  - Market based nature of services
  - Services fulfil the requirement of whole family
  - Farmer's participation in planning and implementation of this services

- Farmer's participation in service evaluation
- Access to required information about:
  - Inputs like Seed, Fertilizer and Equipment
  - Latest Techniques
  - Market Prices
  - Insurance Schemes
  - Credit Schemes

- Numbers of times training received was found correlated with education level of farmers & frequency of contact between the farmer and the extension workers. Trainings received was also found correlated with perceived enhancement of productivity, perceived income growth by farmers, need-based nature of services, participatory nature of services, frequency of credit, use of different communication methods along with access to required information on agri-inputs, latest techniques and credit schemes. Numbers of times training received was not found correlated with access to market price information and insurance scheme information.

**A. Factor Analysis**

- a. Factor Analysis for Package Appropriateness:

<b>KMO and Bartlett's Test</b>		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.822
Bartlett's Test of Sphericity	Approx. Chi-Square	1062.929
	df	91
	Sig.	.000

KMO score of .822 indicate that the sample is adequate for factor analysis. Also, Bartlett's Test indicate a positive result with signification 0.000.

**Table C.a.2: 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	6.737	44.913	44.913	6.737	44.913	44.913	3.608	24.054	24.054
2	1.872	12.481	57.394	1.872	12.481	57.394	2.738	18.254	42.308
3	1.358	9.052	66.445	1.358	9.052	66.445	2.556	17.038	59.346
4	1.057	7.049	73.494	1.057	7.049	73.494	2.122	14.148	73.494
5	.944	6.294	79.789						
6	.590	3.934	83.722						
7	.497	3.312	87.034						
8	.411	2.737	89.771						
9	.366	2.438	92.209						
10	.344	2.291	94.500						
11	.238	1.590	96.089						
12	.195	1.299	97.389						
13	.186	1.240	98.628						
14	.176	1.172	99.800						
15	.030	.200	100.000						

**Table C.a.3: Rotated Component Matrix<sup>a</sup>**

	Component			
	1	2	3	4
Input Availability	.821	.069	.250	.151
Services Are Need Based	.797	.188	.335	.081
Inputs Quality	.786	.130	.270	.009
Frequency Of Extension Contact	.657	.122	.417	-.073
Agri Inputs Info	.627	.260	.179	.332
Perceived Improvement In Crop Productivity	.591	.351	.412	.170
Latest Techniques Info	.543	.343	.085	.381
Services Are Market Based	.056	.835	.033	.080
Perceived Income Growth	.171	.805	.342	.154
Fulfills Requirement Of Family	.112	.792	.355	.083
Market Prices Info	.253	.548	.069	.528
Participation In Service Evaluation	.219	.196	.908	.151
Participation In Planning And Implementation	.215	.197	.904	.213
Insurance Schemes Info	-.063	.053	.083	.863
Credit Schemes Info	.077	.072	.169	.821
	Yield Growth	Income Growth	Participatory Nature	Financial Security

Extraction Method: Principal Component Analysis.

Rotation Method: Equamax with Kaiser Normalization.

a. Rotation converged in 7 iterations.

73.5% of variation because of 15 predictor variables can be explained by 4 components:

Interpretations from Table C.a.3:

- ▶ Agri. Input's Availability like those of seed, manure, equipment and their Quality along with information about their use may lead to perception of improvement in crop productivity and that the services are based on the user's needs. We combine these interrelated factors under the head – 'Yield Growth', as these factors contribute to improvement in the yield of farmers.
- ▶ Market Based Nature of Services can fetch a higher price for the farmers produce, which is why it is related with Perceived Income Growth for the farmer. These two factors lead to fulfilment of needs of the whole family. Fetching a higher price also requires farmer's the updated Market Price Information. These factors combined lead to Income Growth for the farmers.
- ▶ Farmer's Participation in planning & implementation of the extension services along with his inputs is service evaluation certainly leads to higher satisfaction of the farmers.
- ▶ Insurance schemes and Credit availability & related schemes add to Financial Security of the farmers.
- b. Factor Analysis for the use of multiple communication methods by the extension service providers

**Table C.b.1:KMO and Bartlett's Test for Factor Analysis**

<b>KMO and Bartlett's Test</b>	
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.854
Bartlett's Test of Sphericity Approx. Chi-Square	892.946
df	45
Sig.	.000

KMO score of .854 and Bartlett's Test score show that the sample is adequate for the factor analysis.

**Table C.b.2: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	6.011	60.108	60.108	6.011	60.108	60.108	4.114	41.138	41.138
2	1.311	13.113	73.221	1.311	13.113	73.221	3.208	32.083	73.221
3	.728	7.278	80.499						
4	.623	6.234	86.733						
5	.437	4.374	91.107						
6	.303	3.025	94.132						
7	.205	2.053	96.185						
8	.186	1.856	98.041						
9	.129	1.290	99.331						
10	.067	.669	100.000						

Extraction Method: Principal Component Analysis.

Two components extracted out of 10 different methods of communication can explain 73.2% variations. Thus to analyse the different methods we use rotated component matrix.



**Table C.a.3 : Rotated Component Matrix<sup>a</sup>**

	Component	
	1	2
On Farm Demonstration	.875	.249
Demonstration At Training Centre	.857	.201
Farm Visit	.818	.344
Home Visit	.791	.309
Department Visit	.764	.250
Telephone	.577	.504
Television	.271	.899
Radio	.190	.888
Print Media	.326	.851
Exhibition	.432	.506
	Active Contact	Passive Contact

Extraction Method: Principal Component Analysis.

Rotation Method: Equamax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

Two major components emerge- Active Contact and Passive Contact.

- Active Contact include On Farm Demonstration, Demo at Training Centre, Home, Farm Visit by Extension Workers, Extension Department Visit by the farmers, and Telephone (SMS and Calls).

► Passive Contact include Television, Radio, Print Media and Exhibition.

#### A. Regression Analysis

- a. Applied regression analysis to understand the causality between components extracted from several factors and satisfaction of the farmers.

**Table D.a.1: Regression Statistics**

Multiple R	0.667752
R Square	0.445892
Adjusted R Square	0.424163
Standard Error	0.671144
Observations	107

Low R Square explain that there may be many other factors influencing overall satisfaction of the farmers, like

this farm size & access to credit, other sources of income. However, here we tried to check only those factors which are related to the extension service package.

**Table D.a.2: Regression Statistics for Package Appropriateness**

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	0.1834	0.3224	0.5689	0.5707	-0.4561	0.8229	-0.4561	0.8229
Yield Growth	0.2024	0.0636	3.1847	0.0019	0.0763	0.3285	0.0763	0.3285
Income Growth	0.5662	0.0775	7.3068	0.0000	0.4125	0.7200	0.4125	0.7200
Participatory Nature	0.1795	0.0637	2.8172	0.0058	0.0531	0.3059	0.0531	0.3059
Financial Security	0.3547	0.0895	3.9644	0.0001	0.1772	0.5322	0.1772	0.5322

Table D.a.2 indicates that satisfaction (y) is found as a depending variable for all the 4 components (derived using Factor Coefficient Matrix) of package appropriateness- ield Growth, Income Growth, Participatory Nature&Financial Security at 99% confidence level, with income growth having the largest coefficient.

As frequency of contact between the farmer and the extension workers is positively related with the number trainings they service, their agricultural yield and satisfaction, we also regressed that with the different methods of communication derived from the factor analysis.

**Table D.b.1: Regression Statistics for Frequency of Contact**

	Coefficients	Standard Error	t Stat	P- value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	1.5067	0.3037	4.9617	0.0000	0.9045	2.1089	0.9045	2.1089
Active Contact	0.5607	0.1091	5.1419	0.0000	0.3445	0.7770	0.3445	0.7770
Passive Contact	0.1413	0.1076	1.3134	0.1919	0.0720	0.3546	0.0720	0.3546

Table D.b.1: indicates that factors contributing to Active Contact (On Farm Demonstration, Demo at Training Centre, Home, Farm Visit by Extension Workers, Extension Department Visit by the farmers, and Telephone (SMS and Calls)), between the farmer and the extension workers, cause higher perceived frequency of contact by the farmers and that in turn affect productivity and satisfaction.

with their soil type & weather conditions to increase their yield and maximize potential profit). Market Access to farmers can be enhanced by providing them with timely and relevant market price information, maybe through SMS or Interactive Voice Response (IVR) Service over phone. IVR services have proven success record in reaching out to farmers and benefitting them especially in information facilitation area.

### Identified Gaps & Policy Implications

Total of 41 beneficiary farmers among 107 surveyed expressed dissatisfaction with the current extension services provided by the government, which amounts to 38% as against 25% & 36% of the farmers neutral and satisfied respectively . In total, 64% were found not satisfied with the overall extension program.

We investigated into the probable reasons to figure out the reasons behind the same. The model developed using the above frameworks is used and the 4 identified package appropriateness measurement components are evaluated in the order of their significance to identify gaps and figure out some policy implications, which are as follows:

**A. Income Growth for the farmers:** Income Growth for the farmers was the most important identified component for the extension package. 60% surveyed beneficiaries are not satisfied with the market based nature of services, many reporting that they are unable to sell at good prices because of less demand for the produce (produced with the help of extension department), or lack of storage infrastructure, poor access to market, presence of brokers and their influence, etc. Along with that, 93% of the surveyed farmer's lack satisfactory access to market price information which is significantly related with the income growth and satisfaction with the extension program.

**Policy Implication –** Farmers should be provided with good crops to produce (based on market demand forecast along

**B. Financial Security:** Despite presence of schemes like Pradhan Mantri Fasal Bima Yojana (PMFBY) and Kisan Credit Card, 96% and 92% of the surveyed farmers lack satisfactory level of access to information about Insurance Schemes and Credit Schemes respectively. This lack of access to required information severely affects them in two ways – One, their satisfaction level goes down which negatively impacts their productivity; two, they approach unorganized sector for credit in case of emergencies. The creditor often seizes their crops in lieu of the credit granted, which often forces them to accept lower prices for their produce.

**Policy Implication -** Farmers must be provided with knowledge on the financial products including insurance as well as credit schemes. Documentation and other procedural complexities should be eased and should be well communicated with the farmers, maybe through village headmen or extension providers.

**C. Yield Improvement:** 71% of the surveyed farmers are not satisfied with the need-based nature of extension services. 87% of them are not satisfied with the information access to latest techniques, 75% are not satisfied with the information access to agricultural inputs like seeds, manure & equipment. However, 42% of the farmers are satisfied with the improvement in crop productivity mainly attributable to good quality seeds provided by the extension department.

The state is transforming from chemical based farming to organic manure based, since 2015. This is combined with lack of knowledge, willingness to shift to organic farming and lack of adoption for integrated farming, farmers are acquiring costlier chemical fertilizers and pesticides from the market. Many farmers said their soil's fertility is severely down so they are putting more and more fertilizers. This is increasing their cost of production and reducing yields. Main issues here are lack of training and help in implementation of the extension services.

**Policy Implication** - Trainings should be provided more frequently to the extension beneficiaries (40% of the surveyed didn't receive any in the last three years). Many farmers said trainings provided are irrelevant because they can't implement what is being taught in the training. Training should be provided with the increased focus on implementability of the same. Extension providers should increasingly focus on adoption of integrated farming systems and organic manures through the trainings provided. Also, one more point to note here is that active contacts (On Farm Demonstration, Demo at Training Centre, Home, Farm Visit by Extension Workers, Extension Department Visit by the farmers, and Telephone - SMS and Calls) work better to improve the yield of farmers.

**D. Participatory Nature of extension services:** 80% of the surveyed beneficiaries are not satisfied with their participation in planning, implementation and evaluation of the services. Participatory nature of extension services is also related with the need based nature of services, thus it impacts the adequacy of the extension program.

**Policy Implication** – More active participation of the farmers' should be sought by the extension department. This can be done by providing training in the form of facilitation of knowledge rather than imposition of knowledge, and taking their feedbacks at regular intervals.

## Conclusion

Meghalaya's public extension program for farmers is heavily subsidized presently focusing of enhancing farmers' income along with reducing their income fluctuations through the adoption of Integrated Farming Systems. In which farmers take the benefit of all the line departments namely agriculture, horticulture, fishery, animal husbandry & veterinary, soil conservation and forestry.

Due to limitations of finance and manpower, mainly front line extension workers, most farmers do not become the beneficiary of the program at all. However, those who become the beneficiary among them 64% are found not satisfied with the present day extension services. The major components of performance evaluation of the extension program identified on the basis of several factors indicating farmers' expectation from the extension providers are improvement in income, financial security, productivity (yield) and their participation in service planning, implementation and evaluation.

With the evaluation model formed consisting of above mentioned four components consisting several factors, the most important gaps are, in order of their importance –services are not market based, lack of farmer's access to market prices, lack of access to financial products like insurance and credit schemes, poor need-based nature of present program, lack of information on latest techniques and poor participatory nature of the program.

Policy implications are provided to give focused and customized services to the beneficiaries which included providing crops based on forecasted demand and farmer's soil & weather type, easing access to financial products by reducing procedural complexities and enhancing information flow, providing more frequent and implementable trainings along with focus on providing trainings in the form of facilitation of knowledge rather than imposition of knowledge, and collecting farmer's feedback at regular intervals for continuous monitoring of the extension program and making it more need-based.

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## Information Dynamics of Tribal Rice Farmers Under NFSM In Kandhamal District of Odisha

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### ABSTRACT

*Access to information is of crucial importance in the present agricultural scenario. The present study on information dynamics was conducted in Kandhamal district of Odisha. A sample of 120 farmers of which 60 beneficiaries and 60 non-beneficiary farmers were selected from 4 blocks. Two villages from each block were selected to analyse the various sources of information. The data were collected through a well-structured interview schedule. The study reveals that most of the beneficiary tribal rice farmers meet their information needs from Kisan Sathi (100%), VAW (100%), AAOs (81.6%) as Government extension agency, whereas progressive farmer (55%), NGOs (13.33%) as non-Governmental extension agencies. It was further observed that in case of mass media highest preference was given to TV (76.61%), and radio (33.33%). But the extent of contact of non-beneficiary tribal rice farmer to the extension agent and mass media was comparatively very less which affects their knowledge level in rice cultivation.*

**Key words :** Information, NFSM, Beneficiary, Non-beneficiary, Kisan Sathi, VAW, AAO,

### Introduction

The present age has been rightly called as an Information Age. Information has become the most important element for progress in society. According to Kemp "information has been described as the fifth need of man ranking after air, water, food and shelter". Everyone needs information about everything even in his day to day life. In the present-day agriculture, information is the key input and this relevant and timely information helps farmers to take the right decision to the sustained growth of agriculture activities.

National Food Security Mission (NFSM) programme was launched in the year 2007 to increase the production of Rice, Wheat and Pulses by 10 million tons, 8 million tons, and 2 million tons, respectively by the end of the eleventh five-year plan (2011-12). The mission is being continued during 12th five-year plan with additional production of food grains of 25 million tons, comprising of 10 million tons of Rice, 8 million tons of Wheat, 4 million tons of Pulses and 3 million tons of Coarse cereals. This programme helps in providing various type of through extension agencies like scientists, AAO, VAW, Kisan Sathies, progressive farmers and also through the mass media to meet the information need of the farmers.

The tribal farmers require various types of information for their day to day agricultural activities. But they are not getting right information at right time leading to slow development of tribal farmers.

Tribal farmers mostly depend on indigenous knowledge for farming. But in the present modern agricultural system we need to interlink both indigenous and modern farming information for sustainable

agricultural development. The present study was conducted to know the information dynamics of both beneficiary and non-beneficiary tribal rice farmers. (Jalaja & Kala 2015).

### Materials and Methods

The present study was conducted in Kandhamal district of Odisha. Out of 12 blocks, 4 blocks G Udayagiri, Tikabali, Nuagao, Phiringia were selected randomly. From each selected block, one NFSM-Rice implemented village and another non-NFSM-Rice village from the same location was selected for investigation. In this way total 8 villages (4 beneficiaries and 4 non-beneficiaries) were selected for the investigation. From each beneficiary village, 15 tribal farmers associated with NFSM-Rice were selected randomly. Similarly, from non-beneficiary villages 15 tribal farmers were selected randomly as respondent. Thus, total 120 farmers (60 beneficiaries and 60 non-beneficiaries) were selected for this study as respondents. The data were collected through a well-structured interview schedule. The collected data were analysed with statistical tools like frequency, percentage method. The information sources were classified into three categories, viz., Govt. sources, Non-Govt. sources and mass media sources.

### Result and Discussion

The data regarding contact with Govt. Extension agencies of NFSM beneficiary and non-beneficiary tribal farmers presented in the table-1. From the table it was concluded that all (100%) of the beneficiary farmers have frequent contact with Kisan Sathi and VAW. But in case of non-beneficiary tribal farmers majority have no contact (85%) followed by 8 per cent have regular contact and 6 per cent farmers had occasionally contact found with Kisan



Sathi. Similarly, about 60 per cent farmers have no contact, 30 per cent have occasional contact and remaining 10 per cent farmer have frequent contact found with VAW.

So far as KVK was concerned majority, 40 per cent beneficiary tribal farmers have frequent contact, 46 per cent have occasional contact and remaining 3 per cent have no contact found. In case of non-beneficiary tribal farmers,

majority about 90 per cent of farmers have no contact with KVK and 6 per cent farmer came in contact occasionally.

With regard to scientist, 43 per cent of beneficiary have occasional contact and remaining 57 per cent have no contact and in case of non-beneficiary farmers percentage of contact was zero.

**Table -1 Extent of contact of beneficiary and non-beneficiary tribal rice farmers with Govt. extension agency**

Sl.No		Beneficiary farmer (N=60)			Non- Beneficiary farmer (N=60)		
		Frequently	occasionally	Never	Frequently	occasionally	Never
1	OUAT (Scientists)	-	26 (43.3%)	34 (56.6%)	-	-	60 (100%)
2	KVK	24 (40%)	28 (46.6%)	8 (13.3%)	2 (3.33%)	4 (6%)	54 (90%)
3	AAO	49 (81.6%)	11 (18.3%)	-	3 (5%)	10 (16.66%)	49 (81.6%)
4	VAW	60 (100%)	-	-	10 (16.6%)	18 (30%)	37 (61.6%)
5	Kisan Sathi	60 (100%)	-	-	5 (8.33%)	4 (6%)	51 (85%)

The data regarding contact with non-Govt. Agencies of beneficiary and non-beneficiary tribal rice farmers shown in the table-2. The data shows that in case of beneficiary tribal rice farmer highest frequently contact was found with progressive farmers (50%) which was comparatively less in case of non-beneficiary farmers (13%).

With regard to NGOs maximum beneficiary farmers have occasional contact about 57 per cent and

about 13 per cent have regular contact. Similarly, in case of non-beneficiary farmers majority (52%) have no contact, 10 per cent have occasional contact and about 3 per cent have regular contact.

By taking input dealer into consideration both beneficiary and non-beneficiary have occasionally contacted with very less percentage that is 6 per cent, 5 per cent, respectively

**Table -2 Extent of contact of beneficiary and non-beneficiary tribal rice farmers with Non-Govt. extension agency**

Sl.No		Beneficiary farmer (N=60)			Non- Beneficiary farmer (N=60)		
		Frequently	occasionally	Never	Frequently	occasionally	Never
1	Agricultural input dealer	-	4 (6%)	56 (93%)	-	3 (5%)	57 (95%)
2	Progressive farmer	33 (55%)	12 (20%)	15 (25%)	8 (13.33)	-	52 (86%)
3	NGO	8 (13.33%)	34 (56.66%)	18 (30%)	2 (3.33%)	6 (10%)	52 (86%)

The data regarding mass media contact of tribal beneficiary and non-beneficiary farmers given in the table-3(a) and table- 3(b) respectively. This data shows that Television was the daily and more prominent mass media source for majority (76.6%) of the beneficiaries followed by radio (33.3%) then Newspaper (26.6%) as compared to another medium of mass media contact. Similarly, in case

of non- beneficiaries highest level of contact found in television (23%) followed by radio then newspaper. If we go for other mass media like leaflet/folder, magazine, internet mostly monthly contact is found in case of beneficiary farmers, rather the level of the percentage found was very less and in case of non-beneficiary farmers no contact was found.

**Table -3(a)Mass media contact of beneficiary tribal rice farmers.**

Sl.No.		Beneficiary Farmers(N=60)				
		Daily	Weekly	Fortnightly	Monthly	Never
1	TV	47 (76.6%)	-	-	-	13 (21.6%)
2	Radio	20 (33.3%)	-	-	-	40 (66.6%)
3	Newspaper	16 (26.6%)	13 (21.6%)	8 (13.3%)	5 (5%)	18 (30%)
4	Leaflet/Folder	8 (13.3%)	4 (6%)	11 (18.3%)	7 (11.6%)	30 (50%)
5	Magazine	-	-	5 (8.3%)	9 (15%)	46 (76.6%)
6	Internet	-	-	-	2 (3.3%)	58 (96.6%)

**Table -3(b) Mass media contact of non-beneficiary tribal rice farmers.**

Sl.No.		Beneficiary Farmers(N=60)				
		Daily	Weekly	Fortnightly	Monthly	Never
1	TV	14 (23%)	-	-	-	46 (76.6%)
2	Radio	8 (13.3%)	-	-	-	52 (86.6%)
3	Newspaper	3 (5%)	6 (10%)	-	-	51 (85%)
4	Leaflet/Folder	-	4 (6%)	-	-	60 (100%)
5	Magazine	-	-	-	-	60 (100%)
6	Internet	-	-	-	-	60 (100%)

## Conclusion

The present study concluded that most of potential sources of information for beneficiary tribal rice farmers were kisan sathis(100%), VAW (100%), AAOs (81.6%) as Government extension agency, where as progressive farmer (55%), NGOs (13.33%) as non-Governmental extension agencies. It was further observed that in case of mass media highest preference was given to TV(76.61%), and radio (33.33%). But by comparing both beneficiary and non-beneficiary farmer's percentage of contact in all the above cases were found to be higher in case of beneficiary farmers than non-beneficiary farmers.

## Recommendations

- 1- In the present modern era of agriculture, mass media is perceived as most prominent source of information but in the above study the level of contact with mass media in both beneficiary and non-beneficiary was very low. Therefore, it is required to work on this aspect for motivating the farmers for using more of mass media for improving agricultural status of the district in particular and the state of Odisha in general.
- 2- As most of the people of this district were illiterate more emphasis given on the development of “Farm Field School” to improve the knowledge level of farmers.

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# Constraint Analysis of Self Help Group in Koraput District of Odisha

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## ABSTRACT

*Women empowerment is the process of awareness and capacity building leading to greater involvement in participation, decision making power and control and transformative action. Self Help Groups are considered as one of the most significant tools in participatory approach for the economic as well as social, political empowerment of women. For women empowerment It is essential to critically examine the various problems faced by the SHGs and suggest different strategy to overcome the problem. The various constraints faced by the self help group members viz: personal constraints, bank-SHG cooperation and institutional constraints as they perceived. The study conducted in koraput one of the backward region in our country and most of the people are uneducated and poverty ridden it is important to various problems faced in SHG approach so that effective strategy to be suggest for overcome these constraints. Lack of training, financial constraints and lack of knowledge about the opportunities and lack of management skills were important the constraints faced by SHGs member of this study region.*

**Key words :** selfhelp group (SHGs), constraints, suggestion, Problems, empowerment

## Introduction

Women empowerment and gender sensitization are the key issues as women constitute almost half of the population in most of the countries. Self Help Groups (SHGs) act as a method, approach and policy and intervention the women social, economic and political challenges to a great extent. Due to the development of new policies, programmes, schemes and projects, the status of women has totally been changed .women empowerment is the process of awareness and capacity building leading to greater involvement in participation, decision making power and control and transformative action. Self Help Groups are considered as one of the most significant tools in participatory approach for the economic as well as social, political empowerment of women. The empowerment of women through SHGs would lead benefits not only to the individual women but also for the family and community as a whole through collective action, participation, discussion and overall the development of individual. The basis of the self help group exists prior to any intervention. The members are linked by a common bond like caste, sub-caste, blood, community,

place of origin or activity. The interveners, whether from the NGO, Bank, or Government must have the experience to identify these natural groups which are commonly called "affinity groups". Even when group members are engaged in a similar traditional activity, like basket weaving, the basis of the group's affinity is a common caste or origin.(Myrada,2018).

Self help group is a movement now since last two decade in India as various schemes viz , SEWA ,NABARD, DWCRA ,DRDA,NRLM,AJEEVIKA plays greater role for group formation as well as group implantation.

## Materials and methods

The study was conducted in Boriguma block of Koraput district of odisha state in India. 50 SHGs members were selected from 6 SHGs randomly. From SKS Finance Ltd 15 SHGs members while 35 respondents from another five SHGs were selected. Data were collected through well structured pretested interview schedule Data was analyzed and tabulated to draw the inferences. Descriptive statistics such as frequency, percentage, means and ranks were calculated

**Table 1 Information regarding selected SHGs and respondents**

Sl no.	Village	Name of SHGs	No. of Respondents
1	Kundraguda	SKS Finance Ltd	15
2		Jaleswari	5
3		Maa thakurani	5
4	New Anchala	Bhairavi	8
5		Sridevi	9
6		Jhadesawara	8
		<b>Total N =</b>	<b>50</b>

## Results and Discussion

### Personal constraints as perceived by the SHGs members

The prevailing model of women SHGs continue to face different constraints. Among the personal constraints, Lack of knowledge about local condition and opportunities ranked first while Family responsibility scored second rank. SHG s member felt that management skills need for their sustainability hence it rank third and lack education is next constraints as perceived by them. Lack of risk taking ability, Lack of discipline and Lack of experience are the others constraints ranked sixth, seventh and eight respectively.

### Bank-SHG Coordination constraints as perceived by the SHGs members

Bank SHG coordination is very much essential to enhance productivity and employment generation activity to be undertaken by the SHG MEMBERS .the table 3 shows the Bank-SHG Coordination constraints as perceived by the SHGs members. Over dependence on intermediations was most important constraints followed by Lack of recovery. Another two important constraints were poor perception about SHG by bank officials and Unfavorable attitude of bank officials respectively. Officials demand bribe was the least important constraints as they felt as shown in table 1.

**Table 1: Bank-SHG Coordination constraints as perceived by the SHGs members**

S.No.	Bank -SHG Coordination constraints (n=50)	Total scores	Mean value	Rank
a)	Poor perception about SHG by bank officials	95	1.9	III
b)	Delay in loan disbursement	83	1.66	V
c)	Unfavorable attitude of bank officials	87	1.74	IV
d)	Officials demand bribe	56	1.12	VI
e)	Lack of recovery	110	2.2	II
f)	Over dependence on intermediations	120	2.4	I

### Institutional constraints as perceived by the SHGs members

Institutional constraints like scarcity of labour, Lack of transport facility, distant location of market, Don't have supportive network, Low price products, Absence of marketing of SHG products were discussed with the

members. Among the institutional constraints Lack of technical training, financial constraints, Absence of marketing of SHG products were the most important problems. Non visit of SHG members to developed SHG, Low price products, Labour scarcity were ranked fourth, fifth and sixth respectively.

**Table 2: Institutional constraints as perceived by the SHGs members**

S.No.	Institutional constraints(n=50)	Total scores	Mean value	Rank
a)	Labour scarcity	119	2.38	VI
b)	Lack of transport facility	60	1.2	VIII
c)	Distant location of market	57	1.14	IX
d)	Don't have supportive network	67	1.34	VII
e)	Low price products	125	2.5	V
f)	Absence of marketing of SHG products	135	2.7	III
g)	Lack of technical training	150	3	I
h)	Financial constraints	145	2.9	II
i)	Non visit of SHG members to developed SHG	133	2.66	IV

### Suggestion to overcome the constraints

Sustenance of SHGs in tribal dominant region must need financial and market facilities as well communication facilities, financial support.,Skills oriented training to enhance management skills ,leadership skills and marketing skills as well as risk bearing skills, Capacity building is needed by arrangement of awareness camp, exposure visit, demonstration, farmers mela to enhanced

their skills and confidence. Creation of proper market facility to sale the product and effective value chain management should be developed to increase their productivity so that family responsibility may be shared by male counterpart.

### Conclusion and Recommendation

The major findings in the current study indicate that family responsibility, lack of technical training and over

dependence on intermediations were the most important constraints faced by the SHGs members in study area. The proper training, demonstration, and awareness camp should be organised by different development agencies to

overcome the problems. There is need to financial support or proper financial linkage with banks and economic institution to minimize the middlemen.

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## Utilization pattern of Kisan Credit Card among the small and marginal farmers in Rewa block of Rewa District (M.P.)

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### ABSTRACT

*The Kisan Credit Card scheme introduced in the year 1998 with the objective of fulfillment of agriculture the credit requirement of the farmers in a timely and hassle-free manner for raising agricultural production. Keeping the importance of KCC the present study was an attempt to assess utility of KCC as perceived by the farmers. To gain insight into the functioning of KCCs, the present study entitled "Utilization pattern of Kisan Credit Card (KCC) among the small and marginal farmers in Rewa block of Rewa District (M.P.)" was carried out with a sample of 140 beneficiaries of Kisan Credit Card (70 small & 70 marginal farmers). It may be concluded that among the selected indicators the mean utilization index of the indicator increase in income through Kisan Credit Card (70%) was highest Kisan Credit Card was highly utilized in increasing of agriculture and allied activities and in changing cropping pattern. On the contrary utilization of Kisan Credit Card was low in amount utilized as credit increase in extent saving and duration of utilizing credit. It was also observed that the higher percentage of the small and marginal farmers belonged to medium utilization of Kisan Credit Card.*

**Key words :** Kissan Credit Card

### Introduction

Agriculture is the most crucial sector of the country because the main policies of output growth, poverty alleviation, social justice and equity are best served in this sector. In modern farming, credit has become one of the crucial inputs. Thus, there is a need to increase the credit flow to agriculture, raise productive capacity of land and enhance the potential of water resources as well as its use efficiency for agricultural production. The Kisan Credit Card scheme introduced in the year 1998 with the objective of fulfillment of agriculture the credit requirement of the farmers in a timely and hassle-free manner for raising agricultural production. The scheme is being implemented in the entire country by the credit institutional bank involving Commercial Banks, Rural Regional banks and Co-operative bank and has received wide acceptability amongst bankers and farmers. With a view to minimize the procedures/ difficulties and to simplify the credit acquisition by small and marginal farmers. It was disbursed through KCC Scheme in our country. The Co-operative credit societies were, in the past and even now, the most important source of credit to the farmers. There has been tremendous increase in the bank branches in the rural areas. Government has adopted the policy of multi-agency approach in agricultural credit. Keeping the importance of KCC the present study was an attempt to assess utility of KCC as perceived by the farmers.

### Materials and methods:

The present study was conducted in the Rewa

district (M.P.), since the number of Kisan Credit Card holders is maximum in District Co-operative bank as compared to Commercial banks, the study was focused on Kisan Credit Card holders in jurisdiction of District Co-operative Bank only. Rewa District comprises nine blocks. Out of which Rewa block was selected on the basis of higher number of KCC holders. Presently there are 19 credit societies are working through District Co-operative Bank. Out of which 2 credit societies was selected on the basis of higher number of KCC holders. A list of KCC holders from the selected credit societies were prepared and 5 percent KCC holders 70 small and 70 marginal farmers was selected from both societies. The sample was consisted of 140 respondents.

### Result and Discussion

#### 1. Utilization of Kisan Credit Card as perceived by the small & marginal beneficiary farmers

##### A. Extent of utilization of Kisan Credit Card in terms of selected indicators as

##### perceived by the beneficiaries

An index was developed in the present study to assess the utilization pattern of Kisan Credit Card among small and marginal farmer. Selected indicators of Kisan Credit Card namely the extent of utilized amount as credit, duration of utilizing credit, operation of various agricultural allied activities, increase in agricultural produce through Kisan Credit Card, increase in saving through Kisan Credit Card, increase in income through Kisan Credit Card and Change in cropping pattern through

utilization of credit were incorporated in the index in consultation with the bank officers, economists and experts of J.N.K.V.V. On the basis of responses given by respondents against each indicator total score of each indicator was worked out. Mean Utilization Index of each indicator was find out and presented in Table 1.

Table 1 exhibits the extent of utilization of Kisan Credit Card among the respondents in related to selected

indicators of Kisan Credit Card utilization namely increase in agricultural produce through Kisan Credit Card, operation of various agricultural allied activities, duration of utilizing credit, increase in saving through Kisan Credit Card, increase in income through Kisan Credit Card, Change in cropping pattern through utilization of credit and the extent utilized amount as credit.

**Table 1 : Extent of utilization of Kisan Credit Card in terms of selected indicators as perceived by the beneficiaries**

S.No.	Indicators	Mean utilization index (%)	Rank
1.	Increase in agricultural produce through Kisan Credit Card	47	IV
2.	Operation of various agricultural allied activities	64	II
3.	Duration of utilizing credit	41	V
4.	Increase in saving through Kisan Credit Card	36	VI
5.	Increase in income through Kisan Credit Card	70	I
6.	Increase in net sown area	56	III
7.	The extent utilized amount as credit	34	VII

Table 1 reveals that among the selected indicators the mean utilization index of the indicator increase in income through Kisan Credit Card (70%) was highest followed by operation of various agricultural allied activities (64%), increase in net sown area through utilization of credit (56%), increase in agricultural produce through Kisan Credit Card (47%), duration of utilizing credit (41%), increase in saving through Kisan Credit Card (36%) and the extent utilized amount as credit (34%). It means the Kisan Credit Card was highly utilized in increasing of agriculture and allied activities and in changing cropping pattern. On the contrary utilization of Kisan Credit Card was low in amount utilized as credit increase in extent saving and duration of utilizing credit. The finding of Ahmed (2004), Agarwal et al (2016), Dhanabhakym and malavizhij (2012), Parwate et al (2012), Harpreet S. (2004), Ramana TV (2011) and Samantara S (2010) are in line with the present finding.

#### **A. utilization of Kisan Credit Card by the small and marginal farmers**

The mean utilization index of each respondent was also determined in the present study. The mean utilization index of small and marginal farmers was find out separately and presented in Table 2 and 3:

Table 2 show that out of 70 small farmers respondents. 48.57 percent of respondents showed medium utilization of Kisan Credit Card, 27.15 percent low utilization of Kisan Credit Card whereas only 24.28 percent indicated high utilization of Kisan Credit Card. (Fig. 2)

Table 3 show that out of 70 marginal farmers respondents 44.28 percent of respondents showed medium utilization of Kisan Credit Card, 34.28 percent had low utilization of Kisan Credit Card whereas only 21.42 percent indicated high utilization of Kisan Credit Card. Similar findings was reported by Verma A. (2016).

**Table 2: Distribution of the small farmers according to their utilization of Kisan Credit Card**

S.No.	Utilization of Kisan Credit Card	Number of small farmers	Percentage
1.	Low	19	27.15
2.	Medium	34	48.57
3.	High	17	24.28
	<b>Total</b>	<b>70</b>	<b>100</b>



**Table 3: Distribution of the marginal farmers according to their utilization of Kisan Credit Card**

S.No.	Utilization of Kisan Credit Card	Number of marginal farmers	Percentage
1.	Low	24	34.28
2.	Medium	31	44.28
3.	High	15	21.42
	<b>Total</b>	<b>70</b>	<b>100</b>

## 2. To analyze the relationship between dependent and independent variables

**Table 4: Correlation between profile of the respondents and their utilization pattern of Kisan Credit Card**

S. No.	Characteristics	'r' value
1.	Age	-0.0302ns
2.	Education	0.2645*
3.	Size of family	-0.01276ns
4.	Occupation	0.2645*
5.	Social participation	-0.01276ns
6.	Credit acquisition	0.2679*
7.	Annual income	0.2301 *
8.	Repayment of loan	0.2247*
9.	Contact with credit agency	0.2247*
10.	Source of information	0.2839 *
11.	Mass media exposure	0.3125*
12.	Risk orientation	0.2615*
13.	Economic motivation	0.2501 *
14.	Level of satisfaction	0.2324*

(Significant at 0.05 level of probability)

Table 4 depicts the 'r' value indicating the relationship between profile of the respondents with their utilization pattern of Kisan Credit Card. The characteristics namely education, occupation, credit acquisition, annual income, repayment of loan, contact with credit agency, source of information, mass media exposure, risk orientation, economic motivation and level of satisfaction had significant relationship with their utilization pattern of Kisan Credit Card at 5% level of significance. The result also depict that age, size of family and social participation of the respondents did not establish significant relationship with their utilization pattern of Kisan Credit Card. This finding are in line with the findings of Bista et al (2012), Bochalaya and Dhaka (2001), Surve et al (2006) and Vishvajeet et al (2014).

### Conclusions

It may be concluded that among the selected indicators the mean utilization index of the indicator

increase in income through Kisan Credit Card (70%) was highest. Kisan Credit Card was highly utilized in increasing of agriculture and allied activities and in changing cropping pattern. On the contrary utilization of Kisan Credit Card was low in amount utilized as credit increase in extent saving and duration of utilizing credit. It was also observed that the higher percentage of the small and marginal farmers belonged to medium utilization of Kisan Credit Card. As far as the relationship between profile of the respondents with their utilization pattern of Kisan Credit Card is concerned the characteristics namely education, occupation, credit acquisition, annual income, repayment of loan, contact with credit agency, source of information, mass media exposure, risk orientation, economic motivation and level of satisfaction had significant relationship with their utilization pattern of Kisan Credit Card at 5% level of significance.



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## Indigenous Technical Knowledge (ITK) of Pest and Disease Management by Tribal Farmers of Jharkhand

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### ABSTRACT

*Indigenous Technical Knowledge (ITK) is unique to a given culture of society. It is the information base for a society which facilitates communication and decision-making. Indigenous information systems are dynamic, and are continually influenced by internal creativity and experimentation as well as by contact with other external system. In the modern days of technological advancement, this knowledge is often forgotten or neglected in every field. Since only 25 percentages of the developed technologies are adopted by the farmers at the field level so 75 percentage still remains idle in the lab. In nut shell we can say that the farmers are still using some other methods beside these scientific methods in their farming operation .it means they found these methods as more reliable and cost effective. These are the methods which we call traditional or indigenous method.. In the modern days of technological advancement, this knowledge is often forgotten or neglected in every field. Understanding of ITK, their advantages and disadvantages, will help and further strengthen the existing knowledge of professionals in this field. Traditional or indigenous knowledge is gradually gaining more and more attention, after having often been rejected as a hindrance to development. The importance now being given to such ITK is for the facts that these emanate from the cultural context of the people concerned; and they evolve in close contact with specific environmental conditions and are based on traditional societies' intimate knowledge of their environment. These reasons imply that ITK is almost an essential condition for sustainable development. But due to the lack of its proper documentation this valuable assets is in threat. Also in the era of IPR and bio piracy its importance increases many fold. But it is recommended that the documentation of ITK should be included in the curricula of environment and sustainable development as a cross-cutting issue and development. In this backdrop the present work was conducted aiming to document the existing ITK in agriculture, attitude and extent of adoption of Indigenous Technical Knowledge by tribal farmers, the relationship between the selected profile characteristics and the attitude of ITK and extent of adoption and finally constraints in adoption of Indigenous Technical Knowledge and suggestions to overcome them. Indigenous Technical knowledge were found with paddy, horticultural crops, pulses, maize, wheat and groundnut crops etc. Majority of the tribal farmers were medium adopters of Indigenous Technical Knowledge in paddy, maize, groundnut, pulses, wheat, horticultural crops and weather forecasting followed by low and high adoption of ITK. Majority of the tribal farmers were medium adopters of ITK in paddy, maize, groundnut, pulses, wheat, horticultural crops and weather forecasting followed by low and high adoption of ITK.*

**Key words :** Indigenous knowledge

### Introduction

The term indigenous technical knowledge (ITK) refers to unique, traditional, local knowledge existing within and developed around specific conditions of women and men indigenous to particular geographic area. ITK is the information base for a society, which facilitates communication and decision making. Indigenous information system are dynamic and are constantly influenced by internal creativity and experimentation as well as by contact with external systems own lives.

### Indigenous Technical Knowledge System

By 2020, India will free for poverty, hunger and malnutrition and become environmentally save country through accelerated social and economic development by the harnessing the advance in science and blending them

with our indigenous knowledge, wisdom and unique social culture ethos

### In Jharkhand

Jharkhand state has 26.3 percentage tribal population. in scheduled tribal population Jharkhand occupies 5<sup>th</sup> position in all India as for the census 2001 with scheduled tribal population on 7,087,068 about 30 percentage tribals are living in Jharkhand who are adopting indigenous technical knowledge in different crops .

- This ITK is used probably for vegetable crops like brinjal, tomato, cabbage ,chillies etc. Farmers use to bury branches of Bhelwa tree (Semecarpus anacardium) to reduce disease infection and insect pest infestation.

- Farmers have developed low tunnel for vegetable nursery using Thethar plant (Ipomeareptans).
- Farmers use an equipment (which they had named as “chara dalne wala”) to sow seeds at proper spacing in nursery
- Impact of frost in potatoes- for maintaining the moisture of field by irrigation
- High Fog in potatoes field – we use to burn straws and waste material for smoke purpose ,so to maintain temperature around the potatoes field.
- For control of false smut in rice field-1) by crop rotation , 2) low use of nitrogen fertilizers.
- Use of Neem, turmeric , sindwar leaves for controlling of insects in storage of wheat rice grains for long time.
- Storage of potatoes for long period- mixing of milky soil (Dudhiya mitti) with potatoes.
- For controlling of beetle in vegetable field- farmers used tobacco leaves by soaking in water before 24 hrs after that, water is used for spraying in vegetable field.
- For controlling of aphids - farmers spray kerosene oil at morning time in the field.
- For controlling of pest in rice field – farmers use t-shaped karama branch beside crops.
- Control of rice hispa by parasi leaves- Parasi leaves are used to control the pests/insects of paddy, particularly rice hispa. Parasi leaf has strong bitter taste, which is toxic to the insects
- For controlling of gundhi bug in rice field- farmers used to burn tyre made of rubber by holding in their hands so that Gundhi (Leptocoris acuta) bugs gets attracted.
- Control of white ants/termites- through ploughing the fields with ploughs made of neem wood.

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