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The Maharashtra Journal of Extension Education has been renamed (since 2004) as ***Asian Journal of Extension Education*** *and the volume numbers of the Journal are continued...*

NAAS RATED

Asian Journal of Extension Education 2013

MAHARASHTRA SOCIETY OF EXTENSION EDUCATION
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Editorial

Maharashtra Society of Extension Education (MSEE) registered in 1982, has the foremost objective to publish the research journal. Accordingly, the society was publishing the journal entitled Maharashtra Journal of Extension Education. Since the year 2004 this journal has been renamed as Asian Journal of Extension Education.

The journal includes research articles form the researchers and extension workers in the field of extension education from various faculties of various institutes in the country. Extension education plays an important role not only in transfer of innovative technologies but also in developing appropriate methodology in the field of extension more suited for field application. The innovative research methods can be very well communicated for its application and use in further research by the extension fraternity. This can be achieved by publishing research articles.

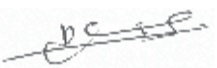
Asian Journal of Extension Education is a very humble attempt to provide platform towards this goal of networking with the all extension professionals who could kindle the minds of their peers and young scientists through their research articles.

I have immense pleasure to present this 31st issue of Asian Journal of Extension Education for the year 2013. The Journal has received an encouraging response from all corners of the country. We have made an effort to encompass the best articles for the issue. Thanks are due to all the authors who have contributed for this issue.

I extend sincere thanks to Dr. A. G. Sawant, Hon'ble President, Maharashtra Society of Extension Education, Dr. K.D. Kokate, Hon'ble DDG (Agril. Extn.) ICAR, New Delhi and Dr. R. R. Sinha, Vice President, MSEE for their constant inspiration, valuable guidance and concrete suggestions to maintain the quality of the journal.

I appreciate the tireless contribution of my colleagues and Co-editors Dr. V. J. Tarde, Dr. H. P. Sonawane and Mr. S.S. Neware for their endless efforts in publishing this issue.

I am confident that this issue of the Journal will be appreciated by the extension scientists, researchers, students and readers for its usefulness and contents. I solicit their suggestions for further enhancement of quality of the Journal.



V. S. Shirke
Editor

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CONTENTS

SWOC on Precision Farming as Perceived by Stakeholders

Padma S.R[1] and T. Rathakrishnan[2]

"Agriculture is the backbone of the Indian Economy" - ***said Mahatma Gandhi*** five decades ago. Even today, as we enter the new millennium, the situation is still the same, with almost the entire economy being sustained by agriculture, which is the mainstay of the villages. Not only the economy, but also every one of us looks up to agriculture for our sustenance too. Therefore, it is no surprise if agriculture gets the celebrity status in the name of Precision Farming (PF). The term "Precision Farming" (PF) means carefully tailoring the soil and crop management to fit the different conditions found in each field. It is defined as the application of technologies and principles to manage spatial and temporal variability associated with all aspects of agricultural production (Pierce and Nowak, 1999). It is also referred as "prescription farming", "site specific farming" or "variable rate technology." The Precision Farming was first experimented in the undivided Dharmapuri district (present Dharmapuri, Krishnagiri districts). More crops have been brought under Precision Farming in this zones with the intervention of possible stakeholders. In the other parts of Tamil Nadu Precision Farming is just at the nascent level and not yet extended to most of the crops. Considering the long period of coverage in the two zones with more crops, stakeholders contribution etc., the study has been conducted in the said districts. Almost a decade and half a decade have passed after the implementation of Precision Farming in Dharmapuri and Krishnagiri, Coimbatore and Erode districts respectively.

After the implementation of any new practice / technology prior to further spread, it is inevitable to study the **S**trengths, **W**eaknesses, **O**pportunities and **C**hallenges. **SWOC** analysis on Precision Farming technologies will also be performed considering its strengths and weaknesses that influence their attractiveness and also the stimulus to implement the technology. Its potential benefits were taken as possible opportunities, while challenges mean barriers in adopting the method and its potential negative consequences

Methodology

Among the seven agro climatic zones in Tamil Nadu, Northern and North western Zones were purposively selected for conducting the present study. Dharmapuri, Krishnagiri districts in the North western zone and Coimbatore and Erode districts in western zone were the study area. Stakeholders like extension personnel from the department of Agriculture, Horticulture, Marketing, Input agencies, Drip marketers, Agripreneurs like agri clinic personnel were involved in the Precision Farming process. From the stakeholders involving in Precision Farming, totally 50 sample @ 25 from each zone were taken for the study following simple random sampling procedure. A sample of 50 stakeholders involving in Precision Farming Process viz.,

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Researchers and Extension Personnel (24), Input Dealers (8), Drip Marketers (2), Produce Marketing Personnel (10), Agri clinics (6) have been taken for the study.

The sample of the present study was taken after receiving the list of precision farm practitioners from State Department of Agriculture, State Department of Horticulture and the existing precision farmers forum. After deleting the overlapping sample from the list, samples were arranged in the alphabetical order, and simple random sampling procedure was followed. Thus totally 200 samples were arrived from the four districts at the rate of 50 samples each. Initially, rating from the researchers, extension workers and experts involving in Precision Farming projects were obtained to fix the Relative Weightage Scores for each of the items under four sub- components *viz.,* Strengths, weakness, Opportunities and Challenges

They were asked to fix the relative weightage scores ranging from 1 to 10 for each of the item based on the importance of the particular item to be included in the interview schedule.

Then the collected responses were analyzed to arrive at Relative Weightage Mean Scores (RWMS) for each activity based on the following formula.

$$RWMS = \frac{\text{Relative Weightage Score for each item}}{\text{Total number of judges}}$$

Finally, 19 statements and 12 statements were selected based on the RMWS obtained, for the strengths and weakness sub-components. Likewise 16 and 12 statements were selected for opportunities and constraints respectively under the various sub heads viz., Economical, Social, Political and Technological aspects.

Findings

SWOC analysis is a tool which assists the stakeholders to evaluate the Strengths, Weaknesses, Opportunities and Challenges involved in any enterprise. This Part deals with the SWOC analysis on Precision Farming as perceived by Stakeholders which ultimately reflect on framing appropriate strategies in the process of Precision Farming. The same items selected by Relative Weightage Mean Score (RWMS) for assessing the SWOC on Precision Farming by the Precision farmers were taken for the stakeholders study also.

Strengths

Table 1 clearly displayed that Increased crop yield, Increased labour productivity, Improved product quality, Enhancing bulk procurement of inputs, Technical support from stakeholders, Sharing of information with the association members, Increases area of cultivation, Decreases human health risk, Surface and ground water conservation, Economized use of water, Minimized fertilizer loss, Change of cropping pattern, Easy disposal of produce Energy, water and soil conservation were considered as major strengths of adopting Precision Farming Technologies perceived by the 80 per cent to 90 per cent of the stakeholders , whereas 70 per cent to 80 per cent of the stakeholders perceived the rest of the statements as strengths. Under strengths the 19 statements were placed before the stakeholders. It is a proven fact that Precision Farming enhances the yield, productivity and increases the area under cultivation because of the high water use efficiency. The tie-up made with the markets enabled the adopters in the easy disposal of the produces without the

Table 1. Strengths of Precision Farming as perceived by Stakeholders

(n=50)

S.No	Statements	More		Moderate		Least	
		No.	Per cent	No.	Per cent	No.	Per cent
1	Increases crop yield	45	90.00	4	8.00	1	2.00
2	Increases labour productivity	40	80.00	8	16.00	2	4.00
3	Improved product quality	40	80.00	7	14.00	3	6.00
4	Effective and efficient pest management	35	70.00	11	22.00	4	8.00
5	Enhance bulk procurement of inputs	40	80.00	8	16.00	2	4.00
6	Technical support from stakeholders	42	84.00	5	10.00	3	6.00
7	Sharing of information with the association members	44	88.00	4	8.00	2	4.00
8	Increases area of cultivation	43	86.00	2	4.00	5	10.00
9	Decreases human health risk	38	76.00	8	16.00	4	8.00
10	Uniform water distribution	39	78.00	8	16.00	3	6.00
11	Surface and ground water conservation	42	84.00	5	10.00	3	6.00
12	Economized use of water	41	82.00	7	14.00	2	4.00
13	High economic efficiency	39	78.00	8	16.00	3	6.00
14	Minimized fertilizer loss	43	86.00	5	10.00	2	4.00
15	Change of cropping pattern	44	88.00	4	8.00	2	4.00
16	Easy disposal of produce	45	90.00	2	4.00	3	6.00
17	Gained skill in grading the produce	37	74.00	11	22.00	2	4.00
18	Energy, water and soil conservation	44	88.00	4	8.00	2	4.00
19	Greatest return on investment on each input.	39	78.00	8	16.00	3	6.00

involvement of middlemen. These type of arrangements from planning to market were taken care by the stakeholders themselves, which certainly envisaged them to place their perception on strengths of Precision Farming as explained. Hence there exists no difference in the perception of farmers and the stakeholders.

Weaknesses

It is to note that, nearly three-fourths of the sample perceived most of the items as “more” weakness and 10 to 20 per cent of the sample mentioned the weaknesses as moderate. While comparing this with responses of the Precision Farmers, only a meagre difference was observed especially in the items like, lack of technical know-how and requires quality water. As far as any new techniques of farming are concerned, the competency of the technocrats especially the stakeholders of SDA, SDH etc., is one of the most important requisites to work in the field situation. To fulfill this demand, skill based participatory training programmes are to be organised to equip with advanced techniques. It was observed under the sub component skill viz., implementation skill that some of the items were indicated as need improvement by the stakeholders and that could be the possible reason for such an outcome under weaknesses as perceived by the stakeholders. It is possible to tackle the other weaknesses by the drip marketers. In line with the study conducted by

Kavitha (1999) on drip irrigation, here also high initial investment cost was expressed by 74 per cent of the PF practisioners. Once the drip fertigation system is installed, it could be maintained for 3-5 years, depends on its quality and the management techniques by involving the stakeholders especially from drip firms. Most of the other weaknesses were concerned with the nature of soil, environment and quality of irrigation water.

Opportunities

Nearly 70 per cent 80 per cent of sample placed the items viz., Availability of subsidies, Increased prices of agricultural commodity, Resolves food security issues under more opportunity category, whereas the Provision of bank loan, Contributes to economic growth by increasing yields were expressed as opportunities by 68 per cent and 58 per cent of the sample respectively. It was observed that increased crop yield, increased area under cultivation and increased product quality were perceived as major strengths. On the other hand, resolves food security issues, approach to attain sustainable agriculture had perceived as opportunities. It is obvious that the strengths perceived would certainly influencing the observed items under opportunities. As strengths and opportunities are complimentary in nature, the un recognised strengths in the present situation may be explored as opportunities in the near future. Nearly an equal proportion placed their perception on more and moderate level financial support from government, which also varies with SWOC results from farmers. The state government has increased the subsidy to cent per cent for the installation of drip system. Because of that, the farmers anticipating such subsidy for water soluble fertilizers and other inputs. Contrary to this, during discussion, the stakeholders expressed that financial support/ subsidy given by Government may not be extended in future for any other inputs. They also added that while introducing the Precision Farming in an area, those farmers who are taking up the farming as a first time will be provided with cent per cent subsidy for drip installation as onetime benefit. This could be the reason for such an outcome. More free time, Attracting farm youth, Low migration rates were expressed as opportunities by nearly three-fourths of the sample whereas the rest of the items under Social sub component are projected by around 60 per cent of the sample. Likewise around 65 per cent of the stakeholders expressed the Improvising extension services, less pollution of underground water with fertilizer residues as technological opportunities. In a nutshell, the opportunities perceived by farmers varied with the stakeholders. Since the Precision farmers were experiencing better yield with economised use of water, optimal use of fertilizers, harvested quality produce, availing the guidance and suggestion from Precision Farmers Associations and thus by exploring the market avenues, disposing the quality farm produces in a appropriate time and also not worrying about health risks involved in conventional farming and thus by getting convinced and they realised farming as better experience. From this result, it could be informed that the farmers were with the visualisation and expectations that they will get financial and other supports of state government continuously in all dimensions. In fact in order to popularise the Precision Farming technologies and bring more area under this process, considering the limited availability of water and increase the productivity to meet the growing demands, the government has taken

such initiatives. Both the stakeholders and the farmers had perceived the opportunities favourably.

Challenges

About 80 per cent of the sample projected as High cost of water soluble fertilisers, Underdevelopment of market infrastructure, Unstableness of government policies were the challenges articulated by the stakeholders and thus reflected on challenges. The remaining items viz., Delayed realisation of the return on investment, price of viability PF tools for larger enterprises, Un skilfull labourers, Farmers expectations on future political changes, Weak awareness of farmers on advantages of the technology were the challenges disclosed by three-fourths of the stakeholders. In order to meet the demand for spare parts, Custom service centres may be established at block level. This centres will also attend the repairs and maintenance of farm machineries and tools. Identified potential rural youths, unemployed agricultural diploma holders may be trained on these areas and encouraged to open such centres. Ultimately this will curtail the migration of farm/rural youth. Also it helps for entrepreneurial development among the rural youth. It is obvious that the tie up with the market was well established in the Precision Farming areas with the support and guidance of stakeholders. However, the infrastructure for the marketing, yards for storing the produces, cold storage etc., were lacking. Also in the study it was indicated that to a certain extent, middle men were involved and huge investment initially made could not be realised in a single term or two, which also depends on the extent of area brought under Precision Farming. It is not assured of getting the support being given by the existing government will also be extended in the next government may be because of changes in policies and political situations. This was indicated that the long term benefits of the Precision Farming have not been felt by the farmers. This further acted as a cause for non-expansion of area under Precision Farming by an individual farmer and hindering the speedy spread of the Precision Farming in neighbouring district in the state.

Conclusion

Performing SWOC analysis involves the generation and recording of the strengths, weaknesses, opportunities, and challenges in relation to a particular task or objective. It is inevitable for the analysis to take account of internal resources and capabilities (strengths and weakness) and factors externally affecting the task (opportunities and threats). This study attempted to carry out SWOC analysis in all possible dimensions and clearly come out with maximum strengths and opportunities. It clearly indicates that, precision farming is undoubtedly relevant to Indian agriculture in the context of improving agricultural production and Stakeholders' income and minimizing environmental impact. Further efforts need to be taken to reduce the observed weaknesses by improving the stakeholders intervention constructively. The Challenges identified may not be persistent and it may get minimised or even nullified over a period of time. Technological and managerial up gradations of farm operations will definitely hold the youth in Agriculture and can help them to lead the decent living. Unless farming becomes both intellectually stimulating and economically rewarding, it will difficult to attract or retain rural youth in farming. (M.S. Swaminathan, 2001).

But, this may happen only when the way, in which farming is practiced to be changed. So, Precision farming, have to be concentrated to get rid of unproductive conventional farming and also route to marketing outlets in a smoother way. By reducing the migration of farm youth to urban and retain them in agriculture, it is un-complicated to attain double the yield and triple the income of the farmers.

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Extent of Adoption and its Influence on Impact Indicators of Sugarcane Production Technologies

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Sugarcane is the world's largest crop and is grown in over 110 countries. In 2009, an estimated 1,683 million metric tons were produced worldwide which amounts to 22.4% of the total world agricultural production by weight (FAO, 2009). India ranks second in cane area and sugar production after Brazil. The states of Uttar Pradesh, Maharashtra, Karnataka, Tamil Naidu and Andhra Pradesh together produce nearly 90 per cent of the cane and sugar in the country. Andhra Pradesh ranks fifth in sugar crop area of the country with a share of 4.83 per cent (Rao, I.V.Y.R. and Sunil, K.B.G. 2010). The average production of Andhra Pradesh is about 20.30 million tons contributing to 5.83 per cent of the total production of the country. In Andhra Pradesh, the major sugarcane growing districts in Telangana, coastal Andhra and Rayalaseema regions are Nizamabad, Visakhapatnam and Chittoor districts respectively. The significant contribution of researchers, extension functionaries and farming community plays pivotal role in achieving the above success. On one side, the researchers developed sustainable technologies to meet the production requirements of the farmers followed by effective dissemination of technologies by the extension functionaries so as to bring the technologies to the farmers for adoption. On the other side, the farming community successfully adopting those technologies so as to increase the productivity levels of sugarcane. The technologies starting from land preparation to post harvest of sugarcane like ridges and furrows, time of sowing, method of sowing, seed rate, varieties, water management, weed management, nutrient management, pest and disease management, harvesting and so on were developed to increase the production and productivity levels of sugarcane.The study was conducted to know the extent of adoption of technologies and its influence on the impact indicators viz. actual productivity, actual cost of cultivation and actual net income of the sugarcane farmers. The study was also probed on the vital technologies which contributed for differentiating the farmers in terms of impact indicators.

Methodology

Ex-post-facto research design was followed for the study. The investigation was carried out in Chittoor district of Rayalaseema region of Andhra Pradesh. Four mandals were selected in chittoor district purposively having highest area under sugarcane. From each mandal 3 villages were selected purposively. From each village, 10 sugarcane farmers were selected randomly thus making a total of 120 respondents for the study. The data were collected with the help of by personal interview method through structured interview schedule.

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Extent of adoption of different combinations of sugarcane production technologies

Thirty six technologies were screened by Agricultural Research Scientists and selected for the study. The extent of adoption of each sugarcane production technologies by the sugarcane farmers were analyzed by assessing the overall extent of adoption of each technology and also by categorizing the sugarcane farmers on the basis of their actual net income, as it is the determining factor for any economic endeavour. Based on the net income range, the respondents were categorized into 5 groups by following the class interval method. Under each net income category different combinations of technologies followed by the respondents in that category were analyzed in terms of percentage of adoption of sugarcane production technologies for each category.

$$\text{Percentage of adoption of sugarcane production technologies for each category} = \frac{\text{Sum of percentage of adoption of technologies of each category}}{\text{Number of technologies}} \times 100$$

The technologies were then analyzed category wise by following "Pareto analysis" so as to study the vital few and trivial many technologies for each category. Accordingly, the most significant technologies adopted in each category were identified in terms of its maximum percentage of adoption.

In each category the cumulative percentage of adoption has been calculated after sorting the technologies in the decreasing order of percent of adoption using Pareto principle. It identifies the vital few and trivial many (technologies). The technologies which contributed to approximately 50% of adoption have been identified.

Measurement of impact indicators

The actual values of impact indicators *viz.*, productivity, cost of cultivation and net income obtained and incurred during the past three years were collected from the farmers. The average of past three years were calculated and the same was considered as the actual productivity, cost of cultivation and net income of each of the respondents.

$$\text{Actual net income} = \frac{\text{Sum of the net income obtained for the past three years}}{3}$$

$$\text{Actual productivity} = \frac{\text{Sum of productivity obtained for the past three years}}{3}$$

$$\text{Actual cost of cultivation} = \frac{\text{Sum of cost of cultivation obtained for the past three years}}{3}$$

Findings

The results revealed that the technologies like Land preparation, Weed management (pre emergence), Wrapping and propping of canes and Earthing up were found to have hundred percent adoption by the sugarcane farmers. The technologies like Optimum time of planting (99.17%), Selection of planting material (98.33%), Varieties (96.67%), Harvesting (95.00%) Chemical control for pests (93.33%), Zinc Sulphate (91.67%), and Chemical control for diseases (90.00%) were found to have more than ninety percent of adoption.

The technologies like Ferrous Sulphate (88.33%), Water management (88.33%), Gap filling (85.83%), Crop rotation (81.67%), Weed management (Post emergence) (81.67%), Destruction of grasses on the bunds (78.33%), Fertilizer dosage (73.33%), Spacing (70.00%), Seed rate (69.17%), Intercropping (65.83%), and Destruction of infested parts of cane (54.17%) were found to be adopted by more than fifty percent of the farmers. The technologies like Manures (44.17%), Trash mulching (35.00%), Post harvest technology (38.33%), Bio fertilizers (27.50%), Sett treatment (22.50%), Pheromone traps (18.33%), Bio-control agent: Egg parasitoid (17.50%), Release of predators (16.67%), Planting of setts in 25 cm deep furrows (10.00%) were adopted by less than fifty percent of the farmers.

The technologies like Detrashing of the crop (9.17%), Stubble shaving (9.17%), Sterilization of harvesting knives (6.67%) Method of application of fertilizers (5.83%), Removal of water shoots (5.00%), were adopted by very meager percentage of the farmers. This indicates the direction for prioritization of extension activities towards need based and less adopted technologies by the sugarcane farmers.

Distribution of respondents based on actual values of impact indicators

It is evident from the table 1 that about half (47.50%) of the respondents with high productivity followed by medium (32.50%) and low (20.00%) productivity levels. In case of cost of cultivation majority (63.33%) of the sugarcane farmers incurring medium cost of cultivation followed by high (19.16%) and low (17.50%) cost of cultivation. The net profit wise distribution of the respondents was concerned, majority (62.50%) of the sugarcane farmers were getting medium net profit followed by low (19.16%) and high (18.33%) net profit. The above result clearly indicating that, the farmers were getting higher productivity and they could be able to get higher net profit, might be because of lower cost of cultivation. The existing land preparation, varieties, seed rate, fertilizer dosage, water management and some other practices might be decreasing their cost of cultivation which in turn leads to high net profit.

Impact indicators under different combinations of technologies as followed by the sugarcane farmers

Farmers were classified into 5 categories on the basis of their net income by following class interval method and presented in table.3

The farmers with net income of Rs. 85000 and above were classified under category I. The percentage of adoption of sugarcane production technologies by the respondents in this category was 88.27 per cent and nine farmers were fallen under this category. The productivity and cost

Table 1: Distribution of respondents based on actual values of impact indicators

(n=120)

Impact Indicators	Productivity Tons/		Cost of cultivation (Rs.)		Net profit (Rs.)	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Low	25	20.83	23	19.17	15	12.50
Medium	71	59.17	78	65.00	82	68.33
high	24	20.00	19	15.83	23	19.17
Total	**120**	**100**	**120**	**100**	**120**	**100**
	Mean:42.28 S.D.:35.685		Mean:32389.177 S.D.: 28396.083		Mean:49908.506 S.D.:37914.226	

cultivation ranges of this category were 53.66-60.00 ton/acre and Rs.22000 – Rs.32356.33 respectively.

The farmers with net income of Rs.70000 – Rs.84999 were classified under category II. The percentage of adoption of sugarcane production technologies by the respondents in this category was 81.20 per cent and thirteen farmers were fallen under this category. The productivity and cost cultivation ranges of this category were 51.00-56.66 ton/acre and Rs.23988 –Rs.34005 respectively. The farmers with net income of Rs.55000 – Rs.69999 were classified under category III. The percentage of adoption of sugarcane production technologies by the respondents in this category was 69.44 per cent and eighteen farmers were fallen under this category. The productivity and cost cultivation ranges of this category were 45.00-52.00 ton/acre and Rs.31476.33 –Rs.34887 respectively.

The farmers with net income of Rs.40000 – Rs.54999 were classified under category IV. The percentage of adoption of sugarcane production technologies by the respondents in this category was 55.90 per cent and fifty six farmers were fallen under this category. The productivity and cost cultivation ranges of this category were 35.00-44.66 ton/acre and Rs.29986 – Rs.37000.55 respectively. The farmers with net income of Rs.39999 and below were classified under category V. The percentage of adoption of sugarcane production technologies by the respondents in this category was 41.44 per cent and twenty four farmers were fallen under this category. The productivity and cost cultivation ranges of this category were 30.00-34.66 ton/acre and Rs. 26988.5 – Rs.37000.66 respectively.

These results facilitate in identification of suitable combination for better impact of sugarcane cultivation. The technologies which were relatively complex and had low observability were found to be not adopted by the majority of sugarcane farmers. This might be because of lack of awareness and knowledge among the farmers due to their less exposure with the extension personnel and mass media. All the technologies one way or the other

contributing for the productivity but the decisions made by the farmers in terms of its relative economic gain would impress the farmers for its adoption. The table also reveals that the farmers under different combination of technologies being adopted in sugarcane production. Farmers with education, high scientific orientation, management orientation, achievement motivation, innovativeness and other variables might be contributing for adoption of technologies and perceiving the impact of sugarcane production technologies as better and leading to continued adoption of technologies.

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Diversification and Horizontal Spread of Technology for Rural Livelihood and Food Security of Small and Marginal Farmers

Vinod Gupta, P. K. Rai, L. K. Sharma and Rakesh Nanda

Diversification as defined in its simplest form 'diversification reflects a change in business activities based on the flexible and differentiated response to changing opportunities created by new production technology or markets signals". More specifically, we draw from Pingali and Rosegrant, (1995) to define diversification as "change in product (or enterprise) choice and input use decisions based on market forces and the principles of profit maximization." At the farm level, diversification will represent a change in the underlying characteristics of the farm system such that farm practices and products are more aligned with the social, environmental, and economic contexts, as well as the constraints and opportunities that exist. At the community level, diversification implies establishing a dynamic optimal mixture of farm production alternatives capitalizing on between-farm heterogeneity in terms of resource availability and qualities.

India has 16.8 per cent of world population, 4.2 per cent world's water resources and 2.3 per cent global land (ICAR, 2006). The advocates of diversification need to notice that farmers, specially the small landholders, cannot take risk associated with the profitability of an alternate cropping system. Results of diversification so far are unimpressive (Rangi, 2004), Ali and Abedullah (2002) and Pingali (2004). The jammu is a district of state of Jammu and Kshmir (J&K) in India. It is located between 74 degree 24' and 75 degree 18', East longitude and 32 degree 50' and 33 degree 30' north latitude and has an average elevation of 327 m. June is the hottest month with average highs of 40.6 °C (105.1 °F), while January is the coldest month with average lows reaching 7 °C (45 °F) , with extreme summer highs reaching 46 °C (115 °F), and temperatures in the winter months occasionally falling below freezing. The average annual rainfall is 42 inches with the bulk of rainfall in the months from June to September. The average land holding in District Jammu is 0.83 ha and majority of it is fragmented and unirrigated, therefore the crop production is not so profitable to the farmers of district Jammu.

Like other states of India, J&K state is also having KVKs at district level with a uniform mandate of working. The KVK Jammu imparts trainings to farmers, in service extension personnel and other mandatory activities. The KVK Jammu have developed and adopted various innovative approaches for dissemination of technologies like Ex servicemen based dissemination of technology and horizontal spread of technology by farmer to farmer method of technology dissemination. KVK trainings and farmer to farmer approach can play a very motivating role for the popularization and adoption of diversified farming. So the present study was

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conducted with the objective of studying the effectiveness of farmer to farmer approach and to study the increase in income of the farmers who have diversified their farming.

The village *Datrayal* is located in Jammu. The area falls under subtropical plain region and about 85 per cent area comes under irrigated system. The main sources of irrigation are canal and tube well. They small farmers of the village have understood that they can sustain themselves only, if, they diversify their cropping system and that was the major reason that they were motivated to grow vegetables, flowers, mushroom and dairy management. The KVK Jammu has identified that approach of horizontal spread of technology through its resource farmers is feasible in the area. In this context, this KVK selected few farmers for intensive training and used that trained farmers as para technicians to train the other fellow farmers of the area.

After adopting this technology farmers of that area are adopted diversifying farming like mushroom cultivation as for income generating activity (got Rs. Up to 175000.00 in year 2008-09 from 20 units), Floriculture (got profit of Rs. 89000.00 in year 2008-09 from 1 ha area), vegetable cultivation as lucrative enterprise and got net profit up to Rs. 59000.00 from one hectare area and also dairy farming. KVK helped the farmers to form a group called as "Sanjeevni Farmers Club". Under the name of this farmer's club members of the club getting facilities like linkages with agriculture agencies, loaning, exposure visits, and marketing of their produce. Horizontal spread of technology is proved to be an important extension tool for bringing most of the farmers on a single platform for taking agriculture as a commercial venture.

Methodology

The study was conducted in Datrayal village of district Jammu. KVK has adopted this village and started providing trainings and conducting demonstrations to diversify their existing traditional rice-wheat cropping system. A systematic approach was adopted by KVK to develop few para technicians in the village. The KVK further used the services of these trained people to motivate and train other people of the village. The details of the approach along with profile of the village are mentioned below:

Details of village Datryal

The village Datrayal is located in Jammu. It is about 14 KM away from district Head Quarter. It is well connected with roads but frequency of general bus service is very less. The area falls under subtropical plain region. The total population of village is approximately 1500 and about 450 farm families' stay in the village. The schedule caste and schedule tribes (classified under Indian schedule) form the major proportion of the village population. The major occupation of the village is farming.

Farmer's Practices before Intervention

Before intervention of KVK, Jammu the farmers of the village Datrayal were mostly concentrated on the traditional cropping pattern of Rice –Wheat and few vegetables for home consumption. Being a resident of irrigated area they were not aware of the potential of vegetables and floriculture as an enterprise. KVK Jammu has intervened in 2006 and shown them the potential of vegetable cultivation and farmers were provided desired training in improved vegetable cultivation. Similarly, they were also trained about mushroom cultivation

and floriculture especially marigold and gladiolus. Farmers were also given proper orientation about market and marketing their produce in Jammu and other nearest markets.

Technical Intervention by KVK

The prioritized problems of that area were thoroughly discussed by conducting group meeting with the active involvement of KVK Scientists and Innovative farmers of this area and keeping in view the past experience of some of the innovative farmers and recommendations of the scientists, it was decided to diversify from Rice-wheat cropping system to floriculture, vegetable production, mushroom cultivation which gives good returns as compared to only cereal crops. For this, KVK Jammu organized different training programmes for these farmers at KVK's complex and at farmer's field beside this, KVK laid down different trials and demonstrations at Farmers Field, which motivated and trained the farmers to grow vegetable (Cauliflower, Cabbage, Peas) commercially along with Rice & Wheat, Commercial cultivation of Flowers, Start entrepreneurships like mushroom cultivation, vermicomposting, dairy/poultry farming and bee-keeping

Adopted practices

In 2007, 23 farmers of the village were motivated and they have started growing vegetables like Cauliflower and Cabbage, Commercial cultivation of marigold, For raising their income and reducing the risk they adopted enterprises like mushroom cultivation, dairy farming and vermicomposting. Initially farmers were motivated by organizing farmer's trainings /awareness camps to raise their farm income. Demonstration on different crops and enterprises was conducted by KVK in the groups. In the first year, farmers were reluctant to adopt this intervention but innovative FIG's leaders Sh. Rajesh Sharma, Sh. Pardeep Kumar and Sh. Jarasandh helped in motivation & adoption of this intervention. In this way the farmers could get additional income of 50000-60000/ha. During the crop period, exposure visits of other areas were also conducted.

Horizontal spread of Technology

The KVK has limited resources and manpower so it cannot reach directly to the each and every farmer of the district and cannot have close contact at all times. The KVK Jammu has conceived the idea of horizontal spread of technology through its resource farmers. In this context this KVK selected farmers for intensive training and selected few for further training to fellow farmers. Keeping in view above mentioned KVK trained farmers used as resource persons for mushroom cultivation in this area. Initially Sh. Rajesh Sharma, Sh. Pardeep Kumar and Sh. Jarasandh along with few other farmers were trained extensively in mushroom cultivation, marigold, cabbage and cauliflower. Later on they were used as para technicians to train other farmers of the area. The data pertaining to each of the three para technicians and the 20 farmers further trained by these farmers/ para technicians was collected. The data was analysed and presented by using frequency and percentage method.

Findings

A sustained economic growth, rising per capita income and growing urbanization are ostensibly causing a shift in the consumption patterns in

favor of high-value food commodities like fruits, vegetables, dairy, poultry, meat and fish products from staple food such as rice, wheat and coarse cereals. The demand for and supply of these commodities have grown much faster than those of food grains (Kumar *et al.* 2003; Joshi *et al*. 2004). The share of these commodities in the total expenditure on food increased from 34 percent in 1983 to 44 percent in 1999-2000 in the rural areas, and from 55 to 63 percent in the urban areas (Kumar and Mruthyunjaya 2002). And, this change is not confined to the higher income group of the Indian society only but is visible in the lower income or 'below poverty line' segment also. Such a shift in consumption patterns in favor of high-value food commodities even among the poorest strata of the India society depicts an on-going process of transformation that is leading toward a 'silent revolution' of agricultural diversification.

The northern region in India has more specialized in rice and wheat crops. The favorable government pricing policies, assured procurement, high-yielding technologies, and irrigation development have encouraged farmers to allocate more area in favor of these crops. Rice and wheat have replaced coarse cereals and pulses in this region and it is diversifying only marginally towards non-cereal commodities. With the availability of short-duration black gram, green gram and pigeon pea, pulses had started regaining area in this region (Joshi *et al*. 2000). Other important crops of the region were sugarcane, vegetables and fruits. There are reports, however, that extensive cultivation of rice and sugarcane was causing negative externalities related to soil and water resources. The soil fertility with respect to macro- and micronutrients was declining, and the water resources were depleting. These negative externalities have adversely affected the total factor productivity of rice-wheat based cropping system in this region (Kumar *et al*. 1998). It has potential for cultivating a variety of fruits and vegetables, but its exploitation depends on developing appropriate infrastructure with suitable linkages between production and consumption.

1. Net profits from diversified enterprises of the farmers of village datrayal in the year 2007-08 and 2008-09

In the year 2007-08, the farmer and para technician trained by KVK Jammu Mr. Rajesh Sharma was getting net profit of Rs 54000/- from vegetable cultivation, Rs 55000/- from marigold cultivation, Rs 27000/- from rice-wheat cropping system and Rs 100800/- from mushroom cultivation (14 quintal unit). If we observe the trends in 2008-09 the area under vegetable cultivation was increased from 20 kanals to 22 kanals (1 hectare= 20 kanals), under marigold cultivation from 18 to 20 kanals and mushroom unit from 14 to 20 quintals. But in rice wheat cropping system the area was decreased from 10 kanals in 2007-08 to 6 kanals in 2008-09. Similarly, the total net profit which was Rs 236800/- in 2007-08 enhanced to Rs 339500/- in 2008-09. The data of Mr. Rajesh Sharma indicated that by diversifying and switching to commercial crops his net profit was increased manifolds and that is motivating him to diversify his crop system further to get more income from farming.

Another farmer and para technician Mr. Pardeep Kumar is having only 18 kanals of area had earned a net profit of Rs 92800/- in 2007-08 and Rs 105000/- in the year 2008-09 by cultivating same area of land. In 2007-08 he cultivated 4 kanals of land for rice wheat system and earned

Rs 10800/- only but in 2008-09 he did not spare land for rice wheat cultivation instead, increased from 10 to 12 kanals under vegetable cultivation, from 4 to 6 kanals under marigold cultivation. Similar trends in increase in net profits of Mr. Pradeep kumar in 2008-09. It was evident in the year 2007-08 that the farmer Yash pal was getting a net profit of Rs 11000/- from 4 kanals of land under vegetable cultivation, Rs 7000/- from 2 kanals of land under marigold cultivation, Rs 13500/- from 5 kanals of land under rice wheat system and Rs 62000/- from 8 quintal unit from mushroom cultivation. The data indicated that in 2008-09 the area under vegetable cultivation was increased to 5 kanals, under marigold cultivation increased to 4 kanals and under mushroom cultivation unit was increased to 10 quintals. But the area under rice wheat system decreased from 5 kanals in 2007-08 to 2 kanals in 2008-09. By doing this his net profit was increased from Rs 93500/- to Rs 122100/- in 2008-09. Almost similar trends for remaining twenty famers and their net profits were increased when they have switched from rice wheat cropping system to other diversified systems such as vegetable cultivation, marigold cultivation and enterprising activities like mushroom cultivation. Being small farmers in the area being totally dependent upon rice wheat system now are motivated and are ready para technicians. The intervention of KVK Jammu has achieved significant development by increasing their net profits.

2. Comparison of Rice-wheat system before the adoption of diversified farming in 2006-07 with diversified farming in 2007-08 and 2008-09

The increase in profits from same area in successive years 2006-07, 2007-08 and 2008-09. In the year 2006-07 the farmers of the datrayal village were practicing only traditional rice –wheat cropping system before the intervention of KVK Jammu. In 2006-07 the farmers were trained in commercial crops like okra, brinjal, cauliflower, cabbage, marigold cultivation and mushroom cultivation and the farmers started cultivating these crops. The results have shown that Sh Rajesh Sharma who has 48 kanals of land had earned Rs 129600/- in 2006-07 from traditional system but due to diversification his net profits were increased to Rs 136000/- in 2007-08 and Rs 164500/- in 2008-09. Similarly, Pradeep Kumar whose profit was Rs 48,600/- in 2006-07 from rice wheat system has increased to Rs 60,000/- in 2008-09 by diversifying his cropping pattern.

Similarly from other farmers same trends and equations were observed and their net profits have increased by diversifying their cropping pattern.

3. Increase in percentage of their net profits in 2007-08 and 2008-09 in comparison to 2006-07

There is an increasing trend in the net profits of the farmers as compared to 2006-07. The net profit further increased in 2008-09. The results of the farmer Rajesh Sharma shown that there was only 5 percent increase in net profit in 2007-08, but in 2008-09 the profit percentage rose to 27 percent. Similarly if we observe the margins of Farmer Jarasand, his net profit was increased from 17 per cent in 2007-08 to 40 percent in 2008-09. Similar trends were observed in majority of the farmers except in three cases of Madan Lal, Ram Lal and Parbesh kumar whose profits were decreased as compared to 2007-08. This may be due to climatic variabilities and poor management of their fields. The figures indicated in percentages have clearly spelled

that efforts of KVK Jammu were tremendous in increasing their net profits as evident

Conclusion

Small/ marginal farmers sustain themselves if they diversify their cropping pattern and that was the major reason that they were motivated to grow more of vegetables, flowers, mushroom and dairy management apart from their traditional rice –wheat system. This diversification include biodiversity-based clean and safe production systems, not only produce agricultural products with food safety standards, but also add value to processed food that has social and cultural value and horizontal spread of technology played a big role regarding extension of technologies and their adoption at end level.

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Extent of Adoption of Sprinkler System of Irrigation by the Farmers in the Jhunjhunu District of Rajasthan

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Through sprinkler irrigation technique light application of water can be made efficiently on the seedlings and young plants, soluble fertilizers, herbicides and fungicides can be applied through irrigation water economically and with little extra equipment. Sprinkler method ensures and high degree of water control and enables judicious use of even small water flow on undulated and shallow soils. It saves land from channels and ridges and overall irrigation efficiency is 80-82% as compared to 30-50% in surface irrigation (Gautam, 1999). Sprinkler irrigation can also be used to protect the crops against frost and high temperature, which reduces the quality and quantity of harvest, labour costs also reduce from 1/3 to 1/4th as compared to surface method of irrigation.

Several available studies on adoption of sprinkler system of irrigation separately addressed this issue. The studies by Sharma (1989), Soniz Kherde (1980) and Singh (1987), Yadav (1993), Saha (2000), Yadav (1997) revealed that knowledge, caste, education, size of land holding, soil at participation, source of information and farm power are instrumental in the adoption of SIS.

Methodology

The present study was conducted in purposively selected Chirawa and Jhunjhunu Panchayat Samiti of Jhunjhunu Distt. of Rajasthan. Four gram panchayat having maximum No. of sprinkler irrigation sets has been selected from these two panchayat samities for selection of respondents 80 adopters and 80 non adopters were selected and thus total 180 respondents were selected.

Table 1 : Selected villages-wise distribution ofthe respondents

S.No.	Name of the village	Total holders (Adopter)	Total non adopter	Selected adopter	Selected non adopter
	(A)Panchayat Samiti Chirawa				
1.	Narar	45	612	32	36
2.	Devram	317	402	26	23
	(B)Panchayat Samiti Jhunjhunu				
3.	Bakara	185	212	14	13
4.	Bharu	105	138	8	8
	Total	**1012**	**1364**	**80**	**80**

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Measurement of adoption

The extent of adoption of sprinkler system of irrigation was measured by means of adoption index, developed by M.R. Jat (1991). As the purpose was to find out the adoption level of the farmers, their procedure was followed. Nine practices were selected for the study of extent of adoption.

The proportion of each of the nine parameters (actual/ recommended) were calculated and multiplied by the corresponding weight. Then their values of all nine items were summed and divided by 31.The total number of weights.The resulting value was multiplied by 100 indicate the percentage of the extent of adoption of the parameter for sprinkler system of irrigation

$$\text{Adoption index of sprinkler system of irrigation} = \frac{\text{Total score}}{\text{Total weightage}} \times 100$$

A well structured and pretested personal interview schedule was used to collect the data. Data were collected by the investigator through personal interview technique. Therefore, data were analysed by using appropriate statistical tools.

Findings

In the present study different categories of farmers were identified according to their level of adoption and in this way respondents were categorized into these groups.

Table 2 : distribution of the farmers under different adoption categories of sprinkler system of irrigation

Sr. No.	Adoption Categories	Percentage	Rank
1.	Low adopters (Score below 151.42)	23.00	II
2.	Medium adopters (Score from 151.42 to 229.16)	62.00	I
3.	High adopters (Score above 229.16)	15.00	III

X = 190.29 = 38.87

A close look of Table-2 explains that as a whole about 62.00% of the farmers were fond to be medium adopters. While 23.00% were low adopters and only 15.00% of the respondents were high adopters. Further more, the intent of adoption of sprinkler irrigation system was analysed separately. The collective importance of all the nine practices was high lighted by ranking them in increasing order on the basis of their percentage of adoption.

Table 3 : Extent of adoption of sprinkler system of irrigation by the farmers

Sr. No.	Parameters	Extent of adoption in percentage	Rank
1.	Area under sprinkler system of irrigation	62.10	IX
2.	Water pressure used(type of sprinkler / water pressure)	90.20	III
3.	Distance between two nozzles(range of sprinkler / distance in meters)	96.30	I
4.	Depth of water applied for each irrigation (soil / depth in mm)	70.00	VIII
5.	Irrigation intervals(type of sprinkler / days)	74.00	VII
6.	Height of the riser (type of crop / hight meter)	95.05	II
7.	Number of sprinkler / hectare	85.00	V
8.	Diameter of coverage by each nozzle	76.00	VI
9.	Time of irrigation in one setting	88.00	IV

It was apparent from the data presented in Table -3 that overall intent of adoption of sprinkler irrigation system of the respondents was 81.9%. The adoption level of each of the nine parameters of sprinkler irrigation system was also measured. Adoption of distance between nozzles was 96.30% and ranked first second rank was accorded to height of the riser as it was adopted to the extent of 95.05% followed by water pressure (90-20%) number of sprinkler (85.00%) diameter of coverage by each nozzle (76.0)%), Irrigation intervals (74.0%) depth of water applied for each irrigation (70.0%) area under sprinkler system of irrigation (62.10%) and ranked III, IV, V, VI, VII, VIII & IXth respectively. Hence it may be inferred from the above results that the farmers were found very conscious about distance between nozzles they rated it as the most important parameter among all the nine important parameters of sprinkler irrigation. While the area under sprinkler system of irrigation was regarded as the least important component of sprinkler irrigation system.

Above results shows that still there was gap between what was recommended and adopted by the farmers. The probable reasons of this might be that while interviewing with the respondents it was reported that about half of them were facing the problem of non-availability of technical guidance. Similarly about 40% of the respondents have also reported that proper adoption of the sprinkler irrigation system require high tech. competence which is very difficult for an average farmer. These might have been the reasons about the findings. The findings of the study were in line with the findings of Sharma (1989), Singh and Sharma (1990) and Jat (1991) who reported that the majority of the respondents were medium adopters. About the extent of adoption of individual parameters of sprinkler irrigation system, it was noted that distance between nozzles, height of raiser, water pressure, diameter of coverage by each nozzle, irrigation intervals, depth of water applied for each irrigation. Area under sprinkler system of irrigation was adoption to the extent of 96.30, 95.50, 90.20, 22.00, 85.00, 76.00, 74.00, 70.00, and 62.20 percent, respectively. For less extent of adoption of different new tech. factors like higher cost, lack of money, lack of knowledge, high initial investment were responsible.

Conclusion

Study revealed that adoption of sprinkler system of irrigation technology is medium level means majority of respondents (62.0%) were medium adopters of sprinkler irrigation system and adoption level of the farmers was found to be positively and significantly associated with the knowledge, caste, education, size of land holding, source of information and farm power while negatively and non significantly associated with the social participation of the respondents. Various measures like training of the farmers, strong contact with subsidy procedure, regular electricity supply. Necessary training may prove significant for improving adoption.

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A Study on Opinion of Women towards Rajasthan Mission on Livelihoods Programme

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Women in India play a major role in shaping country's economy through their active participation in various income generating activities. They are working in different organized and unorganized sectors of economy and participating in various agro based and non agro based enterprises. But unfortunately their role is neither accurately quantified and nor correctly recognized. Knowing that important role of women in economic sector, the concern is to engage women in gainful employment looking at the important role being played by women in the economic sector various government and non government organizations are playing pivotal role to bring about economic empowerment among women through entrepreneurship development programme. The Rajasthan Mission on Livelihoods program is one of them to create a large number of livelihood opportunities. The present study has been planned with the objective to study opinion and expectations of women towards Rajasthan Mission on Livelihoods (RMoL) programme.

Methodology

Directorate of Extension Education (DEE), MPUAT, Udaipur is one of the organization implementing Rajasthan Mission on Livelihoods activities in the Udaipur district. Training programme organized for women participants by Directorate of Extension Education MPUAT, Udaipur on Cutting and Tailoring, Embroidery and Needle work were selected purposely. The total sample of the study comprised of 37 respondents of which 17 respondents from cutting and tailoring training and 20 respondents from embroidery and needle work training. Interview technique was used for data collection. Frequency and percentages were used for analysis of data.

Findings

1. Training on Cutting and Tailoring

Reasons for attending Cutting and Tailoring training programme

Perusal depicts that more than half of the respondents (52.94%) had attended training to increase their family income. They expressed that cost of living is increasing day by day and income earned by their husband alone was not sufficient to fulfill the family requirements. Hence, they felt the need to increase their family income. Similarly 47.05 per cent respondents reported that training could help them to learn new things. Since stitching as an enterprise that could be done by women alone at home in free hours. They can start it as an income augmentation activity and become independent. Desire to establish an enterprise has emerged as an important factor contributing to participation in

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training programme as reported by 35.29 per cent trainees. The participation of women in the training programme due to their own interest was reported by nearly one fourth of the respondents (23.52) respondents. Another reason to attend training programme for improvement in their existing skill was expressed by 17.64 per cent respondents. Utilization of free time and advice by friends and neighbours were reported by 11.76 per cent respondents. A few women (5.88%) were motivated to attend training after seeing other successful women entrepreneurs.

Opinion of respondents towards different aspects of Cutting and Tailoring training programme

Opinion of the respondents was studied in ten different aspects i.e. training time, duration, material, place, methods, content, practical orientation, technical guidance, financial assistance and marketing facilities. It was encouraging to note that all the respondents of Cutting and Tailoring training were satisfied with training time, place, methods and content. Training venue was comfortable with all physical facilities which helped participants to learn effectively, Technical guidance provided by trainers during the training programme was useful and effective as reported by 88.23 per cent trainees. With regard to duration and practical orientation of training programme majority of the respondents (76.47%) were satisfied however, 23.52 per cent were not fully satisfied as they were of the view that since stitching is skill oriented activity, hence in order to develop full efficiency one month training is not enough thus it should be of 2 months duration.Regarding marketing facilities provided by training institutions all respondents (100%) reported that they were not satisfied. They expressed that linkage and contract initiatives should be incorporated during training for establishment of the enterprise.

Table 1 : Opinion of respondents towards different aspects of Cutting and Tailoring training

N=17*

S.No.	Training aspects	Satisfied f (%)	Some what satisfied f (%)	Not satisfied f (%)
A	**Training**			
1	Training time	17(100)	-	-
2	Training duration	10(58.82)	-	7 (41.17)
3	Training Materials	12(70.58)	5(29.4)	-
4	Training Place	17(100)	-	-
5	Training Methods	17(100)	-	-
6	Training Content	17(100)	-	-
7	Practical orientation	13(76.47)	4(23.52)	-
B	**Technical Guidance**	15(88.23)	2(11.76)	-
C	**Financial assistance**	11(64.70)	6(35.29)	-
D	**Marketing Facilities**	-	-	17(100)

*Multiple responses

Perceived benefits of Cutting and Tailoring training

Perusal depicts that Majority of the respondents (88.23%) reported that training increased their knowledge about stitching activity. Nearly three fourth of the respondents (76.47%) reported that they have learned drafting and stitching of new garments viz. jhabla, frock, lahnga, petticot, salwar suit, gown, blouse and rajputi dress during training programme. Nearly 60 per cent respondents reported that they were not only able to draft and stitch garments but also acquired efficiency in performing the tasks. Training programme helped women participants in establishing their enterprise as reported by 47.05 per cent respondents. Some of the respondents (11.76%) were of the view that training was beneficial to clarify doubts related to the enterprise.

2. Embroidery and Needle work training

Reasons for attending Embroidery and Needle work training

Visualization of Table 4 indicates that nearly three fourth of the respondents attended training to improve their skills in Embroidery and Needle work. A good number of the respondents (70%) mentioned that training can be a better way to utilize leisure time. It was also found that 65 per cent women had attended training due to their own interest. Establishment of their own enterprise and increasing their family income were the other reasons expressed by half of the respondents (50%). Further, learning of new things and motivation by the friends and nieghbours were other reasons expressed by 45 and 35 percent respondents, respectively.

Opinion of respondents towards different aspects of Embroidery and Needle work training programme

Table 5 indicates opinion of the participants regarding different aspects of the Embroidery and Needle work training programme. During investigation it was observed that training duration and marketing facilities were only the areas in which dissatisfaction was expressed by 30- 35 per cent participants.

With respect to technical guidance provided during training programme three fourth of the respondents were satisfied, whereas one fourth of the respondents were some what satisfied and stated that most of the time trainer focused only on selected participants and information about the machine embroidery was totally nil.

In case of financial assistance provided to the participants eighty five per cent of the women were satisfied and 15 percent respondents were satisfied to some extent only. During discussion with the women it was found that they had not enough amount of money for initial investment of enterprise viz. procuring raw materials, advertisement, publicity and marketing etc.

It was encouraging to note that cent per cent of the respondents were satisfied with training time, materials, place, methods, content and practical orientation. During investigation it was observed that training duration and marketing facilities were the only areas in which dissatisfaction was expressed by 30- 35 per cent participants. With respect to technical guidance provided, three fourth of the respondents were satisfied, whereas, one fourth of the respondents were some what satisfied. In case of financial assistance eighty five per cent of the

Table 2: Opinion of respondents towards different aspects of Embroidery and Needle work training

N=20*

S.No.	Training aspects	Satisfied f (%)	Some what satisfied f (%)	Not satisfied f (%)
A	**Training**	20(100)	-	-
1	Training time	14(70)	-	-
2	Training duration	20(100)	-	-
3	Training Materials	20(100)	-	6(30)
4	Training Place	20(100)	-	-
5	Training Methods	20(100)	-	-
6	Training Content	20(100)	-	-
7	Practical orientation			-
B	**Technical Guidance**	15(75)	5 (25)	-
C	**Financial assistance**	17 (85)	3 (15)	7 (35)
D	**Marketing Facilities**	13 (65)		

women were satisfied and remaining 15 percent respondents were satisfied to some extent only

Perceived benefits of Embroidery and Needle work training

It is evident that training was beneficial in terms of increasing their about embroidery work and also helped them to learn different stitches and embroidery like chain stitch, herring bone stitch, stem stitch, kaj stitch, bakhiya, moti kasab work, naka tiki work, aari tari work, shadow work, jardoji work, crochet work, block printing, bandhej etc. on table mates, sofa backs, table cover, seat cover and saree as reported by 85 and 75 per cent respondents respectively. Similarly half of the respondents acquired efficiency in Embroidery and Needle work after attending the training. One fourth of the respondents reported that training helped them in clarification of doubts and establishment of an enterprise.

Conclusion

On the basis of above findings it could be concluded that training organized by DEE under RMoL scheme the participants were satisfied and it helped women in increasing their knowledge and acquiring proficiency for the establishment of an enterprise.

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A Study on Clinical Trial of Selected Ethnoveterinary Medicinal Practices through Farmers Participatory Research (FPR) in Northern Region of West Bengal

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Animal Husbandry is an integral part of the rural farming system. Agriculture and animal Husbandry are equally important for farmers at rural areas. Since long our farmers take care of management and disease prevention practices of livestock animals. Traditional methods of animal treatment are prevalent in rural areas more specifically in tribal belt of North Bengal. The tribal farmers living in forest, close to nature, depend upon forest produce for their livelihood and rear as well as treat animals with help of herbs and plants. This complete knowledge, beliefs and practices are generally known as Indigenous technical knowledge (ITK) which is based on experience, tested over centuries, adopted to local culture and dynamic in nature. The present study was aimed at advocating strategies for higher adoption of ITKs and their blended technologies in Veterinary practices. So, this study envisaged finding the Ethnoveterinary practices available in the forest fringe areas of Terai region of North Bengal by studying the socio-cultural characteristics of the Ethnoveterinary practitioners, collecting and documenting the Ethnoveterinary medicine practices existed in animal husbandry with testing of scientific validity of such practices. The study was formulated some recommendations based on clinical validation trial and subsequent monitoring of the validated practices for wider diffusion of Ethnoveterinary medicine.

Methodology

The study was conducted in the Jalpaiguri district of West Bengal, India. The studied area belongs to high altitude, densely tribal populated, forest fringe areas of Sub-Himalayan Terai agro-climatic zone of North Bengal. Considering the limitation of time, manpower and other resources the study was conducted purposively in the Maynaguri and Matiali block of Jalpaiguri district, mainly focusing on the villages. A sample of 65 resource persons was fixed for collection and documentation of Ethno-veterinary practices in livestock and wildlife in forest fringe areas of the district. A list of resource persons was prepared through Group Discussions and by nomination method with the assistance of society leaders, village level Scientists, Ramshai Krishi Vigyan Kendra situated in the study area. Thus the selected respondents were interviewed through the structured schedule. At the end of the survey in total 105 Ethno-veterinary practices used in livestock and wildlife were collected for proper documentation. The documented practices were then categorized according to its uses, chief organ of action and species of animal involved enlisting through generation of ailments list

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related to remedial Ethno-veterinary practices. The diseases or in broader use of practices were then ranked through card scoring method by the selected key informants. Out of 105 documented ITKs, 10 ranked Ethno-veterinary practices with 5 replications in each case were brought under validation through clinical trial using both Ethno-veterinary and Allopathic medicine by the 10 experimenter resource person following FPR method. From the 10 best selected ITK's 03 were taken in the study. Data collected from the respondents on several criteria were subjected to one way analysis of variance. To test the difference of mean (Significant / Non-significant) amongst alternatives, Multiple Range Test i.e. HSD (Honest Significant Difference) Tukey's Test was followed.

Findings

The results of validation trial on use of Halud (Haldi) paste in mustard oil in treating non-specific dermatitis in goat were presented in the Table-1. The effectiveness (i.e. number of animals responded satisfactorily) of using Halud (Haldi) in treating non-specific dermatitis in goat was greater in Allopathic medicine, though it perceived to be more effective by the women-farmer but not observed that much in Ethnoveterinary trial. The women-farmer's perception and observed result differed significantly ($p<0.05$), might be because of their less frequent exercise in treating animals due to social hindrance. Such may happened in non-specific dermatitis cases, which results from varied and combination of aetiologies. Though they perceived well as their perception was similar in trial of Allopathic medicine. The women-farmer's perception did not differ significantly ($p<0.05$) from Allopathic trial. The Allopathic medicine was more effective compared to Ethnoveterinary medicine as differed significantly. The quickness of healing up the dermatitis cases was more in case of Allopathic medicine compared to as women-farmer's perceived and as observed in trial. The perception here also was more than actually observed, which might again due to non-frequent Ethnoveterinary practice of women-farmer's and underlying incurable varied causes by this Ethnoveterinary medicine. Thus all the three groups under study were significantly different ($p<0.05$) in results. Regarding side-effects women-farmer's perception and observation in Ethnoveterinary medicine was same, which showed less adverse effects compared to Allopathic medicine. But, the women-farmer's perception and observation in Ethnoveterinary trial significantly differed ($p<0.05$) considering individual case studies. Thus all the three groups under study differed significantly in this criterion.

Table 1 : Clinical trial on use of Halud (Haldi) in treating non-specific dermatitis in goat

(Mean ± Standard errors) (n=5)

Criteria / trial group	Effectiveness	Quickness	Side effects	Ease in preparation	Availability	Cost Effectiveness
Before trial	10±0.00 [a]	9±0.00 [a]	10±0.00 [a]	9±0.00 [a]	10±0.00 [a]	10±0.20 [a]
Allopathic medicine	10±0.00 [a]	10±0.00 [b]	8±0.00 [b]	10±0.00 [b]	6±0.00 [b]	6±0.20 [b]
Ethnoveterinary Medicine	9±0.00 [b]	8±0.00 [c]	10±0.00 [c]	9±0.00 [a]	10±0.00 [a]	10±0.20 [a]

[a, b, c] = "Mean ± Standard errors" with dissimilar superscripts in columns differ significantly, at $p < 0.05$ level.

The ease in the preparation of Halud paste found to be less than use of ready to lotion/ointment as perceived and observed in trial by the women-farmers. Thus ease in preparation of Ethnoveterinary medicine differed significantly ($p<0.05$) from Allopathic medicine but no significant difference was there between women-farmer's perception and observation in Ethnoveterinary trial. The availability of ingredients for Ethnoveterinary medicine was very easy in the household and scored more. Women-farmer's perception and observation was same here and did not differ significantly, but both these differed significantly from Allopathic medicine ($p<0.05$). The high cost effectiveness of using Halud for the Ethnoveterinary practice differed significantly ($p<0.05$) from Allopathic trial. In this regard, farmer's perception and observation in the Ethnoveterinary trial was the same and did not differ significantly.

The all through analysis of Table 1 showed the favourable acceptance of Halud paste with mustard oil in treating non-specific dermatitis by the women-farmers with least side-effects, household availability of ingredients and high cost effectiveness. Allopathic medicine was more effective, quicker to heal up, available in ready to use form. Thus, experience gained through discussion with women-farmers and through the trial results, it may be concluded as Halud paste could be a better option in treating non-specific dermatitis in goat for farmers' choice in the study area.

The use of Halud (*Curcuma longa*) paste with mustard oil in treating skin problems was documented several times by many workers. Grounded Halud alone could treat wounds, as recorded by *Mathias et al. (1998, 1999), De et al. (2004), Verma et al. (2008), Karthickeyan and Gajendra (2005).* Turmeric was also reported to cease haemorrhage *(Kemparaja et al., 1998*), heal oozing wound and even to cure off pox *(IIRR, 1994). Jager (2003)* reported the healing properties of turmeric on skin diseases was known from long past as Charaka also recommended it. He has recorded its beneficial effects even against HV, AIDS and other varieties of disease conditions. Mustard (*Brassica nigra*) was reported to have wound healing ability *(Mathias et al., 1998). Sher and Hussain (2008)* recorded the medicinal value of mustard paste in removing skin rashes and also wound healing as antiseptic agent. *Joshi and Joshi (2008)* noted the use of mustard in healing skin cracks and other skin problems.

Results of validation trial on use of Sajna leaf in the post-natal cows to augment milk yield was reproduced in the table 2. The effectiveness (i.e. number of animals responded satisfactorily) of using Sajna in post-natal cows to augment milk yield was greater in Allopathic medicine, though it perceived to be more effective by the women-farmer but not observed that much in Ethnoveterinary trial. The women-farmer's perception and observed result differed significantly ($p<0.05$), might be because of their less frequent exercise in treating animals due to social hindrance. Such may happened in evaluating the condition and cause of post-natal milk reduction, which resulted from varied and combination of causes. Though they perceived well as their perception not differed significantly ($p<0.05$) in trial of Allopathic medicine. The Allopathic medicine was more effective compared to Ethnoveterinary medicine as differ significantly. The quickness of augmenting milk yield in post-natal cows was more by Allopathic

medicine compared to as women-farmer's perceived and as observed in the trial. The perception was same as observed in Ethnoveterinary experimentation and did not differ significantly ($p<0.05$). The Allopathic galactogogue was thus significantly different from women-farmer's perception and Ethnoveterinary trial ($p<0.05$). Regarding side-effects women-farmer's perception and observation in Ethnoveterinary medicine was the same, which showed less adverse effects compared to Allopathic medicine. But, the women-farmer's perception and observation in Ethnoveterinary trial significantly differed ($p<0.05$) while considered individual case studies. Allopathic treatment showing more adverse effect also differed significantly from women-farmer's perception as well as actual observation in Ethnoveterinary medicinal trial. Thus all the three groups under study differed significantly ($p<0.05$) in this criteria.

Table 2 : Clinical trial on use of Sajna leaf in the post-natal cows to augment milk yield

(Mean ± Standard errors) (n=5)

Criteria / trial group	Effectiveness	Quickness	Side-effects	Ease in preparation	Availability	Cost Effectiveness
Before trial	8.8±0.20 [a]	8±0.00 [a]	10±0.00 [a]	9.8±0.20 [a]	10±0.00 [a]	9±0.20 [a]
Allopathic medicine	9±0.00 [a]	10±0.00 [b]	8±0.00 [b]	8±0.00 [b]	5±0.00 [b]	4±0.20 [b]
Ethnoveterinary Medicine	7.8±0.20 [b]	8±0.00 [a]	10±0.00 [c]	9.8±0.20 [a]	10±0.00 [a]	8.8±0.20 [a]

[a, b, c] = "Mean ± Standard errors" with dissimilar superscripts in columns differ significantly, at $p < 0.05$ level.

The ease in the preparation of Ethnoveterinary medicine found to be more than Allopathic galactogogue and it was as perceived also same observed. Thus ease in preparation of Ethnoveterinary medicine differed significantly ($p<0.05$) from Allopathic medicine but no significant difference was there between women-farmer's perception and observation in Ethnoveterinary trial. The availability of ingredients for Ethnoveterinary medicine was easier than Allopathic medicine. Women-farmer's perception and observation was the same here and did not differ significantly, but both these differed significantly from Allopathic medicine ($p<0.05$). The high cost effectiveness of using Sajna in Ethnoveterinary medicine differed significantly ($p<0.05$) from Allopathic trial. In the regard, farmer's perception and observation in the Ethnoveterinary trial was similar and thus not significantly different ($p<0.05$).

It was evident from table 2 that the Sajna leaf in augmenting milk yield in post-natal cows may be accepted by the farmers for its least side-effects, ease in preparation, household availability and high cost effectiveness. Allopathic medicine was more effective and quicker to increase milk production. Experience gained in discussion with farmers and through the trial showed that Sajna leaf being cheaper, household available, easy to prepare with minimum side effects, seemed to be the viable option in the study area in augmenting milk yield in post-natal cows. For sustained lactation yield some Allopathic

galactogague might be used alongwith in chronic cases of milk yield reduction.

Bandyopadhyay and Mukherjee (2005) documented feeding of Sajna leaves to cattle to bring better health and lactation after delivery. Sajna (*Moringa oleifera*) was ascribed as miracle tree by *Donovan (2007).* He also reported that Sajna leaves were relished feed for livestock besides its varieties of internal and external beneficial action. Sajna contained high proportion of nutritional ingredients line protein, minerals etc. *Fahey (2005)* vividly studied the physio-chemical attributes of Sajna and reported to have high nutritional value. Sajna in curing blood sugar was recorded by *Ghosh (2003). Chakraborty and Bhattacharjee (2006)* documented the emollient, anti-inflammatory and purgative action of Sajna.

The results of validation trial on use of Lau decoction in the post-natal cows to increase lactation yield was reproduced in the table 3. The effectiveness (i.e. number of animals responded satisfactorily) of using Lau decoction in post-natal cows to increase lactation yield was greater in Allopathic medicine, though it perceived to be more effective by the farmer but not observed that much in Ethnoveterinary trial. The farmer's perception and observed result differed significantly ($p<0.05$), might be because of incorrect evaluation of the condition and cause of post-natal milk reduction, which resulted from varied and combination of causes. Though they perceived well as their perception was not significantly different ($p<0.05$) in trial of Allopathic medicine. The Allopathic medicine was more effective compared to Ethnoveterinary medicine as differed significantly. The quickness of increasing lactation yield in post-natal cows was more by Allopathic medicine compared to farmer's perceived and observed scores in trial. The perception and as actually observed scores also differed significantly ($p<0.05$) in Ethnoveterinary trial, which might be owing to different cause of reduction of lactation yield in post-natal cows. The Allopathic galactogogue thus significantly differed from farmer's perception but not from Ethnoveterinary trial. So, quickness of increasing lactation yield was similar in both the cases of Allopathic and Ethnoveterinary medicine. About, side-effects farmer's perception and observation in Ethnoveterinary trial was same, which showed less adverse effects compared to Allopathic medicine. But, the farmer's perception and observation in Ethnoveterinary trial significantly differed ($p<0.05$) while considered individual case studies. Allopathic medicine showing more side effects also differed significantly from farmer's perception as well as present observation in Ethnoveterinary medicinal trial. Thus all the three groups under study differed significantly ($p<0.05$) in this criteria.

Table 3 : Clinical trial on use of Lau decoction in the post-natal cows to increase lactation yield

(Mean ± Standard errors) (n=5)

Criteria / trial group	Effectiveness	Quickness	Side-effects	Ease in preparation	Availability	Cost Effectiveness
Before trial	8±0.00 [a]	8±0.00 [a]	10±0.00 [a]	10±0.00	10±0.00 [a]	10±0.20 [a]
Allopathic medicine	7.8±0.20 [a]	10±0.00 [b]	8±0.00 [b]	10±0.00	5±0.00 [b]	3±0.20 [b]
Ethnoveterinary Medicine	7±0.00 [b]	9.8±0.20 [b]	10±0.00 [c]	10±0.00	9.8±0.20 [a]	10±0.20 [a]

[a, b, c] = "Mean ± Standard errors" with dissimilar superscripts in columns differ significantly, at $p < 0.05$ level

The ease in the preparation of Ethnoveterinary medicine and Allopathic medicine was the same along with farmer's perception. So, ease in preparation of Ethnoveterinary medicine, Allopathic medicine and farmer's perception in this regard did not differ significantly ($p<0.05$). The availability of Lau for Ethnoveterinary medicine was easier than Allopathic medicine. Farmer's perception was perfect as observed in the Ethnoveterinary trial and did not differ significantly in between. But both perception and practical observation differed significantly from Allopathic medicinal trial ($p<0.05$). The high cost effectiveness of using Lau in Ethnoveterinary medicine differed significantly ($p<0.05$) from Allopathic trial. In this aspect, farmer's perception and observation in the Ethnoveterinary medicinal trial was the same and not significantly different ($p<0.05$) in between them. It was revealed from Table-03 that the decoction of Lau to increase lactation yield in post-natal cows might favourably be accepted by the farmers for its least side-effects, household availability and high cost effectiveness. Allopathic galactogogue was more effective and quicker to increase milk production. Experience gained in discussion with farmers and through the trial showed that being cheaper, household available with minimum side effects, use of Lau to increase lactation yield in post-natal cows seemed to be the better viable option in the study area. To get prolonged lactation, some Allopathic milk enhancing drugs might be blended with Lau decoction in more debilitated cows. The use of boiled Lau (*Lagenaria siceraria*) with molasses was reported for better milk production in cows by *Bandyopadhyay and Mukherjee (2005). Ojiako and Igwe (2007)* studied the nutritional compositions of Lau (Bottle gourd) and recommended it as potential source of charbohydrate, protein, fat, macro and micro-mineral.

Monitoring and Feedback of Validated Cases of Ethno-Veterinary Practices through Fpr

All the experimental cases validated were brought under monitoring process through visits by the researcher along with key participants atleast one in week upto thirty six weeks during post-trial period. No cases were relapsed and responded very well with the use of Ethno-veterinary medicine. Each of 5 cows under trial with Allopathic galactogogue in place of Sajna and Lau treatments showed decrease in milk yield after 3 months.

Conclusion

The tribal farmers living in forest, depend upon forest produce for their livelihood and rear as well as treat livestock with the help of herbs and plants. This complete knowledge, beliefs and practices are generally known as Indigenous technical knowledge (ITK) which is based on experience, tested over centuries, adopted to local culture and dynamic in nature. The experience gained through discussion with women-farmers and through the trial results, it may be concluded as Halud paste could be a better option in treating non-specific dermatitis in goat for farmers. The Sajna leaf being cheaper, household available, easy to prepare with minimum side effects, seemed to be the viable option in augmenting milk yield in post-natal cows. But, for sustained lactation yield some Allopathic galactogague might be used along with in chronic cases of milk yield reduction. The trial also showed that use of Lau to increase

lactation yield in post-natal cows seemed to be the better viable option but for prolonged lactation, some Allopathic milk enhancing drugs might be blended with Lau decoction in more debilitated cows. Though, Ethnoveterinary medicine had its own limitations and strengths but regarding geo-climatic, socio-economic, educational and developmental aspects promotion of Ethno-veterinary medicine must be advocated in this region and the development plans should accommodate for the Ethnoveterinary practices of rural people.

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Problems Faced by the Krishi Projukti Sahayaks in Implementing the Extension Activities and Measures Suggested for Improvement

Debabrata Mondal

Regarding the extension techniques it was ensured that Krishi Prajukti Sahayaks will directly disseminate the new technology to the farmers. They are in urgent need of understanding and acquiring new knowledge and skills so that they could contribute more effectively to the production process. It would also help them to the drudgery involved in their day to day work (FAO, Report, 1990).

There is an increasing realization that extension need to play an expanded role in addition to dissemination of useful and relevant technology. This means helping farmers to adopt scientific technology, access market, research advise, credit, value addition opportunities, education on improved harvesting methods, improved packaging and handling, proper use of information technology etc. KPS will also receive the farmers' problems and pass these on to the ADO, and then agricultural scientists through the PAO seeking solution. The investigator on the often hand would pass on the solution of the problems if readily available at hand and take up research investigations to find solution and pass on the finding at a later stage

Methodology

Total ten blocks from Katwa and Kalna sub-division of Burdwan district of West Bengal were selected. The ten blocks – Katwa-I, Katwa-II, Ketugram-I, Ketugram-II and Mangolkote from Katwa sub-division and Kalna-I, Kalna-II, Purbasthali-I, Monteshwar and Purbasthali-II from Kalna sub-division of Burdwan district of West Bengal were selected purposively .A total 60 Krishi Prajukti Sahayaks (KPSs) were selected as respondents. The following functional areas of extension activities at village level were identified for the present researcher in consultation with the experts. Each of the management functions had some constrains. These are – Crop demonstration, Conducting farmers meeting, Providing technical advice and feed back, Visiting contact farmers, Soil sample collection and Crop cutting survey

Findings

The above study deals with some important problems in implementing the extension activities as perceived by the KPSs and measures suggested for improving the efficiency and effectiveness of Agricultural Extension Services in the State. The term efficiency and effectiveness have been defined by Drysdale and Shute (1989). Efficiency in the agricultural extension service can be defined as the ability of the extension service to utilize scare resources to facilitate the flow of information from the extension service to the farmer in a way that address the needs of the farming community and national development objectives.

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The important problems of KPSs at village level were: Soil sample collections, Crop demonstration, conducting farmers meetings, providing technical advice and feedback, Crop cutting survey and visiting contact farmers. The respondents were asked to questions regarding the most important problems for each of the functional areas of management which they were facing and also suggest measures for this effectiveness. These were ranked on the basis of percentage of respondents reporting. Each KPS reported one or more problems as well as suggestive measures to overcome these problems.

Table 1 : Constraints in Soil Sample Collection as perceived by the KPSs and measures suggested for improvement

Sr. No.	Items	Frequency	Percentage	Rank
1.	**Perceived problems**			
	(i) Lack of infrastructure Laboratory facility	45	75.00	I
	(ii) Non-availability of soil testing report in proper time	36	60.00	II
	(iii) Dissimilarity in soil testing	30	50.00	III
2.	**Suggested measures**			
	(i) Availability of soil testing report in proper time.	40	66.66	I
	(ii) Establishment of proper infrastructure for soil testing.	39	65.00	II
	(iii) Uniform procedure to be followed for soil sample collection	36	60.00	III

Constraints and suggestions

1. Soil samples collection

Lack of infrastructure / laboratory facility for checking the soil sample were the most important problems of soil sample collection as faced by the Krishi Prajukti Sahayaks. The KPSs suggested that establishment of proper infrastructure/laboratory facility for testing the soil sample. Non-availability of soil testing report in proper time means farmers got their soil report after long time back. As a result their interests were gradually decreasing and finally they loose their interest. This was an also important problem for which the KPSs suggested for availability of soil testing report in proper time. Dissimilarity in soil testing report described that different results were obtain from two halves of the same soil sample collected in the same plot/field. There was no detail information's about the soil sample except NPK content. It was another important problems reported by KPSs. The KPSs suggested that uniform procedure to be followed for soil sample collection.

2. Crop demonstration

The problems in Crop demonstration at village level as perceived by the Krishi Prajukti Sahayaks and measures suggested by them for improvement are presented in Table -2.

Table 2 : Constraints in Crop demonstration as perceived by the KPSs and measures suggested for improvement

Sr. No.	Items	Frequency	Percentage	Rank
1.	**Perceived problems**			
	(i) Distribution of inputs supply to the beneficiaries	55	91.66	I
	(ii) Selection of beneficiaries for different programme.	51	85.00	II
2.	**Suggested measures**			
	(i) Distribution of inputs to the beneficiaries without any interference.	42	70.00	I
	(ii) Selection of pr oper beneficiary should be done without any interference.	39	65.00	II

"Distribution of inputs supply to the beneficiaries" was an important problem as perceived by the KPSs for arrangement of demonstration. KPSs suggested Distribution of inputs to the beneficiaries without any interference in appropriate time, provision of tested and certified seeds and other inputs for demonstration.

"Problems in beneficiary selection" was also important problems. The KPS cannot perform demonstration in the farmers' field of their own choice. The KPSs suggested that farmers field should be selected by the KPSs themselves and Selection of proper beneficiary should be done without any interference.

3. Conducting farmers meeting

"Lack of active participation" was the most important problems as perceived by 60.00 percent KPSs. They reported that few farmers did not participate in the meetings with KPS even after calling. The KPSs suggested for encouraging peoples active participation in the meetings. About 50.00 percent KPSs had reported that farmers are not interested about the importance of meeting but interested only for refreshment like Tiffin, bag, inputs etc. As a solution to this problem they suggested for arousing interest in technological intervention.

4. Providing technical advice and feedback

A perusal revealed that "no field application of technological information" was an important problem of providing technical advice and feedback as perceived by 60.00 percent KPS. They were reported that technical advice, which was giving by the KPS, a number of interested farmers followed probably 20.00 percent. As a solution of that problem the KPSs suggested "Need orientation training programme for farmers about the technology."

About 53.33 percent KPSs also reported lack of interest on new technology among farmers to adopt the new technology. As a solution to these problems the KPSs suggested sufficient demonstration plot with farmer's day should be organized.

5. Crop cutting survey

Lack of experience regarding map pointing was an important problem perceived by 76.66 percent KPSs for which 86.66 percent KPSs suggested for training regarding selection of site and map pointing.

Training is the process of acquiring specific skills to perform a job in a better way. According to Halim and Ali (1997) there are three approaches to training. In the traditional approach, the training staff designs the objectives, contents, teaching methods etc. In the experimental approach, the goals and other element of training are jointly determined by the trainers and trainees or their organizations. In performance-based approach to training, goals are measured through attainment of a given level of proficiency.

The KPS was spending his own money and labour for crop cutting in the farmers' field but the farmers were not active participants during the time of crop cutting. It was next important problem as perceived by 63.33 percent KPSs. The KPSs suggested for encouraging farmers for an active participation

6. Visiting contact farmers

It reveals that the important problems of visiting contact farmers as perceived by the Krishi Prajukti Sahayaks were; the main work of KPSs to contact the farmers in the villages. When the KPSs contact the Farmers, they usually demand for agricultural inputs but KPSs cannot provide to all the farmers because of limited resources. The next problem was that they have no permanent office like other extension personnel. So farmers cannot contact with the KPS according to farmers time and need. It was the important problems to visit the farmers.

The other problems, the KPSs usually select the progressive farmers randomly in every village and give advice and information to them. But in reality due to lack of seriousness progressive farmers does not convey the message to others.

As a suggested measure the KPSs put more emphasis on adequate input supply for all the interested farmers. Besides, they also suggested proper communication channel should be developed among the farmers.

Conclusion

The management problems as perceived by the KPSs were to be continuously assessed. It was discerning that several problems invalid with the implementation of several extension activities still they were working with full devotion and strengthening the Department of Agriculture for the development at agriculture. Their suggestion to cope the problems embedded with the extension activities were basically very appealing and practical oriented. The suggestions like supply of input, development of communication support, development of infrastructure were the three basic aspects of different aegis to cope or to revive the agricultural development in our State.

Before dissemination of any new technology or introducing a new crop to the farmers, timely available of essential inputs may be ensured by the Department of Agriculture. Otherwise, the farmers are likely to suffer economically.

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Impact of Front Line Demonstrations on Productivity and Profitability of Wheat in Sawaimadhopur District of Rajasthan

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Major management factors responsible for low productivity of wheat includes use of old variety seeds, use of high seed rate, lack of seed treatment, imbalanced and inadequate use of fertilizers, inadequate weed management and limited irrigation facilities. Among climatic factors, availability of low cropping period due to high temperature stress during maturity phase remained a yield limiting factor under the situation of the district. There exist ample scope to improve the wheat productivity in the district at least up to feasible potential of 50-55 q ha^{-1} by systematic adoption of cost-effective agronomic practices such as replacement of old varieties by improved varieties having high yield potential and high temperature stress tolerance, use of optimum seed rate, seed treatment, judicious use of fertilizers including deficient micronutrients, integration of bio-fertilizers and timely agricultural management. Organization of front-line demonstrations is most effective tool for transfer of cost-effective technologies among the farmers. Therefore, frontline demonstrations were conducted during rabi 2007-08 to 20012-13 on selected farmer's fields of the operational area of Krishi Vigyan Kendra, Sawaimadhopur with the objective of demonstrating the cost-effective agro-techniques which could be adapted by the farmers for yield enhancement.

Methodology

Frontline demonstrations (FLD's) were conducted during *rabi* seasons of year 2007-08 to 2012-13 in 50.2 ha area on 108 farmers fields covering 12 different villages of operational area of KVK, Sawaimadhopur namely Nindarda, Banota, Vijay Nagar, Dobra Kalan, Koshali, padli, Shyampura, Chakeri, Bagwatgarh, Mainpura, Danoli and Fariya. The area under each demonstration were 0.4 to 0.5 ha with farmers practice as control plots. Soils of the study area are loamy to clay loam in texture with low nitrogen, low to medium phosphorus, high in available potassium and low zinc status. Farmer's were selected based on group meeting taking in to consideration mainly the approachable site and adaptive attitude of the farmers. Technological interventions demonstrated includes use of high yielding variety Raj-3765 during 2007-08 to 2011-12 and Raj-4037 during 2012-13, use of optimum seed rate @ 100-125 kg ha^{-1}, seed treatment with carbandazim @ 2g kg $seed^{-1}$ and integrated nutrient management (90-120:40:0 NPK kg ha^{-1} + *Azatobector* + PSB @ 600g ha^{-1}, zinc sulphate fertilization @ 20-25 kg ha^{-1} along with recommended N:P schedule. Farmers were also suggested for efficient use of fertilizers by drilling in furrows, split application of urea, need based weed management and irrigation at critical stages. Selected farmers

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were provided trainings on agro-techniques for higher productivity of wheat. Critical inputs were distributed and other inputs were suggested as per need. Crop was timely sown during first week to third week of November each year

drilled in 23 cm. rows apart. Farmers applied 4 to 5 irrigations at critical growth stages of the crop. All steps like site and farmer selection, layout of demonstration, farmer's participation etc. were followed as suggested by *Choudhary (1999).* Monitoring of FLD sites were done by periodical visits and needful suggestion were given to the farmers. Field days were organized at crop maturity to demonstrate the impact of FLD among other farmers of the area. The crop was harvested between second and third week of March. Data related to yield and cost particulars were collected separately drilled in 23 cm. rows apart. Farmers applied 4 to 5 irrigations at critical growth stages of the crop. All steps like site and farmer selection, layout of demonstration, farmer's participation etc. were followed as suggested by *Choudhary (1999).* Monitoring of FLD sites were done by periodical visits and needful suggestion were given to the farmers. Field days were organized at crop maturity to demonstrate the impact of FLD among other farmers of the area. The crop was harvested between second and third week of March. Data related to yield and cost particulars were collected separately for FLD and farmers practice. The average prices of inputs and outputs commodities prevailed during each year of demonstrations were taken for calculating cost of cultivation, net return and benefit cost ratio. The technology gap, extension gap and technology index were calculated as suggested by Samui *et al.* (2000).

Technology gap = Potential yield - Demonstration yield

Extension gap = Demonstration yield - Farmers yield

Technology index (%) = (Technology gap/ Potential yield) × 100

Findings

The data on average wheat grain yield (Table.1) reveal that application of demonstrated technologies resulted in substantially higher wheat grain yield than that under local check (farmer's practice) during all the six years (2007-08 to 2012-13). The average yield of wheat during six years ranged from 41.5 to 54.75 q ha^{-1} under demonstrated technologies as against 34.61 to 46.26 q ha^{-1} under farmers practices (local check). Based on pooled data over six years, demonstrated technologies recorded mean grain yield of 49.17 q ha^{-1} which represents 18.22 cent yield enhancement over local check (41.6 q ha^{-1}). The higher productivity of wheat under demonstration in comparison to farmer's local practice could be ascribed to the use of high yielding varieties Raj-3765 and Raj-4037, optimization of seed rates, use of recommended doses of N:P fertilizers by following proper schedule, zinc sulphate fertilization, integrated nutrient management through bio-fertilizer inoculants and timely management practices followed. As soils of the demonstrated sites were deficient in Zn status therefore, application of Zn seems to have enriched Zn status of the soils, thereby improved availability to roots for extraction, which resulted in over all improvement in growth parameters and ultimately the productivity. Parihar *et al.* (2005) also reported wheat yield enhancement on the sandy loam soil of Durgapura, Jaipur (Rajasthan) due to zinc application.

A perusal of data (Table-1) revealed that values for extension gap ranged from 6.91 to 8.85 q ha^{-1}during the period of demonstration, emphasizes the need for transferring the feasible improved technologies among farmers to bridge the wide extension gap. Further, technological gap during six years of demonstration ranged from 5.25 to 18.48 q ha^{-1}, with a mean of 10.83 q ha^{-1}. There was a decreasing trends in technological gap over the six years which clearly indicates that the gap between demonstration and potential yields is decreasing. This reflects that the demonstrations were well executed by the farmers. Technology index shows the feasibility of evolved technology at the farmer's field and lower the value of technology index more is the feasibility of the technology (Katare *et al*., 2011). Technology index in the present study varied between 8.78 to 30.80 per cent and averaged 18.05 per cent. The values for technology index also show decreasing trends over six years indicating increased adaptability and feasibility of demonstrated technology over farmer's fields. It has also reflects in changing scenario of district wheat productivity as shown in table -1.

Economic indicators i.e. gross cost of cultivation, gross returns, net returns and B:C ratio of front line demonstrations are presented in Table 2. The gross cost of cultivation for wheat cultivation under demonstrated practice ranged from Rs. 16831 to 29366 ha^{-1}with a mean value of Rs. 22028 ha^{-1} against local check where it ranged from Rs.16110 to 28653 ha^{-1} with an average of Rs. 21231 ha^{-1}. These data clearly indicates that cost of cultivation has increased over the years which might be on account of escalating cost of inputs needed for cultivation. The data further revealed that demonstrated technologies provided substantially higher net returns than local check i.e. farmers practice during all the years of demonstration. FLD practice on six years average, fetched net returns of Rs 49828 ha^{-1}with B:C ratio of 3.15, higher in comparison to local practice (Rs 40118 ha^{-1}, B:C ratio 2.78). An average additional returns of Rs.10508 ha^{-1} was obtained under demonstrated technologies with incremental B:C ratio of 13.4 which might be attributed to yield enhancement under demonstration with least additional cost. Higher cost benefit ratio and additional returns clearly shows that demonstrated techniques were found cost effective & feasible for yield enhancement of wheat on farmer's fields. Farmer's were also found greatly convinced with the technological interventions due to higher economic returns with least additional investment and management practices. The variation in cost benefit ratio during different years might be due to variation in yield performance and input output cost in that particular year.

Conclusion

The results of front line demonstrations presented clearly indicates that the wheat productivity can be increased by 15 to 20 per cent on farmers fields with the introduction of cost-effective agro-techniques. There is need of transfer of adoptable technologies suitable for enhancing the productivity of wheat crop through conduct of such demonstrations. Technological and extension gaps can be bridged by popularizing package of practices with emphasis on improved variety seed, use of optimum seed rate, seed treatment, recommended fertilization and weed management practices.

Table 1 : Impact of Front Line Demonstration on yield performance of wheat

Year	No. of demons-tration	Area of demons-tration	Yield (q /ha)		% increase over FP	Mean District yield (q /ha)	Extension Gap (q /ha)	Technology Gap (q /ha)	Techno -logy Index (%)
			DP	FP					
2007-08	20	10	41.52	34.61	20.57	26.00	6.91	18.48	30.80
2008-09	10	5.0	46.22	39.04	18.38	30.25	7.18	13.78	22.97
2009-10	13	5.2	48.48	41.04	18.13	36.30	7.44	11.52	19.20
2010-11	20	10	49.66	42.70	16.30	36.50	6.96	10.34	17.23
2011-12	25	10	54.40	46.26	17.61	36.80	8.14	5.60	9.33
2012-13	20	10	54.75	45.90	19.30	38.50	8.85	5.25	8.75
Mean			49.17	41.59	18.22	34.05	7.58	10.83	18.05

DP- Demonstration practice FP- Farmer's local practice

Table.2 : Impact of Front Line Demonstration on economic indicators of wheat

	Gross cost of cultivation (Rs./ha)		Gross Return (Rs./ha)		Net Returns (Rs./ha)		B:C ratio		Additional Returns (Rs./ha)	Incremental B:C ratio
	DP	FP	DP	FP	DP	FP	DP	FP		
2007-08	16831	16110	53403	44571	36572	28461	2.17	1.77	8832	12.25
2008-09	16880	16105	64753	54796	47873	38691	3.84	3.40	9957	12.85
2009-10	19280	18445	75100	64300	55820	45855	3.90	3.49	10800	12.93
2010-11	23563	22843	68102	59959	44539	37116	2.89	2.62	8143	11.31
2011-12	26248	25228	79220	68632	52972	43404	3.02	2.72	10589	10.38
2012-13	29366	28653	90558	75835	61192	47182	3.08	2.65	14726	20.65
Mean	22028	21231	71856	61349	49828	40118	3.15	2.78	10508	13.40

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Assessment of Effectiveness of Farm Broadcast in Transfer of Agricultural Technology among the Farmers

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Radio is a very popular media of communication in India. The extensive network of broadcasting is found to have a profound influence on agriculture. Radio is an important media of communication has greater role to play in the forth coming years in order to disseminate agricultural education to the farming community. Radio is more popular than other tools of mass media, because it brings to the listening audience events in reality providing experiences of things to listeners those who are miles away. The message which requires immediate attention of public, can relate to the adverse conditions of the weather, attack of insects pests and the crop diseases which can be transmitted through environment. Radio is the only valuable and very effective media which can reach effectively to the rural masses. At present many farmers have owned radio sets and become the listeners of Kisan vani, krishi darshan, choupal, krishi paricharcha, krishi samayaki programmes etc. Radio was considered to be effective in communicating the agricultural technology to needy and remote area farmers in quick time and help to bridge the gap between the scientist and farmers and also increasing the knowledge level of farmers. One of the important objectives of radio is to provide essential knowledge and information to stimulate greater agricultural production. The fast changing agricultural technology demands for more information to be transmitted to our increasing volume of clientele. Television due to its mass nature promises to satisfy the informational needs of the masses in general and farmers in particular. Agricultural information is disseminated to the farmers through Kisan vani, krishi darshan, choupal, krishi paricharcha and krishi samayaki programmes. The value of any programme can only be judged through audience perception and response. Perception is the immediate apprehension of an object or all of the sense organs by way of sensation. Perception is influenced by the environment in which communication takes place. It is not intrinsic quality or attribute of an object, individual or message.

Methodology

In order to fulfill the objectives, the study was conducted in Gwalior district of (M.P). Out of 666 villages in the four block, five villages were selected in each block randomly for the study. After the selection of villages, a village wise list of farm broadcast listeners was prepared and from each village fifteen listeners of farm broadcast were selected by using simple random sampling method. Thus, the total sample was consisted of 300 respondents for the study. The data were collected through a well structured and pre-tested interview schedule. The attributes namely-educational status, caste, family background, social participation, land holding, annual income, credit orientation, economic status, attitude towards farm broadcast, belief in broadcast and extension participation were included for the study The statistical tests and procedures were

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used for analyzing the data and included percentage, mean, Karl Pearson's coefficient of correlation and multiple regressions.

Findings

Effectiveness of farm broadcast in technology transfer by the farm broadcast listeners. The majority of the respondents 58.46 percent perceived medium effectiveness of farm broadcast category in transfer of agricultural technology, followed by 23.85 percent of the respondents who perceived low effectiveness of farm broadcast category and 17.69 respondents perceived high effectiveness of farm broadcast category in transfer of agricultural technology. Similar findings were also reported by Badodiya et al. (2010)

Relationship between attributes of radio listeners and perceived effectiveness of farm broadcast in technology transfer

The zero order correlation coefficient were determined between independent variables i.e. age, education, family background, social participation, occupation, land holding, annual income, credit orientation, economic status, attitude towards farm broadcast, extension participation, belief in broadcast, knowledge about farm broadcast were found significant relationship with dependent variable- effectiveness of farm broadcast at 1 % level of probability whereas caste, family size and type family were no significant relationship with dependent variable- effectiveness of farm broadcast.

Table 1 : Relationship between the profile of radio listeners and they perceived effectiveness of farm broadcast

S. No.	Characteristics	Correlation coefficient (r)	Computed 't' value
1	Age(X_1)	0.360**	6.66
2	Education (X_2)	0.740**	18.98
3	Caste(X_3)	0.107^{NS}	1.85
4	Size of family(X_4)	0.137^{NS}	2.38
5	Type of family(X_5)	0.119^{NS}	2.07
6	Family Background(X_6)	0.507**	10.15
7	Social participation(X_7)	0.636**	14.22
8	Occupation(X_8)	0.541**	11.10
9	Land Holding(X_9)	0.573**	12.07
10	Annual Income(X_{10})	0.486**	9.60
11	Credit Orientation (X_{11})	0.479**	9.42
12	Economics Status(X_{12})	0.462**	9.00
13	Attitude towards farm broadcast(X_{13})	0.468**	9.14
14	Belief in Broadcast(X_{14})	0.452**	8.74
15	Extension participation(X_{15})	0.472**	14.26
16	Knowledge about the farm broadcast(X_{16})	0.668**	15.50

** Significant at 1 % level of probability
* Significant at 5 % level of probability
NS- Non significant

Multiple regression analysis of attributes of radio listeners and perceived effectiveness of farm broadcast in technology transfer

For this purpose, step down method of multiple regression analysis was carried out to get estimates of predictive ability to antecedent factors on consequent factor of effectiveness of farm broadcast. Stated in other words, the scores on attributes of radio listeners were explain a significant amount of variance in the scores of effectiveness of farm broadcast.

Table 2 : Multiple regression analysis of attributes of the radio listeners with effectiveness of farm broadcast in transfer of agriculture technology

Sr. No.	Independent variables	Regression coefficient	Standard error	't' value
1	Age(X_1)	0.154^{NS}	0.277	0.555
2	Education (X_2)	0.910**	0.218	4.174
3	Caste(X_3)	2.346**	0.617	3.802
4	Size of family(X_4)	0.379^{NS}	0.236	1.605
5	Type of family(X_5)	0.883^{NS}	0.723	1.221
6	Family Background(X_6)	1.398^{NS}	1.368	1.021
7	Social participation(X_7)	0.285^{NS}	1.329	0.214
8	Occupation(X_8)	0.549^{NS}	1.386	0.396
9	Land Holding(X_9)	4.052**	1.569	2.582
10	Annual Income(X_{10})	0.254^{NS}	0.367	0.692
11	Credit Orientation (X_{11})	0.192^{NS}	0.197	0.974
12	Economics Status(X_{12})	0.262*	0.133	1.969
13	Attitude towards farm broadcast(X_{13})	0.239^{NS}	0.127	1.881
14	Belief in Broadcast(X_{14})	0.383*	0.185	2.070
15	Extension participation(X_{15})	2.499^{NS}	1.901	1.314
16	Knowledge about the farm broadcast(X_{16})	3.355*	1.316	2.549
	R^2 = 0.81 F value (1,300-16-1=283) of R = 7.24			

* Significant at 1% level of probability ** Significant at 5% level of probability
NS = Non significant

Table 2 presents the regression coefficient between effectiveness of farm broadcast with attributes of radio listeners. It is observed that the regression coefficient in respect of education (0.910), caste (2.346), land holding (4.052), economic status (0.262), belief in broad cast (0.383) and knowledge about the farm broadcast (3.355) were found positively significant with effectiveness of farm broadcast while rest of all ten variables was found non significant. The coefficient of multiple determinations (R^2) indicated that only 81.00 per cent of variation in the effectiveness of farm broadcast could be explained due to 16 independent variables and remaining 19.00 per cent variation is due to other factors yet to be located. The highly significant 'F' value reported that confirmation to the validity of R^2 (0.81) worked out with variable identified for the study. Hence, the multiple regressions attempted for the explanatory variables is justified. Thus, the multiple regression coefficient of six independent attributes were found significant while ten variables were found to be non significant. Thus, it explains that these six

variables are significant factors in the prediction of effectiveness of farm broadcast. The coefficient of multiple determinations (R^2) shows that all sixteen variables jointly explain 81.00 per cent of the variation in effectiveness of farm broadcast.

Preferences of the radio listeners about different aspects of farm broadcast

Time of broadcast

It can be observed from table-4 that 60.00 percent of the respondents were satisfied with the present timing of the farm broadcasts. Those who were not satisfied with present timing of farm broadcasts suggested that these should be broadcast 6.00 p.m. onwards (40.00 % of the respondents)

Duration

From the data in Table-4 it is noted that more than half (53.33%) of the respondents suggested that duration of the farm broadcast should be increased to one hour.

Modes of representation

It is observed that percent of the respondents preferred the broadcast in the dramatized form,33.33 percent of them preferred interview with progressive farmers, while 26.67 percent of them preferred discussion form and 16.67percent of the respondents preferred debates 15.00 percent of the respondents preferred question answer form &whereas only 12.50 percent of the respondents preferred lecture.

Language of the broadcast

Majority (61.67 %) of the respondents suggested that scientific words of technical terms should be simplified in to local language. This findings confirms the findings of Badodiya and Chaudhary (2011)

Conclusion

It is revealed from the present study that the majority of the respondents perceived medium effectiveness of farm broadcast category in transfer of agricultural technology. The zero order correlation coefficient were determined between independent variables i.e. age, education, family background, social participation, occupation, land holding, annual income, credit orientation, economic status, attitude towards farm broadcast, extension participation, belief in broadcast, knowledge about farm broadcast were found significant relationship with dependent variable- effectiveness of farm broadcast at 1 % level of probability whereas caste, family size and type family were no significant relationship with dependent variable- effectiveness of farm broadcast. The coefficient of multiple determinations (R^2) shows that all eleven variables jointly explain 81.00 per cent of the variation in effectiveness of farm broadcast. It can be observed that 60.00 percent of the respondents were satisfied with the present timing of the farm broadcasts.

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Attitude of Post Graduate Students towards Agriculture Entrepreneurship

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The agricultural situation in India has undergone a rapid change in last two decades. Agriculture entrepreneurship plays a very important role in improving food and nutrition security, reducing poverty and in accelerating economic growth in a predominantly agricultural and rural economy like that of India. Education has been considered a lubricating force in the process of overall socio-economic development. Entrepreneurship education provides opportunities to develop skills, in addition to the knowledge through engaging the learners in a variety of process and situation. Entrepreneurship education in universities could enhance the skills of students in areas related to starting a new business. Entrepreneurial skills refers to those activities, or practically know -how, that are needed to establish and successfully run a business enterprise. These may comprise such areas as finance, accounting, marketing or production. Others want to make a distinction between managerial and entrepreneurial skills (Smilor, 1997 and Kilby, 1971). Agriculture students perceived the agricultural area more positively and considered themselves to be more concerned, friendly and liberal. Socio-economic status is the vital factor which decides attitude towards studies in present days. Agricultural students are now better informed about professional opportunities than in the past. The employment opportunities, the type of jobs and the earning potential influence students as well as their parents to decide on the preferred course.

Methodology

The present study was carried out at College of Agriculture, Nagpur under the jurisdiction of Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola was purposively selected. In this college in nine disciplines there are post graduate degree programme and every year in each discipline nearly 12-15 students were enrolled. At College of Agriculture, Nagpur during the academic year 2010-11 and 2011-12 there were total 240 students enrolled for post graduate (PG) degree programme in different nine disciplines. Thus, from two academic years out of 240 PG students 120 students were selected by proportionate random sampling method and these selected 120 students were considered as respondents in present study. The data were collected with the help of interview schedule. The respondents were categorized on the basis of frequency, percentage, mean, standard deviation and correlation coefficient.

Findings

It was observed that over one third of post graduate students (36.67%) had small size of family land holding (1.01 to 2.00 ha), followed by nearly one fourth of students had semi-medium

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(2.01 to 4.00 ha) land holding followed by 20.82 and 11.67 per cent of students had marginal (upto 1.00 ha) and medium (4.01 to 10.00 ha) land holding. Only 06.67 per cent respondents had large size of land holding. Regarding CGPA nearly two third of the post graduate students (64.17 %) were in first class category (7.00 to 7.99 CGPA), whereas post graduate students who got distinction, second class and pass class were 17.50 per cent, 13.33 per cent and 05.00 per cent, respectively.

Nearly two third of the post graduate students (65.83 %) had low participation in extracurricular activities followed by 20.00 per cent of the students had medium participation in extracurricular activities. Over two fifth of the post graduate student's father (40.83 %) had college level of education, followed by 27.50 per cent were high school level, while 16.67 and 11.67 per cent, of the post graduate student's father had middle school and primary school level educated. Incase of father's occupation, one third of the post graduate student's father (33.33 %) were engaged in agriculture only, followed by 23.33 per cent student's fathers had agriculture+ other subsidiary occupation, this was followed by agriculture + business (19.17%) and agriculture + service. Regarding family income majority of the post graduate students (76.67 %) had medium income between Rs. 48,576/- to Rs.3,83,047/-, followed by 17.50 per cent of students father had high income above Rs.3,83,047/- (18.33%) respectively. Only 05.83 per cent student's fathers had labour as their occupation**.** It was observed that over two third (68.33 %) of the post graduate students had medium level of innovativeness, followed by high and low and low innovativeness with 18.33 and 13.34 per cent, respectively. Similarly, regarding risk preference over two third (69.17 %) students had medium level of risk preference, whereas nearly equal proportion of respondent had high (15.83%) and low (15.00%) risk preference,respectively.

Table 1 : Relationship between profile of post graduate students and their attitude towards agriculture entrepreneurship

Sr. No.	Independent variable	Correlation coefficient
1.	Land holding	0.2176*
2.	CGPA	0.2601**
3.	Participation in extracurricular activities	0.2023*
4.	Father's education	0.1956*
5.	Father's occupation	0.2315*
6.	Family income	0.2090*
7.	Innovativeness	0.2614**
8.	Risk preference	0.2556**

** Significant at 0.05 per cent level of probability.* *** Significant at 0.01 per cent level of probability.*

It was observed nearly three fourth of the post graduate students (72.50%) had favorable attitude towards agriculture entrepreneurship, whereas 15.83 per cent had highly favorable attitude. Whereas only 11.67 per cent of the post graduate students had unfavorable attitude

towards agriculture entrepreneurship. It was inferred, majority of the post graduate students had favorable attitude towards agriculture entrepreneurship. Most of the post graduate students were from the families having high literacy level, medium economic condition and average occupational status. All these would have created favourable condition for higher education. After they have been admitted to post graduation, they might come to know the importance of post graduation and their role in development of the country and on other hand, they also aware about the vast area of agriculture to develop a positive attitude towards agriculture entrepreneurship.

The item wise attitude of the post graduate students towards agriculture entrepreneurship was studied on five point scales i.e. strongly agree, agree, neutral, disagree and strongly disagree. There are total 27 statements out of which 16 were positive statements and 11 were negative statements results had been presented in Table 3. It was reveled that, over half of students (52.50%) were strongly agreed that agricultural entrepreneurship should be given top priority for development, followed by over two fifth of students (44.16%) were strongly agreed with the statement that today's need is to promote agricultural entrepreneurship. It was observed that two third of students (65.83%) agreed that, agricultural education develop confidence in student to accept agriculture entrepreneurship as a profession, followed by the (56.67%) were agreed with statement that agricultural entrepreneurship leads to employment generation. Whereas in equal proportion (45.00%) students were agreed with statement that agricultural enterprises are more suitable to small and marginal farmers and agricultural entrepreneurship also provides the graduate with a positive attitude towards the adoption of modern technology. More than half of the students (60.00%) were disagreed by the statement that agricultural entrepreneurship does not provide best subsidiary occupation opportunities. It was observed that, over half of the students (53.33%) were strongly disagreed by the statement that agricultural entrepreneurship is meant for uneducated and poor people, followed by the statement that agricultural entrepreneurship doesn't provide good employment opportunity. The majority of students were agreed that, agricultural entrepreneurship creates positive attitude towards starting an agriclinic or agri-business centre at village level (54.16%), agricultural entrepreneurship provides help to improve the farmer's economy (51.67%), followed by an agriclinic or agri-business training may create agricultural business anxiety (48.33%), equal per cent of respondents (43.33%) were agreed that it is the hope for growing population in India and it helps to safeguard our cultural heritage keeping agrarian society, respectively.

It was observed, the variables CGPA, innovativeness and risk preference shows positive and highly significant relationship with attitude towards agriculture entrepreneurship. Similarly, independent variables like land holding, participation in extra-curricular activities, father's education, father's occupation, and family income, also had positive but significant relationship with attitude towards agriculture entrepreneurship.

Conclusion

Nearly three fourth of the post graduate students (72.50%) had favorable attitude towards

agriculture entrepreneurship, whereas 15.83 per cent had highly favorable attitude. Whereas only 11.67 per cent of the post graduates students had unfavorable attitude towards agriculture entrepreneurship. It is therefore suggested that the efforts should be made to change the attitude of the students from favourable to highly favourable This level can be increased to a high level by creating self confidence, providing knowledge about agril-entrepreneurship, government policy about agri-business. Wide publicity of the course, market oriented knowledge and maximum nos. of visits / tours for students to be organised at various agri-enterprises.

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Strategies to Strengthen Precision Farming

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In conventional agriculture, spatial variability over the landscape is ignored and fertilizers, herbicides, insecticides, fungicides etc. are applied at a uniform rate throughout the crop field. Precision Farming emphasizes on the infield variability which is first recognized, located, quantified and recorded, then managed by applying farm inputs in specific amounts at specific time and at specific locations. Precision Farming is facilitating the prospects and scope for switching over to modern agriculture leaving the traditional one by utilizing right resources in right time and management, which results an environment friendly sustainable agriculture. Precision farming provides a new solution using a systems approach for today's agricultural issues such as the need to balance productivity with environmental concerns. It is based on the implementation of advanced information technologies. It includes describing and modelling variation in soils and plant species, and integrating agricultural practices to meet site-specific requirements. It aims at increased economic returns, as well as at reducing the energy input and the environmental impact of agriculture. Precision farming requires some degree of competence in the use of software and hardware on the part of growers and/or crop consultants. Indeed the success of precision farming largely depends on creation of management systems, which will involve some combination of computerized decision support systems and the wisdom of farmers. Growers will adopt information technologies only if they are reliable and easy to use, offer some competitive advantage and can be introduced into farming without too much difficulty or expense.

Methodology

Among the seven agro climatic zones in Tamil Nadu two zones viz., Northern Zone and North western Zones were purposively selected for conducting the study. In the North western zones the districts Dharmapuri, Krishnagiri and in western zone Coimbatore and Erode were the study areas. Two blocks from each district in which the Precision Farming cultivation is intensive were selected. Thus the study covers eight blocks in four districts. Simple random sampling procedure was followed to arrive 200 precision farming practisioners totally @ 25 from each block and 50 Stakeholders viz., Researchers/Extension personnel, Input dealers, Drip marketers, Produce marketing personnel and Agri clinics personnel @ 25 from each zone. The study was carried out in the said study areas to assess the technological utilization pattern, perceived effectiveness, market associated activities of the precision farm practitioners, intervention of stakeholders in Precision Farming and the SWOC on Precision Farming as perceived by farmers and stakeholders.

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Dimensions of the study

The strategies have been formulated based on the outcome of the study to strengthen the Precision Farming further.

Strategies

1. Joint Decision making with members of Precision Farm practitioners Association (PFA) and peer group was observed in the study, it has to be fortified by the intervention of stakeholders so that the thorough flow of information could be possible among the PFA members.

2. The sample was found with moderate to high level extension participation, Orientation with Research station and its activities. If the stakeholder has more contact with Precision Farmers with frequent intervals, it could be lifted up.

3. It was noted that a portion of land was allotted by the farmers for Precision Farming from their total area under cultivation. The size of Precision Farming was semi medium to medium size, despite they could earn Rs. 5 lakh as annual income. If the area under Precision farming is increased that will have the positive reflection on the livelihood status of the farmers.

4. Though there is ample scope for sharing the farm information through PFA, moderate level of sharing pattern was observed. The monitoring team motivates the PFA members to share and discuss every aspect in their areas.

5. Among the core technologies recommended for Precision farming, Remote Sensing the prime technology was not at all aware by the sample. The infield variation could be assessed based on remote sensing only. Without considering such in field variation, the other technologies even if followed as recommended will not bring the anticipated output. The Precision Farming Development Centres (PFDC) established at National level have not yet initiated this process. The effectiveness of remote sensing in this regard has been utilized in the developed countries. Such attempt may be taken up by the Regional Remote Sensing Service Centres (RRSSC) located across the country, established by National Natural Resources management System (NNRMS). The stakeholders especially the service providers of public sectors could obtain the results and adopt the same as a trial in every Precision Farming area. The performance of such approach will enable the farmers to develop awareness and the importance of the use of remote sensing, incidentally it will diffuse into the system.

6. The use of quality seed and seedlings is the important component of Precision Farming for producing quality farm produces. The supply of seedlings through Hi-tech community nursery is one of the technologies which was not up to the expected level in the study area. As that of Self Help Groups (SHGs) farm women groups may be organized by the stakeholders in the Precision Farming areas and be involved in the production of seedlings through Hi-tech community nurseries. In order to overcome the initial hurdle, in establishing the nursery, the groups may be provided with a reasonable budget as a seed money from the government as revolving fund. Those groups may be linked with PFA for the supply of seedlings. All these activities will be assisted and monitored by the stakeholders of the

public sectors. Through this attempt, in addition to the supply of quality seedlings, entrepreneurial development could also be achieved.

The Precision Farmers Association (PFA) operating in the Precision Farming areas need to be strengthened. It is ensured as a mandate that every Precision Farm practitioner is to be enrolled as a member. A team may be constituted by the administrators which includes the stakeholders, the progressive farmers of the region and also the office bearers of PFA. PFA activities are to be monitored with fixed time interval by any of the stakeholders alternatively. This will facilitate the following aspects.

1. Collective decisions about the choice of crops on demand base
2. Supply of agricultural inputs at lesser price with assured quality by developing direct contact with the manufacturing companies
3. Eliminating middlemen by developing direct contact with exporters.
4. Availing common transport.

In order to lessen the burden of Precision Farmers, the state level administrators may take the initiative to build tie-up with the input production companies to supply Water Soluble Fertilizers and other required agro inputs with high quality on concessional rate to the Precision Farmers Association. Also through this mode the actual demand could be assessed by the units so that the bulk transport could be materialized. Moreover assured return is also possible for the production companies. As reported in the study the intervention of stakeholders especially Researchers and Extension functionaries was more frequent than the others. As far as the drip marketers, input agents are concerned they restricted their intervention with the initial establishment. The stakeholders should not work in isolation as observed during data collection. In every activity of the Precision Farming their roles to be made as complementary. The implementing agency of Precision Farming should work out a strategy of involving every one's role by interlinking their activities throughout the process. This will further strengthening and sustaining the Precision Farming activities at all levels.

1. The success and experiences of the precision farming activities need to be regularly and continuously shared among the stakeholders through publications, websites, newsletter , CDs and other media.
2. Stakeholders meet on Precision Farming during crop seasons may be taken up at various levels and their services or technological intervention in time without missing the season make the precision success.

Stakeholders involved in Precision Farming process are both public and private sectors. Technology delivery process mainly concerned with the public sectors. The assignment of public sector stakeholders proceeds till the disposal of the produce. In order to perform their roles effectively, they should be competent in their managerial and facilitating skills. Being play the influential role, they have to be trained adequately to equip with the said skills which help them to perform their assigned tasks without delay and deviation as designed. The capacity building should not be a habitual rather the training programmes may be taken up in the reputed management centres periodically.

Such programmes will help in developing **OCTAPACE** culture which stands for **O**penness**, C**ollaboration**, T**rus**t, A**uthentication**, P**ro action**, A**utonomy**, C**onfrontation with Problems and **E**xperimentation among the stakeholders.If the said culture is developed among the stakeholders, naturally they will discharge their tasks effectively without lapses.

The scope of Precision Farming in all its dimensions could be strengthened by involving multidisciplinary team of Researchers in various fields including Agricultural Engineers, Manufacturers, Economists etc., Such a team may be constituted by the planners at state and district level. The forecast on Demand of the market will definitely influence the choice of the crops and production. This could be attended by the PFA and the monitoring team. Warehousing centres, Cold Storage facilities and Ripening chambers are need to be established at district level in the major production centres so as to reduce the post harvest losses. These infrastructures may be established jointly in coordination with the drip marketers, NGOs and other agencies working in that zone. This will support the Precision farmers to store the farm produces for a reasonable period to fetch the reasonable price. Buffer storage through precision platform ensure the produce available throughout the year in the market so as to get premium price and gaining the confidence of customers with the assurance of its availability. The possibility of establishing Fruits and Vegetables Processing centres and value addition centres at Zonal level may be explored to exploit the surplus produces when the market price is low.

Creating a logo and having brand name was found with only very few of the PFA in Krishnagiri and Dharmapuri districts. It should be encouraged by the stakeholders so that labelled and packed produce leads to traceability and winning the confidence level of the buyers which will improve the cost of the produces on par with branded goods. The administrators may assess the possibility of establishing mobile markets, farmers own mega markets, Farmers retailers markets, so that the farm produces could reach the local customers at their door steps without the middle men intrusions. In order to meet the demand for spare parts, Custom service centres may be established at block level. This centres will also attend the repairs and maintenance of farm machineries and tools. Identified potential rural youths, unemployed agricultural diploma holders may be trained on these areas and encouraged to open such centres. Ultimately this will curtail the migration of farm/rural youth. Also it helps for entrepreneurial development among the rural youth.

Conclusion

The strategies have been formulated based on the major outcome of the study. The strategies are focused to further strengthen the activities of PFA, insisting the need for assessing the in field variation through remote sensing, supply of seedlings through hi-tech community nursery, intervention of stakeholders at all levels of Precision farming, establishment of processing centres, mobile and farmers markets and custom service centres to retain farm youth. The comprehensive approach of attending the strategies by the public sector agencies especially the state government will certainly strengthen the Precision Farming process in the state , ultimately increase the livelihood status of the farmers.

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Knowledge Level of Resource Poor Farmwomen of Coastal Eco-System on Livestock Management: An Empirical Assessment

Sujit K Nath[1] and Sarthak Chowdhury[2]

In India, women's involvement in livestock management is a long standing tradition (Durggarani and Subhadra, 2009). But their role in agriculture and allied activities has been grossly underestimated and undervalued. Due emphasis is not given to boost up their knowledge level, though much of work related to livestock farming is carried out by them (Narmatha et al., 2009). Rogers and Shoemaker (1971) while describing the model of decision process, considered knowledge as a function of a stage of decision making process when an individual is exposed to the existence of an innovation and gains some understanding of how it functions. In coastal eco-system, due to poor land holding, the resource poor farm families usually opts livestock as an additional and ancillary viable enterprise for sustainable livelihood. Hence it is pertinent to assess the existing knowledge level of farm women in all the components of livestock farming which could be helpful in planning to increase the production as well as the productivity of livestock farming in coastal rural areas for their holistic development. Keeping this fact in view, the present study was undertaken to find out the knowledge of farm women in livestock management and its relationship with their socio-economic traits.

Methodology

The investigation was carried out in purposively selected Balasore district from the coastal districts of Odisha state. It has 81 kms of coast line and six out of the 12 community development blocks are adjacent to the coast of Bay of Bengal. One village from each of the block was selected through random sampling technique. About 90 per cent of total farming community of the district is resource poor coming under small and marginal categories. Twenty resource poor farm families were selected purposively from each village. Data were collected from the 240 farm women personally through a pre-tested interview schedule. Knowledge in livestock management was measured in a scale of 2, 1, 0 scores, allotted to fully known, partially known and not known about the practices (Nath and Nayak, 2008). The total score and mean score of each activity was calculated. Knowledge Index (KI) was calculated to assess the extent of knowledge farm women were having on each important attributes of livestock farming. KI of each activity was calculated using the formula (Meena et al., 2009):

$$KI = \frac{SO}{PS} \times 100$$

Where KI=Knowledge index expressed in percentage
SO= Score obtained in individual activity
PS= Potential score of each activity

Attempts were made to establish correlation between the knowledge levels of farm women in

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livestock farming with certain socio-economic variables employing the formula suggested by Pearson.

Findings

According to the livestock census of Odisha (2003), about 41.6, 20.2, 16.1 per cent of the total livestocks of Balasore district are the poultry birds, cows and goats respectively. Buffaloes, sheep and pig like animals have very meager presence in the district. Analysing the domestication of livestock, it was found that 24(10%) households of the total sample did not possess any livestock.

Table 1 depicts the status of various types of livestock reared by small and marginal farming categories in Balasore district.

Table 1 : Major Livestocks Reared by the Resource Poor Farm Families

n=240

Livestock	Number	Frequency	Per cent
Cattle	No cattle	49	20.4
	1-5 cattle	115	47.9
	5-8 cattle	53	22.1
	8-15 cattle	20	8.3
	>15 cattle	3	1.3
Milch cows	No milch cow	100	41.7
	1-2milch cows	117	48.7
	3-4milch cows	21	8.8
	>5 milch cows	2	0.8
Poultry birds	No bird	98	40.8
	1-5 birds	59	24.6
	5-8 birds	55	22.9
	>8 birds	28	11.7
Goats	No goat	92	38.3
	1-5 goats	56	23.3
	5-8 goats	31	12.9
	8-15 goats	32	13.4
	>15 goats	29	12.1

A perusal of Table 1 revealed that 20.4 per cent of the responding samples did not have any cattle. 41.7, 38.3 and 40.3 per cent of the responding sample being without a milch cow, goat and poultry bird respectively, indicates the neglect of livestock farming by the small and marginal category of farm families. 61.7 per cent of the respondents had one or more number of goats. 11.7 percent of respondents had more than 8 poultry birds and 25.5 percent had more than 8 goats. Further it was observed that only 1.3 per cent of the sampled respondents had

more than 15 numbers of cattle whereas 12.1 per cent had more than 15 numbers of goats. Only 0.8 per cent of responding farm women had more than five milch cows and 48.7 per cent had one or two milch cows. Therefore it could be concluded that most of the farm women belonging to small and marginal categories did not take dairy enterprise commercially and the preference towards goat was more than the cattle.

Table 2 : Knowledge Level of Farm Women in Livestock Management

n=240

Activities	Parameters tested	Fully known	Partially known	Not known	Mean score	KI (%)
Shed construction	Types of shed, light and air ventilation, cleanliness	44 (18.3)	111 (46.3)	85 (35.4)	0.82	41.5
Breed selection	Types of breed and characters	0 (0.0)	51 (21.3)	189 (79.7)	0.21	10.6
Feeding management	Feeding schedule, composition of feed, water and feed management	185 77.1)	49 (20.4)	6 (2.5)	1.75	87.3
Fodder cultivation	Types of fodder, their nutritive value	0 (0.0)	7 (2.9)	233 (97.1)	0.03	1.5
Health care and management	Diseases, causes, curative and preventive measures	7 (2.9)	109 (45.4)	124 (51.7)	0.51	25.6
Preservation	Preservation of products, bi-products	0 (0.0)	77 (32.1)	163 (67.9)	0.32	16.0
Value addition	Types of bi-products, quality maintenance	15 (6.3)	164 68.3)	61 (25.4)	0.81	40.4
Compost making from various products and bi-products	Skill of composting, vermi-composting	22 (9.2)	202 (84.2)	16 (6.6)	1.02	51.3

(Figures in the parentheses represent the percentage)

From Table 2 it can be observed that the 77.1 per cent farm women had full knowledge on feeding management. During discussion it was found that maximum number of responding farm women was very often performing the task of giving food and water to domestic animals. They were well aware about the feeding habit and feeding preferences of their livestock. This might be the factor of having better knowledge of farm women in this aspect of livestock farming. Therefore, the knowledge index in this activity was also found the highest, i.e. 87.3 per cent. In compost making the responding farm women obtained an average score of 1.02. In the rest activities farm women had poor knowledge (< 1.00). In breed selection, product preservation and fodder cultivation none of the sampled farm women had full knowledge. There was a huge gap of knowledge in farm women in these activities. Special emphasis should be given to bridge the gap. Only 2.9 per cent of farm women had partial knowledge on fodder cultivation. It indicates the poor adoption of fodder cultivation among the respondents. This might be the cause of poor productivity of dairy animals of Odisha. 6.3 percent of farm women belonging to small and marginal categories had full knowledge on value addition procedures of the livestock

products. The knowledge index of 10.6 per cent in breed selection shows the lack of exposure and awareness about latest innovations of livestock management among the farm women. More than half of the responding farm women (51.7%) percent were found no knowledge on healthcare and management. Though it was revealed in the previous studies of Muhammad et al. (2006), Javed et al. (2006) , Mishra et al. (2008), Despande and Shibapara (2010) and Chauhan (2011) that farm women were very much involved with the livestock management, their lack in knowledge on the above mentioned vital activities must have a negative impact on the productivity of livestock.

Different antecedent variables of individual farm woman were found correlated with their knowledge level in livestock rearing and management (Table 3).

Table 3 : Correlation between respondents' antecedent variables with their knowledge level

Antecedent Variables	'r' values
Age	0.0582
Education	0.0561
Caste	0.3437**
Farm size	0.0682
Family type	-0.0566
Farming experience	0.1860*
Cosmopoliteness	0.2224*
Family income	0.1986*
Economic orientation	0.2356**
Social orientation	0.3243**

**Significant at 1% level of probability
*Significant at 5% level of probability

The above table indicates a few socio-economic traits had significant correlation with the knowledge of farm women in livestock management. The correlation between the caste and social-economic orientation of farm women of these resource poor categories and their knowledge in livestock management were found highly significant and positive but farming experience, cosmopoliteness and family income had positive influence on the knowledge level of the respondents at 5 per cent level. It indicates farm women belonging to higher caste and more socio-economic orientation had more knowledge than the others. Furthermore, no significant association was found between knowledge level of the respondents with their age, education, land holding and family size. It is surprising to find that education had no significant relation with the knowledge in livestock farming. It shows higher educated resource poor farm women had no significant difference in knowledge with the farm women having less qualification. It may be due to the lack of interest of the majority of the respondents towards livestock farming.

Conclusion

From the study it could be concluded that age, education, farm size and family size of the respondents had no relationship with their knowledge level but caste and socio-economic orientation had positive and significant association in livestock management. Further, it was found that the resource poor farm women of coastal eco-system bear very less knowledge in the most important aspects of livestock rearing like fodder cultivation, breed selection, health care, preservation and value addition of products irrespective of age, caste, education and all social hierarchies. Thus, emphasis should be given to reduce the knowledge gap by providing them proper training. The officials of

animal resources department should effectively disseminate the knowledge to the farm women to make livestock farming a sustainable means of livelihood. Exclusive trainings for women could be organized to expose them to livestock farming as a viable enterprise, thereby increasing their knowledge level. More women para- workers, *gomitras* should be appointed for better effective dissemination of knowledge to farm women.

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Factors Discriminating the Effectiveness of Women's Joint Liability Groups in Agriculture: Evidences from Kerala

Sajesh V K

Collective farming by women groups was initiated by Kerala State Poverty Eradication Mission (Kudumbasree) as strategy to enhance the livelihood options of women from small and marginal back grounds as well as to contribute to the food security of the state. Kudumbasree is a Self Help Group (SHG) based women oriented initiative launched in 1998 by the State Government with the active support of Government of India and NABARD. The lower most tier of Kudumbasree constitutes the SHGs consisting of 10-20 women members selected from the poor families. SHGs under Kudumbashree are known by the name 'Ayalkoottam' (Neighbourhood Groups). Kudumbasree is one of the largest women's movement in Asia with 3.8 million members in 0.2 million SHGs (Kudumbasree, 2010). Since inception, Kudumbasree has promoted farming and other allied activities for income generation of SHG members. Many special projects on agriculture have also been implemented by the mission in collaboration with local self governing bodies and other governmental agencies. Collective Farming is an initiative introduced by Kudumbashree to encourage cultivation by neighbourhood groups. Joint liability groups (JLGs) of women farmers were formed under the collective farming initiative Presntly, there are 2,25,200 women cultivators in 46444 groups were cultivating various crops like paddy, banana, tapioca and vegetables in 25062 hectare (Kudumbasree, 2010).

Methodology

The study was conducted in Thiruvanathapuram districts of Kerala. The units of analysis of the study were exclusive women groups under Kudumbasree programme involved in collective farming activities. From the district fifty groups were selected following a multi stage random sampling procedure. The Personal interview with structured questionnaire was used for collection of primary data.

To assess the perceived effectiveness of women groups in agriculture, before-and-after research design was used and effectiveness was assessed for both the periods by using effectiveness index. In before-and-after design, effect of the treatment (*JLG fromation*) would be equal to the level of the phenomenon after the treatment minus level of the phenomenon before treatment (Kothari, 2004) The effectiveness index was developed for the study based on five components which were selected based on literature review and expert opinion and are discussed below.

(I) Resource mobilization: resource mobilization was opertionalised as the extent to which various resources like credit, inputs and animals were available to the respondent

(ii) Extension orientation: Extension orientation was operationalised as the extent to which the respondent was aware of various

extension programmes, access to and availability of public and private extension services and participation in extension activities.

(iii) Marketing effectiveness: Marketing effectiveness refers to respondents' perception about availability of market information, presence of intermediaries, collective marketing facilities, bargaining power of producers, transparency in marketing operation and marketing transaction cost

(iv) Capacity building: Capacity building was operationalised as the extent to which respondent have knowledge and skill to undertake diversified activities, to diagnose and solve the problems and to learn and use innovations. In case of the four components mentioned above, respondents were categorized into following categories based on their responses

(v) Technology adoption: Technology adoption was operationalised as the extent to which the respondent has adopted various dairy technologies. Adoption of dairy technologies by the respondent was measured on a nominal scale based on the responses.

For each of these components separate index was calculated as follows for both periods:

$$\text{Effectiveness index} = \frac{\text{Actual score obtained for that component}}{\text{Maximum possible score for that component}} \times 100$$

Combined effectiveness index was also calculated for both the periods by taking equel weight for all the sub components viz. resource mobilization, technology adoption, extension orientation, marketing effectiveness and capacity development.

Discriminant function analysis (DFA) was used to find out the factors which discriminate the collective farming groups as less effective and more effective. Discriminant function analysis (DFA) is a statistical technique to study difference between two or more groups with respect to many variables at the same time (Klecka,1980). Zibaei and Bakhshoodeh (2008) have used DFA to find out the determinants of sprinkler irrigation technology discontinuance in Iran. The women's farming groups were classified into two classes of almost equal number based on the value of the combined effectiveness index (high and low) and coded as 1 and 2. Socio economic and psychological variables considered for analysis include age, education, annual income, land holding, livestock holding, social status, social participation, economic motivation, support from IKP, group dynamics, functional linkage, credit availed, self reliance and risk taking ability.

A linear discriminant equation,

$D=v1_{X1}+v2_{X2}+v3_{X3}+...+vi_{Xi}+a$, is constructed such that the two groups differ as much as possible on D.

Where D = combined effectiveness index after group mobilization.

$_X$ = respondent's score for the socio economic and psychological variable as discussed above

v = the discriminant coefficient or weight for that variable

a = a constant

i = the number of predictor variables.

Those variables with the largest standardized discriminant coefficients are the ones that contribute most to effectiveness of SHGs.

Findings

1. Effectiveness of Women's Joint Liability Groups in Agriculture

Perceived effectiveness of collective farming groups was studied using a before and after research design. Five components were identified and improvement in these components was analysed and mean score for all the components was presented in table 1.

The results of the paired t-test showed that difference in the mean score for all the components of effectiveness index were statistically significant at 1% level of significant. There was considerable difference between the mean score of components in both the periods. Access to resources like land, inputs and credit has considerably improved after the initiation of collective farming. Sore for resource mobilization component has increased from 28.15 to 66.67 due to collective farming intervention

Table 1: Mean score obtained by JLG members on the components of effectiveness index.

Sl.No	Components of effectiveness index	Score		Paired difference	t-value
		before	after		
1	Resource mobilization	28.15	66.67	38.52	11.3089
2	Extension orientation	15	53.33	38.33	3.1438
3	Marketing effectiveness	24.94	43.7	18.76	3.8973
4	Technology adoption	22	69.6	47.6	5.32984
5	Capacity building	28.15	66.67	38.52	11.3089

Group members were able to access land on lease with the help of Kudumbasree personnel and office bearers of gram panchayats. Access to credit, an important bottleneck for small and marginal farmers, was facilitated by group saving and support of the mission. Under the collective farming initiative of Kudumbasree mission, Primary Agricultural Cooperative Societies (PACS) provide interest free loans for selected crops and play an important role in the farming by these women groups. Nationalised banks and some private banks provide crop loan for the group at 7 percent. Out of this 7 percent, 5 percent is provided as interest subsidy from Kudumbashree and hence the group gets the loan at a low interest rate. Access to credit has improved the timely access to inputs also. Reduction of input transaction cost due to

economy of scale achieved in purchase and transportation of inputs has also contributed to the effectiveness of collective farming groups in resource mobilization front. The pooling of human resource has helped them to overcome the problems of labour shortage and better supervision of the enterprise. It was observed that group mobilization has not improved the marketing effectiveness to a markable level in the case of crop production. Under collective farming initiative, Kudumbasree mission has provided financial and technical assistance of crop production, but marketing assistance is restricted to organization of seasonal fairs only. Since the collective marketing facilities not in operation, JLG members were marketing their produces individually. There was noticeable improvement in the awareness about and adoption of technologies. But level of adoption is still lower compared to improvement in the awareness about technology. Though all the JLG members were aware of the High Yielding Varieties, rate of adoption was found to depend on the provision of seeds / planting material by promoting institution or agricultural department.

1. Discriminating Factors of group effectiveness

Discriminant function analysis was carried out to find out the factors which discriminate the collective farming groups as high and low effective with respect to their effectiveness in terms of resources, technology, extension, marketing and capacity development. Respondents were classified into two groups (High and Low) based on their perceived effectiveness score. Appropriateness of this classification was verified using classification table results. The classification results revealed that 96% of original grouped cases correctly classified and 88% of cross validated groups are correctly classified.

Table 2 : Classification results of discriminant function analysis.

		Effectiveness Index	Predicted Group Membership		
			High	Low	Total
Original	Count	High	24	1	25
		Low	1	24	25
	%	High	96	4	100
		Low	4	96	100
Cross-validated[a]	Count	High	22	3	25
		Low	3	22	25
	%	High	88	12	100
		Low	12	88	100

The major factors discriminating the groups based on their effectiveness as revealed by the result of the analysis were level of education, social participation, economic motivation, group dynamics and support from Kudumbasree mission.

Table 3 : Results of discriminant function analysis of factors affecting effectiveness of collective farming

Sl.No	Socio-economic characterestics	Discriminant function coefficient	Significance
1.	Age	0.537	0.074
2.	Education	0.285	0.056
3.	Annual Income	1.213	0.757
4.	Land Holding	1.264	0.462
5.	Social Status	0.760	0.105
6.	Social Participation	1.872*	0.019
7.	Information seeking behaviour	0.507	0.324
8.	Economic Motivation	0.586**	0.019
9.	Group dynamics	1.006**	0.000
10.	Support of Kudumbasree	0.835*	0.000
11.	Functional Linkage	0.189**	0.032
12.	Risk Taking Ability	0.474	0.002
13.	Self Reliance	0.500	0.569
14.	Credit availed	0.011	0.062

*Significant at the 0.05 level of the probability. **Significant at the 0.01 level of the probability.

It can be inferred that groups with members who were better educated and having more participation in formal organizatons were able to mobilize the resources and demand for extension services. They were able to better understand the technologies and practices and adopted it. Economic motivation of the group memebrs has contributed to the effectiveness through their urge to maximize the gains for improvement in their economic condition and standard of living. Group dynamics effectiveness in terms of participation of members, democratic approach and group cohesion is important to harness the potential of group mobilization. The results have shown that groups with higher group dynamic effectiveness were more effective in terms of resources, technology, extension, marketing and capacity building. Efforts of Kudumbasree mission were instrumental in group mobilization as well as forging their linkages with key stake holders. Convergence of various schemes and activities of line department with Kudumbasree mission have significantly related to the support received by the groups.

Conclusion

The assessment of effectiveness of women's joint liability groups involved in collective farming in Thiruvananthapuram district of Kerala

revealed that farming groups could prove considerable effectiveness in terms of resource, technology, extension, marketing and capacity building. Scope for further improvement still exists. It was also observed that coordination with other agencies and institutions like co-operative banks, line departments as well as convergence with various programmes of central and state governments played an important role in realizing the potential of group mobilization. Role of concerned promoting instituion (Kudumbasree mission) was found to be instrumental in enhancing the performance of the groups. Group mobilization and collective action in agriculture has the potential to address the multiple constraints faced by small, marginal, women and tenant farmers. So, it is pertinent to pay attention to the factors affecting effectiveness of collective action in agriculture to promote growth as well as equality in agriculture.

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Knowledge of Rainfed Chilli Growers about Recommended Package of Practices

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India is predominatey an agricultural country as 70 percent of its population depends on agriculture and 28 percent of national income is deriving from the same. If we compare our average production per unit area with that of developed countries, it will be seen that the same is very low. For this purpose, it is essential to look into various facts of the problem. One of the reasons of low productivity would have been attributed to the adoption of recent technology. Adoption behavior is influenced by various factors, which prominently include knowledge about the technology, adoption and constraints they face in adoption of the technology. This is not the case with cereals or pulses but it is also applicable to the cash crop like chilli. Chilli is an important cash crop in Vidarbha region. However, the area under cultivation of chilli is declining. As the adoption behavior of farmers is influenced by various factors and if they are identified, it will be possible to increase the area and also the production of chilli

Methodology

The present study was conducted in Achalpur Panchayat Samiti of Amrawati District. Ten villages were selected purposively having large area under chilli. Tweleve chilli growers were selected from each village. In all 120 farmers were selected by proportionate random sampling. The data were collected by personally interviewing the respondents with the help of structured schedule. Collected data were carefully examined, classified, quantified and tabulated. Frequencies, mean, standard deviation, were employed for interpreting the results. Results obtained after analysis have been summarized as below.

Findings

Practicewise knowledge about rainfed chilli cultivation

A critical look Table 1 reveals that among chilli cultivation practices, cent percent of the respondents had complete knowledge about recommended spacing and stage of ear thing up to chilli crop followed by great majority of them found to have complete knowledge about time of transplanting (97.50%), type of soil required (69.67%) and age of seedlings on transplanting (95.83%). Moreover, majority of them possessed complete knowledge about dose of FYM (85.84%). Further probe in this regard found that the name of recommended varieties (71.67%), time of fertilizer application (69.17%) doses of fertilizers (65.83%), number of spraying to be applied (65%) and important diseases were known completely to two-third majority. However, less than half of them were well versed only with name of important pests (48.33%) and doses of plant protection measures (32.50%) to be followed for chilli crop. The practice of dipping the seedlings was fully known to negligible (5.83%) portion of the chilli growers.

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Table 1 : Distribution of the respondents according to their knowledge about rainfed chilli cultivation practices

Sr.No	Practices	Knowledge n=120					
		Complete		Partial		No Knowledge	
		F	%*	F	%*	F	%*
1	Soil	116	(96.67)	4	(3.33)	0	(0.00)
2	Varieties	86	(71.67)	34	(28.33)	0	(0.00)
3	Time of transplanting	117	(97.50)	0	(0.00)	3	(2.50)
4	Age of seedlings on transplanting	115	(95.83)	3	(2.50)	2	(1.67)
5	Dose of FYM	103	(85.84)	11	(9.16)	6	(5.00)
6	Spacing	120	(100.00)	0	(0.00)	0	(0.00)
7	Dipping of seedling in insecticide solution	7	(5.83)	0	(0.00)	113	(94.17)
8	Doses of fertilizers	79	(65.83)	39	(32.50)	2	(1.67)
9	Time of fertilizers application	83	(69.17)	37	(30.83)	0	(0.00)
10	Earthing up	120	(100.00)	0	(0.00)	0	(0.00)
11	Important pests	58	(48.33)	50	(41.67)	12	(10.00)
12	Important diseases	74	(61.67)	46	(38.33)	0	(0.00)
13	No. of sprayings	78	(65.00)	42	(35.00)	0	(0.00)
14	Doses of plant protection measures	39	(32.50)	58	(48.33)	23	(19.17)

*****The sum of percentage is more than 100 due to multiple responses.

Secondly, when the respondents, in respect of partial knowledge was critically seen, it was revealed that near by half of the respondents (48.33%) possessed partial knowledge about doses of plant protection measures followed by 41.67 percent 38.33 percent and 35 percent of them having partial knowledge about name of important pests, diseases and number of sprayings to be sprayed for chilli crop respectively. Partial knowledge was also noticed about doses and time of fertilizer application and name of recommended varieties with 32.5, 30.83 and 28.33 percent of the respondent respectively. The respondents with partial knowledge about doses of FYM (9.16%), type of soil required (3.33%) and ages of seedlings on transplanting were very meager (2.5%).

Thirdly, it was found from the data presented in Table 1. that great majority of the respondents (94.17%) were unaware about dipping of seedlings in insecticide solution on transplanting. Less than one-fourth of them (19.17%) did not know about doses of plant protection measures. The knowledge of important pests of chilli (10.00%), doses of FYM (5.00%), time of transplanting (2.5%), age of seedlings on transplanting and fertilizers doses (1.67%) were not possessed by very negligible percent of the respondents The present findings go to corroborate the results of Makode (1987), Ambarkar (1993) and Wankhade (1996) who had reported that majority of the respondents were moderately aware about recommended cultivation practices of chilli, vegetables and onion respectively.

Besides investigating practice wise knowledge the researcher has also an attempt to categorize the respondents on the basis of knowledge level they possessed in respect of chilli cultivation. The information has been presented in Table 2.

Table 2: Distribution of respondents according to their knowledge level

Sr.No.	Category	Frequency	Percentage
1	Low	18	15.00
2	Medium	74	61.67
3	High	28	23.33
	Total		100.00

It could be observed from Table 2 that majority of respondents (61.67%) had moderate knowledge about recommended rainfed chilli cultivation practices, followed by nearer to one-fourth of them (23.33%) with high level of knowledge. Moreover, 15 percent of the respondents belong to the category of low level of knowledge.

Conclusion

Thus, it could be concluded that cent percent of the respondents having complete knowledge about spacing and earthing up practices followed by great majority of them possessed knowledge about time of transplanting, selection of soil and age of seedlings on transplanting. After that half of the respondents possessed partial knowledge about doses of plant protection measures and important pests of chilli lastly great majority of the respondents did not have the knowledge about dipping of seedlings in insecticide solution while transplanting. It could, further, be concluded that majority of the respondents were mediocre about the knowledge of chilli cultivation practices.

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A Study on Communication Openness of Dairy Organization

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In view of emphasis and imputus accorded to dairy development through Co-operative movement, there is an urgent need for effective management and integration of various functions and activities in dairy organization viz. production, procurement, transportation, processing and marketing etc. These activities in the routine operation as well as during emergency situations largely depended upon communication system operating at various levels of the organization. Being a highly departmentalized and specialized, the dairy organization represent a complex system which has necessitated a great deal of co-ordination among its management and employees through an efficient and open organizational communication network.

Of late, it is being increasingly recognized that open communication between employees and management is vital to the target achievement and success of the organization. According to Willits (1967), " Open communication may be defined as the probability that an individual will attempt to share accurately his views, feelings and intentions with another, on matters pertaining to organizational objectives. Communication climate is generally referred to as communication openness. In the case of Redding Scheme (1966) and Falcione's Study (1974), the communication openness was described in terms of feedback dimensions. In taking a 'system approach' to the study of communication network openness, Rogers (1973) focused upon the relationship which existed between perceived openness of the organizational communication network and perceived characteristic of the organization. Keeping its importance in view, the study was, therefore, Conducted with an objective to assess the communication openness at different hierarchical levels of the dairy organization.

Methodology

The study was conducted in Uttar Pradesh (U.P) Dairy cp-operative organization. The entire state has been brought under the umbrella of Anand pattern Dairy Co-operative model broadly under the administrative control of two dairy organizations namely Pradeshik Co-operative Dairy Federation ltd. (PCDF) and State Milk Board (SMB). It was, therefore, envisaged to take a comparative view between these two organizations i.e., PCDF & SMB with respect to studied dimensions of communication openness. Keeping in view the three tier structure of U.P. Diary Co-operative organizations, the sampling size of the study comprised of three different hierarchical level i.e., head office at the apex level, milk union at district level, and the Dairy Co-operative society at the village level. In PCDF the composite sampling of all three levels came to 99. In SMB, total sample size of the respondent numbered 85. The data was collected through a well structured interview schedule.

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Communication openness was measured with the help of Roger's (1973) 35-item Organizational Communication Network Openness Instrument (OCNIO). It has two major components viz., communicative initiative and communicative responsiveness. Communicative initiative referee to the behavior perceived by the respondent as being initiated by a message-sender. It was measured with the help of 17-items within the Organizational Communication Network Openness Instrument (OCNOI) concerning suggestions, opinions, criticism and complaints.

Communicative responsiveness referes to the message recipient's interpretation of the message- sender's action or to suggestion, opinion, criticism and complaints. This was measured with the help of Roger's (1973) 18-accepteance and response questions on the organizational communication Network Openness Instrument (OCNOI).

Findings

Communication openness was measured with the help of Roger's (1973) organizational Combination Network Openness Instrument (OCNOI). It has two major components viz. (i) communicative initiative and (ii) communicative responsiveness. The data regarding openness of communication as perceived by the respondents at different levels in both the organization have been presented in table 1.

Table 1 : Communication Openness at different levels of the organizations (Mean Score)

	SMB				PCDF			
Communication Openness	**Head Office**	**Milk Union**	**D.C. Society**	**Total**	**Head Office**	**Milk Union**	**D.C. Society**	**Total**
Communication initiative	39.05^{a}	43.16^{b} ±0.99	33.45^{c} ±0.80	38.24^{A} ±0.714	43.19^{a} ±0.86	41.76^{b} ±1.32	38.90^{c} ±1.03	41.70^{A} ±0.63
Communication responsiveness	40.57^{a} ±2.94	42.19^{b} ±0.80	35.60^{c} ±0.90	39.211^{A} ±1.11	45.00^{a} ±1.25	40.07^{b} ±1.25	38.73^{b} ±0.70	42.45^{B} ±0.74
Communication openness	76.63^{a} ±3.73	85.35^{a} ±1.44	69.02^{c} ±1.69	88.19^{A} ±1.85	81.84^{a} ±2.22	81.84^{b} ±2.22	76.90^{c} ±0.95	83.93^{A} ±1.23

Means across the row within and between the organization bearing different superscripts are significantly different.

The data given in the table 1 indicated that the amount of communicative initiative in PCDF was more than of SMB. However, the degree of imitativeness found to be maximum at head office level in PCDF and at milk union level in SMB. In PCDF, communicative initiative was found to be an agreement with the finding of the Ansari (1990) who reported maximum initiatives at headquarters level in the Department of Animal Husband. Besides, a highly significant

difference between both the organization was found in respect of communicative imitativeness it was significantly higher in PCDF then that of SMB. Further, communicative initiative was found to be significantly higher at head office level in PCDF and at milk union level in SMB.

As far as communicative responsiveness was concerned, there was a highly significant difference between SMB and PCDF. The communicative responsiveness was found to be significantly in PCDF than that of SMB. It was significantly higher at head office level in PCDF and at milk union level in SMB. It was also quite of obvious from the table 1 that the communicative openness in PCDF was more then that of SMB. The extent of openness was found to the maximum at head office level in PCDF and at milk union level SMB. The communication openness was found to be significantly higher in PCDF than that of SMB. Moreover it was found to be significantly higher at head office and milk union level in both the organization.

Communicative initiative, responsiveness and communication openness were found to be significantly higher in PCDF at head office level which could be attributed to the fact that the head office of PCDF being dominated by the professionals having business skill and managerial expertise often come out with innovative schemes and projects. Being the implementing agency of operation flood programme. the PCDF not only receives financial and technical support from NDDB but the consultancy service consultancy of practical problem is also given by NDDB. It enables PCDF to take initiatives and correctives measures at head office level more frequently as compared to SMB.

New schemes, plans, policies, targets & budgets are mostly financed at head office level and sent to the units or milk unions for execution. At the same time, the head office in PCDF seems to be responsive to the needs and problems of milk unions by offering practical solution and guidelines. Probably, these are the reasons why the communicative initiative, responsiveness and finally the openness are maximum at head office level in PCDF. The head office of the SMB being manned by the Govt. officials and bureaucrats who might be lacking in innovativeness and imitativeness. Probably, it might be responsible for lower extent of communicative initiative at the head office level in SMB.

Conclusion

The study clearly revealed that overall, the extent of communicative initiative, responsiveness and openness in PCDF was significantly higher than that of SMB. Further the amount of communicative initiative, responsiveness and communication openness were found to be maximum at head office level in PCDF and milk union level in SMB. The significantly higher amount of communication openness in PCDF was attributed to be fact that the PCDF was managed professionally on commercial line whereas the SMB was victim of red tape and bureaucratic approach. Hence, need of the hour is to promote communication openness in SMB as well by recommending a complete overhaul and more professional management of its organization as observed in case of PCDF.

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Knowledge and Adoption of Dry land Technology for *Rabi* Jowar

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Rabi jowar is major crop in the Drought Prone Area of Maharashtra which occupies more than 80 per cent of the rabi cropped area. Dry farming is practiced in Maharashtra in about 92 per cent of the area Dry land farming technology has been developed at the Agricultural Research Station, Solapur. The adoption of Dryland technology was not in fullest extent by the farmers in DPAP Area. Still the yield of rabi jowar on farmer's field is low.

Knowledge is one of the important components of behavior which plays a major role in the covert and overt behavior of an individual. Once knowledge is acquired, it produces changes in one's thinking process which would lead to further changes in the aptitude of the individual. In the present study an attempt has been made to study the knowledge level and socio-personal, economic and psychological characteristics influencing on adoption about improved dryland technology for rabi jowar small, medium and large farmer in each villages

Methodology

The findings of the study are based on the data collected from 168 farmers randomly selected villages from Karmala tahshil of Solapur district. Care was taken to select 7 farmers in each group as Karmala taluka of Solapur district (M.S.) was purposively selected because as the Drought Prone Area Programme is in operation in this taluka by comparatively more area is under dryland jowar in this taluka than other taluka's in this districts. The data were collected personally by interviewing the respondents. Knowledge index computed by using the following formula were applied to find out the knowledge level of improved dryland technology for rabi jowar.

$$\text{Knowledge Index} = \frac{\text{Score of correct answer}}{\text{Total raw score}} \times 100$$

The respondents were classified as under in three categories on the basis of knowledge index.

1. Low Knowledge (31.25 to 58.81 Score)
2. Medium Knowledge (58.82 to 75.10 Score)
3. High Knowledge (75.11 to 100.00 Score)

Table 1 : Distribution of the three group of farmers by their level of knowledge about the recommended dryland technology of rabi jawar

Sr No.	Level of Knowledge	Small farmers n=56	Medium farmers n=56	Large farmers n=56	Chi-square × 2
1.	Low	20 (35.71)	19 (33.93)	13 (23.21)	4.59^{NS}
2.	Medium	24 (42.86)	23 (41.07)	33 (58.93)	
3.	High	12 (2.43)	14 (25.00)	10 (17.86)	

N.S.= Chi-Square (x^2) value not significant at 0.05 level

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Level of Knowledge

On the basis of knowledge index farmers were grouped into three categories as low, medium and high knowledge levels in three types of farmers viz, small, medium and large. This information is presented in Table 1.

It is revealed that a large proportion of respondents had medium knowledge level, low knowledge followed by high knowledge was possessed by farmers. There was no significant difference between three categories of the farmers and their knowledge level. This indicates that the knowledge is not dependant on category of farmers.

The data in respect of nature of association between characteristics of the respondents and adoption about dryland rabi jowar technology are presented in Table 2

Table 2 : Nature of association between characteristics of the respondents and their adoption regarding dryland rabi jowar technology

Sr. No.	Characteristics Category	Adoption level			Chi-square X^2
		Low n=40	Medium n=93	High n=35	
	1	2	3	4	5
1.	**Education**				
	Illiterate	16	20	06	12.95* d.f.=4
	Primary and secondary	18	60	17	
	Higher education	06	13	12	
2.	**Size of land holding**				
	Small	15	28	13	
	Medium	10	40	06	11.90* d.f.=4
	Large	15	25	16	
3.	**Annual income**				
	Low	17	23	07	
	Medium	11	52	11	21.05** d.f.=4
	High	12	18	17	
4.	**Social participation**				
	Low	20	28	08	
	Medium	13	47	13	12.70* d.f.=4
	High	07	18	14	
5.	**Socio-economic status**				
	Low	15	20	05	
	Medium	14	52	14	11.24* d.f.=4
	High	11	21	16	
6.	**Sources of information**				
	Low	16	19	08	
	Medium	13	51	11	13.01** d.f.=4
	High	11	23	26	
7.	**Extension contact**				
	Low	16	20	09	
	Medium	15	55	12	12.71* d.f.=4
	High	09	18	14	

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Sr. No.	Characteristics Category	Adoption level			Chi-square X^2
		Low n=40	Medium n=93	High n=35	
	1	2	3	4	5
8.	**Risk orientation**				
	Low	17	19	08	18.58^{**} d.f.=4
	Medium	15	58	12	
	High	08	16	15	
9.	**Cosmopoliteness**				
	Low	20	28	08	12.70^{*} d.f.=4
	Medium	13	47	13	
	High	08	18	14	
10.	**Knowledge score**				
	Low knowledge	20	24	08	18.08^{**} d.f.=4
	Medium knowledge	13	54	13	
	High knowledge	07	15	14	

** = Chi-square(X^2) value significant at 0.01 level
*= Chi-square(X^2) value significant at 0.05 level

It could be seen that annual income and risk orientation were found to have highly significant association with adoption of recommended dry farming technology of rabi jowar. Education, size of land holding, social participation, socio-economic status, sources of information, extension contact and posmopoliteness werw found to be significantly associated with adoption of recommendet dry farmng technology of jowar. The Chi-square value was significant with adoption about recommended dry farming practices of rabi jawar. This revealed that higher the schooling, more the adoption of new technology. Formal education develops his scientific and rational outlook. Educated persons are more likely to see facts, situations, environments and innovations in their proper perspective than the uneducated individuals hence they are better oriented to new technology. Association between size of land holding and adoption was significant. The reason for this might be that the large farmers are able to sustain the losses, can spare the land for new practices and had risk bearing capacity to adopt new technology.

The Chi-square value was highly significant with adoption. It was observed that as the income level increases adoption level also increases in the same direction. The farmers who had sound economic condition can afford to invest money for adoption of new innovations without much difficulty, when they are guided and convinced about the superiority of new technology. The Chi-square value was significant with adoption. This may be due to participation in various activities of social, economic and political institutions in a community. An individual interacts and communicate effectively with each other thereby learning get reinforced and, thus he gets motivated for the adoption of innovations There was significant association between socio-economic status and adoption

about recommended dry farming practices of rabi jowar. The reasons might be that the respondents belonging to the higher socio-economic status usually have more social prestige and sound economic position. The Chi-square was highly significant with adoption. It is the fact that when an individual gets information through different and many sources the message gets confirmed.

Association between extension contact and adoption was significant about recommended dry farming practices of rabi jowar. Farmers having more extension contacts adopt more practices. Farmers having high extension contacts are in touch with latest agricultural technology through extension personnel. This results into better gain in knowledge about new practices. There was highly significant association with adoption regarding recommended dry farming practices of rabi jowar. These respondents who had high risk are psychologically prepared to try new innovations with a view to make progress in farming. They have foresight and rational thinking. These facts might stimulate them to adopt new technology. There was significant association between cosmopoliteness with adoption. The cosmopolite persons are more receptive have more contacts and visit different places and get knowledge about various aspects. The Chi-square value was highly significant with adoption of recommended dry farming practices of rabi jowar. Knowledge of an innovation is a pre-requisite for adoption of technology. This can be attributed to a common observations that knowledgeable persons tend to get more knowledge through continuous contacts with change agents and outside the world and try to adopt it.

Conclusion

It can be concluded that a large proportion of respondents in small, medium and large farmer's groups had medium knowledge level. Respondents from all categories of farmers having low knowledge were comparatively more than those over high knowledge. It is also observed that there was highly significant and significant association between annual income,risk orientation and education, size of land holding, social participation, socio-economic status, sources of information, extension contacts and cosmopoliteness respectively.

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Training Needs of Potato Growers

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Potato (*Solanum tuberosum* L.) popularly known as the king of vegetables has emerged as fourth most important food crop in India after rice, wheat and maize. Indian vegetable basket is incomplete without Potato. Because, the dry matter, edible energy and edible protein content of potato makes it nutritionally superior vegetable as well as staple food not only in our country but also throughout the world. Now, it becomes as an essential part of breakfast, lunch and dinner worldwide. Being a short duration crop, it produces more quantity of dry matter, edible energy and edible protein in lesser duration of time than cereals like rice and wheat. Training refers to an act, process or method of one who trains. Training indicates a planned activity to which a person is subjected to induce learning. Training aims at behavioral changes to be used in life or vocation. It has a sense of immediacy about application. To increase the production and efficiency of the potato crop, training programme will be prove useful. Study was conducted with an objective to ascertain the training needs of potato growers.

Methodology

Junnar and Ambegaon tahsils of Pune districts were selected for the study purpose. The list of villages having maximum area under potato crop from sample tahsils was prepared with the help of Subject matter specialist of KVK, Narayangaon Dist. Pune and ten villages with maximum area and production were selected for the study purpose. Potato growers were selected by proportionate random sampling method. Thus in all total 120 potato growers were selected randomly from Junnar and Ambegaon tahsils of Pune district. Training need of potato growers was calculated in the form of most needed, needed and not needed by assigning score 2, 1, 0 respectively. Training need index was calculated by using following formula:

$$\text{Training Need Index (TNI)} = \frac{\text{Total obtained score}}{\text{Max. obtainable score}} \times 100$$

Findings

The findings of the present study are presented here under. The data indicates that, 77.50 per cent of the potato growers had most need of training in seed treatment of potato tubers followed by processing (73.33 per cent), varietal selection (65.00 per cent) and 50.00 per cent of the potato growers had most need of training in grading of the potato. It is observed that, 70.83 per cent of the potato growers had medium need of training in production potential followed by marketing (70.00 per cent), fertilizer management (65.00 per cent), plant protection (64.17 per cent), storage (57.50 per cent), irrigation management (55.84 per cent) and 51.67 per cent of the potato growers had medium need of training in seed rate. It is found that, 75.83 per cent of the potato growers had not need of training in spacing followed by soil

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type (53.33 per cent) and 42.50 per cent of the potato growers had not need of training in transportation of potato.

The data revealed that, a large majority of potato growers needed high training need in subject like, seed treatment (85.83 per cent), processing (82.50 per cent), varieties (75.83 per cent), grading (70.41 per cent), irrigation management (63.75 per cent), Plant protection (62.91 per cent), marketing (60.00 per cent), seed rate (59.16 per cent), storage (58.75 per cent), fertilizer management (55.00 per cent) and production potential (52.08 per cent).While, potato growers needs less training in the subjects like transportation (35.41 per cent), soil type (23.33 per cent), spacing (12.08 per cent). In the subject of time of planting no any training need was observed. Average (mean) Training need index or All over training need index of the potato growers in potato cultivation.

$$\text{Average training need index (ATNI)} = \frac{\text{Sum of the all index}}{\text{Total area}}$$

$$\text{Average Training Need Index (ATNI)} = \frac{799.95}{14}$$

$$= 57.13 \text{ per cent}$$

Therefore overall training need index of the respondents is 57.13 per cent. Further the information pertaining to the suggestions of the potato growers about training requirement on potato crop was collected, tabulated and analyzed results are presented

Table 1 : Suggestion of potato growers about Training requirement on potato crop

Sr. No.	Particulars	Frequency (N=120)	Per cent
A)	**Duration of training**		
1	One day	109	90.84
2	Three days	31	25.83
3	Five days	13	10.83
B)	**Place of training**		
1	In own village	108	90.00
2	Krishi Vigyan Kendra, Narayangaon	61	50.83
3	Agri. Research Station/ SAU	23	19.17
C)	**Organization of training**		
1	Krishi Vigyan Kendra, Narayangaon	90	75.00
2	Agril. Technical School	14	11.67
3	Agril. University	26	21.67
D)	**Training method**		
1	Lecture and Practical combine	109	90.84
2	Group discussion	74	61.67
E)	**Time of training**		
1	Pre-seasonal	73	60.83
2	During the crop growth	47	39.17
F)	**Number of training required**		
1)	One training in year	99	82.50
2)	Two training in year	32	26.67

The data depicted in Table1, showed that 90.84 per cent of the potato growers suggested one day training followed by 25.83 per cent and 10.83 per cent of the potato growers required three days and five days of training respectively. Most of the (90.00 per cent) of the potato growers wish the place of training should be in their own village while 50.83 per cent of the potato growers were ready to get training at KVK, Narayangaon followed by 19.17 per cent at SAU. It is seen from Table-18, that 75.00 per cent potato growers were suggested that training should be organized by KVK, Narayangaon followed by 21.67 per cent by SAU and 11.67 per cent by Agricultural Technical School. Most of the potato growers i.e. 90.84 per cent need training through lecture and practical combine while, 61.67 per cent of the potato growers wish to training through group discussion. 60.83 per cent potato growers the suggested pre-seasonal training while 39.17 per cent farmers are ready for training during the crop growth. A majority i.e. 82.50 percent of the potato growers suggested one training programme in a year while 26.67 percent wish to take two training in a year.

Conclusion

Seed treatment, processing, varietal selection, grading, irrigation management and plant protection were the focusing areas of the training. Organizing and conducting training programmes based on felt need of potato growers would definitely influence and change the behaviour in desire manner. Therefore, extension agencies need to orient their training programmes towards the areas as identified in the present study.

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Analysis of Farmers' Queries Received by Mahatma Phule Krishi Vidyapeeth, Rahuri

Patil S.D.[1], Kharde P. B. [2] and S. L. Khose [3]

MPKV, Rahuri renders services to the farmers through Education, Research and Extension Education in the Western Maharashtra with a jurisdiction of 10 districts. The Agricultural Technology Information centre has been started from August 2001 at central campus of MPKV for disseminating agricultural information and technology to the farmers and other stakeholders. ATIC is supervised by the ATIC Manager with four Subject Matter Specialists; the services of other disciplines are made available from other departments, research schemes and projects of university as and when required. After every visit ATIC scientists interact with the farmers regarding the improved agricultural technologies developed by university. The extension activities like field visits, replying the queries of the farmers and other stakeholders, diagnostic services are being performed by the ATIC. Besides, the seed and seedlings, bio-fertilizers, bio-pesticides, processed products and publications are sold through the ATIC to the end users. The university scientists attend daily on an average 150-200 calls from the farmers (Anonymous, 2010). The Agriculture Technology Information Centre (ATIC) was established to achieve the objectives set forth and completes its mandate and fulfills the needs and expectations of the visitors. Therefore, it is important to have information in respect of the nature and subjects of problems. Queries are made by visiting personally or contacting through help lines or letters and by other means of the contacts methods. It is also important to know the content of the queries in detail. The queries indicate the production intelligence of farmers.

Accordingly, the present study on 'Analysis of Farmers' Queries Received By Mahatma Phule Krishi Vidyapeeth, Rahuri' was undertaken with the following objectives: i) to collect and analyze the nature of farmers queries; ii) to identify the extent of various farmers queries and its content analysis; iii) to determine the trends of farmers queries over a period of time; and iv) to study and analyze the location-wise farmers queries.

Methodology

The study was conducted at the Agricultural Technology Information Centre, Mahatma Phule Krishi Vidyapeeth, Rahuri of Maharashtra State in India. In order to get a clear picture of farmers queries received at the ATIC the data available in records at ATIC, MPKV, Rahuri were used for the present study. The data of total five years i.e. from the year April 2005 to March 2010 were analyzed. The collected data were complied and analyzed according to the nature of queries in order to draw meaningful conclusions in the

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terms of frequency and percentage. The queries are so compiled and categorized in year - wise, area - wise, gender - wise, crop -wise, subject - wise, constraint -wise etc.

Findings

Facilities available at Agricultural Technology Information Centre (ATIC)

1. Technology Services: Soil testing, pest and disease diagnosis, farmers training, in service training and technical guidance.

2. Advisory Services: Helpline service, Monthly district workshop, field visits, farmers rallies, mobile crop dispensary, crop demonstrations, on farm testing, diagnostic team visit.

3. Information Services: Print and electronic media like books, news papers, radio, television, internet etc.

4. Sales Services: Agril. Inputs like seed, seedlings, bio-pesticides, bio-fertilizers etc. Publications like *Krishidarshani*, *Shri Sugi*, other books, posters etc

Helpline Service

Helpline service was started at ATIC on 10th October, 2001. Besides the SMS of ATIC, other crop specialist/ experts are also available on phone at ATIC during the afternoon session. The crop experts frequently answer the farmer's queries.

Year - wise trend of farmers visit and trend of queries reported at ATIC

Farmers, students and other stake holders from Maharashtra and adjoining states of Andhra Pradesh, Madhya Pradesh, Gujarat, Karnataka etc. are frequently visiting and in contact with the ATIC for advise, information, publications etc. Year - wise trend of queries received are presented in Table 1 and Table 2.

Year - wise trend of farmers visit

Majority of the farmers visited the exhibition gallery and the number of telephone calls received from farmers increased year after year. It is observed from Table 1 that number of farmers visited the ATIC increased from 15799 (2005-06) to 73676 (2009-10). At the same time the numbers of letters received from farmers decreased from 458 to 95 in year 2009-10. Similarly numbers of telephone calls received from farmers were increased upto 21532 in the year 2009-10. Similar findings were recorded by Sathiadhas and Immanuel (2003) and Sharma *et al.* (2008).

Table 1 : Year - wise trend of farmers visit at ATIC during 2005-10

Nature of Visit	2005-06	2006-07	2007-08	2008-09	2009-10	Total
No. of farmers visited the exhibition gallery	15799	30162	26669	18820	73676	165126
No. of letters received from farmers	458	605	473	119	95	1750
No. of telephone calls received from farmers	1813	3693	11993	15294	21532	54325
Total	**18070**	**34460**	**39135**	**34233**	**95303**	**221201**

Year - wise trend of queries reported

It is observed from Table 2 that majority of the farmers queries reported at ATIC were through personal visits (94.67 per cent), followed by very few number of queries through phone calls (5.00 per cent) and letters (0.33 per cent). These findings are similar to the findings recorded by Sathiadhas and Immanuel (2003) and Sharma *et al.* (2008).

Table 2 : Year - wise trend of queries reported

Year	Personal visit	Phone calls	Letters	Total
2005-06	19834	906	47	20787
2006-07	15773	869	72	16712
2007-08	17508	806	54	18368
2008-09	15083	790	48	15921
2009-10	12809	913	40	13762
Total	**81007**	**4282**	**261**	**85550**
Per cent	**94.67**	**5.00**	**0.33**	**100.00**

Subject - wise distribution of the farmers' queries

Agricultural Technology Information Centre is supervised by the ATIC Manager/ Extension Agronomist with four Subject Matter Specialists viz., Agronomy, Horticulture, Animal Science and Dairy Science and Plant Protection. The services of other disciplines are made available from other departments, research schemes and projects of university as and when required. These experts fulfill the needs and expectations of the visitors/farmers' queries. During every visit experts interact with the farmers regarding the improved agricultural technologies developed by the university. The subject - wise distribution of the farmers' queries are presented in Table 3.

It is observed from Table 3 that majority of the farmers' queries were about Horticulture which is 46.70 per cent, followed by Agronomy (21.15 per cent), Animal Husbandry and Dairy Science (20.49 per cent) and Plant Protection (11.66 per cent). Almost half of queries throughout the period were related to horticulture. The area under horticultural crops has increased due to implementation of National Horticultural Mission programme. This might be result of massive sale of quality planting material all over the state. Every year about eight to ten lakhs of horticultural grafts are sold by the university nurseries.

Table 3 : Subject - wise distribution of the farmers' queries

Year	Agronomy	Horticulture	Plant Protection	Dairy Science	Total
2005-06	178	459	088	185	910
2006-07	191	397	082	193	863
2007-08	144	364	132	166	806
2008-09	166	346	106	172	790
2009-10	227	434	091	161	913
Total	**906**	**2000**	**499**	**877**	**4282**
Per cent	**46.70**	**21.15**	**11.66**	**20.49**	**100.00**

Gender - wise distribution of the farmers' queries

Farmers' keep visiting the ATIC throughout the year. The information on Gender - wise distribution of the farmers' queries at ATIC are presented in Table 4. It is observed from Table 4 that amongst total 4282 farmers queries, majority of the queries received at ATIC were from the male farmers, which is 97.69 per cent (4183), while, the queries from female farmers were very few 2.31 per cent (99). This results shows that women farmers' don't have exposure compared to male farmers. This might be observed because of traditions and culture of the society. These findings are similar to the findings of Hegade (2001) and Sharma *et al.* (2008).

Table 4 : Gender - wise distribution of the farmers' queries

Discipline	Queries asked by	2005-06	2006-07	2007-08	2008-09	2009-10	Total
Agronomy	Male	176	188	142	164	224	894
	Female	02	03	02	02	03	12
Horticulture	Male	445	364	361	341	430	1941
	Female	14	33	03	05	04	59
Plant Protection	Male	87	82	131	100	77	477
	Female	01	00	01	06	14	22
Dairy Science	Male	185	192	166	169	159	871
	Female	00	01	00	03	02	06
Total	Male	893	826	800	774	890	4183 (97.69)
	Female	17	37	06	16	23	99 (2.31)
Total	**Male+ Female**	**910**	**863**	**806**	**790**	**913**	**4282**

(Figures in parentheses indicate percentage)

University -wise distribution of the queries

In this, visitor queries were grouped according to the university under which the native place of visitors comes. It is observed that majority (82.84 per cent) of the queries were received from MPKV jurisdiction and 17.16 per cent farmers' queries were received from out of jurisdiction of the university.

District - wise distribution of the farmers' queries

MPKV, Rahuri jurisdiction queries were further grouped according to the district of farmers and visitors. It is observed that majority (66.73 per cent) of the farmers' queries were received from the farmers of Ahmednagar district followed by Nashik, Pune and Solapur districts. The queries from Nandurbar and Kolhapur districts were very few i.e. less than one per cent. These results may be observed because the distance of ATIC from Ahmednagar, Nasik, Pune and Solapur is less as compared to Nandurbar and Kolhapur districts.

Strategies for Effective Services (Implications)

The research findings indicated that,

- The SMS's and other ATIC staff, therefore, need to keep upto date knowledge about recent developments so that they can tackle problems of farmers.
- Majority of the farmers' queries were on Horticulture. This is due to the increasing area under horticulture crops and the assured and high economic returns from horticultural crops.
- From the study it is very clear that farming community is aware of recent knowledge and techniques of agriculture and it will increase day by day and will lead to the development of farmers, their families and the nation.
- Majority of the queries received were from the male farmers. It may be due to unavailability of female Subject Matter Specialist. Generally, women farmers feel shy and hesitate to ask queries and discuss problems with male SMS. It is therefore proposed that female Subject Matter Specialist, or experts may be appointed at ATIC.
- Majority of the farmers' queries were from within the jurisdiction of MPKV, Rahuri and also from farmers of Ahmednagar district. This is because of easy access to the local farmers and due to the availability of strong network of university's Regional Extension Centres, District Extension Centres, Agricultural Colleges, Agricultural Technology Schools, Krishi Vigyan Kendras in every district of MPKV jurisdiction.

Conclusions

From the findings of this study it is concluded that number of farmers' visits and telephone calls received have kept increasing. At the same time letters received from farmers were in decreasing trend. Majority of the farmers' queries were asked by farmers when they visited the ATIC. Majority of the farmers' queries were about Horticulture followed by Agronomy, Animal Husbandry and Dairy Science and Plant Protection. Almost fifty per cent of queries throughout the period were related to horticulture. Majority of the queries were from the male farmers. Majority of the farmers' queries were from the jurisdiction of MPKV, Rahuri. Majority of the farmers' queries were from farmers of Ahmednagar district followed by Nashik, Pune and Solapur districts.

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Utilization of Information Sources by Orange Growers

V.S. Tekale[1] and D. V Gavit[2]

The orange of Nagpur region is known as 'Nagpur Santra' throughout India. There is a historical background behind its name. At the end of 18th century, Maharaja Rahuji Bhosle brought few plants of loose skinned oranges from Aurangabad and planted in his garden at Nagpur. These plants under the soil and climatic condition of Nagpur grow very well and produced fruits of excellent quality. Since then orange cultivation has earned an important place in the agriculture economy of Vidharbha region. The Nagpur santra has earned fame and name in this country for its exceptional quality. Information about orange cultivation, its post harvest technology and marketing may come to farmers from various sources. They are different types of sources of information personal /impersonal, institutional/non-institutional, localite /cosmopolite or mass-media. This study was helpful to find out the extent of utilization of differnt information sources by orange growers.

Methodology

The study was carried out in Kalmeshwar Panchayat Samiti of Nagpur district of Vidarbha region of Maharashtra state in the year 2013. An exploratory research design of social research was used. The Kalmeshwar Panchayat Samiti was purposively selected because the area under orange cultivation was more (425 ha) as compared to other Panchayat Samiti in Nagpur district in the year 2011-12. The 100 respondents were selected through proportionate random sampling method from ten selected villages. The data were collected by personally interviewing the respondents with the help of pretested, structured, interview schedule. The collected data were then tabulated, analyzed and interpreted by using mean, frequency, percentage and coefficient of correlation.

Findings

1 Profile of orange growers

It was observed, majority of the respondents (64.00%) belonged to middle age group (36 to 50 years). Most of the respondents (41.00%) were found to be educated up to college level. Whereas, 36.00 per cent of the respondents were educated up to high school level. Three fourth of the respondents (75.00%) had their occupation as farming and 21.00 per cent of the respondents were belonged to farming and other subsidiary occupation. The majority of the respondents (63.00%) had their annual income above Rs. 2,00,000/-, followed by 21.00 per cent of respondents were found in the range of annual income between Rs. 1,50,001/- to Rs. 2,00,000/-. Two fifth per cent of the respondents (40.00%) were belonged to medium (4.01 to 10.00ha) land holding category, followed by 37.00 per cent respondents were small land holders (2.01 to 4.00 ha.). Nearly half of the respondents (45.00%) had medium level social participation. Nearly three fourth per cent of the respondents (73.00%) had medium level of innovativeness.

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Over half of the respondents (57.00%) had medium level of economic motivation. Three fourth of the respondents (75.00%) were used well\tube well as a source of irrigation.

It was observed that, in case of personal contact, majority of respondents (62.00%) had always contact with their friends regarding information about orange cultivation, followed by majority of respondents (59.00%) had always contact with neighbours and as well as progressive farmers each. Further it was observed that majority of respondents (56.00%) had always contact with relatives, followed by 37.00 per cent had sometime contact. Similar findings were also found by Thakur. et.al. (1990) and Meena and Babel (2003). The majority of respondents (55.00%) had always contact with gram panchayat members, majority of respondents (63.00%) were never contact by personal letters.

2 Utilization of information sources by orange growers.

In group contact it was observed that majority of respondent (60.00%) were always got information through group discussion regarding orange cultivation, nearly half of the respondents (48.00%) got information through demonstrations. These findings were supported by findings of Punjabai (1989). Whereas, nearly equal per cent of respondents always got information through trainings (36.00%) and field days (35.00%), respectively. The 42.00 per cent respondents sometime got information through training. Nearly half of the respondents (49.00%) were never got agricultural information through the conference followed by through field tours (42.00%) and through seminar (38.00%), respectively.

In case of mass contact source of information the majority of respondents (68.00%) had always contacted through mobile specially they had received messages regarding agricultural information like, orange cultivation, market information, weather reports and also had calls, followed by the 65.00 per cent of respondent were always watching television for seeking agricultural information. These findings were supported by Marimuthu and Radhakrishnan (2000). Whereas 55.00 per cent of respondents orange growers were always reading newspapers, 40 per cent respondents were always reading agricultural magazine like Baliraj/ Krishi patrika/ Krushakunnatti, etc. The 30.00 per cent respondents were always participated in farmers rallies for obtaining agricultural information. Further, it was observed that nearly half of the respondents (47.00%) were sometime reading agricultural magazines/ weekly as sources of information, followed by campaigns (45.00%), attained farmers rallies (42.00%) and 38.00 per cent respondents were sometime got information through charts/ posters.It was also observed that nearly half of the respondents (48.00%) were never listening the radio for agricultural information, followed by internet/ email (45.00%) and charts/ posters (38.00%). In case of radio similar findings were also reported by Prameela and Ravichandran (2004). The distribution of the respondents according to their overall level of the utilization of information sources. shows that nearly three fourth of the respondents (73.00%) had medium level overall of the utilization of different information sources. It was followed by 18.00 per cent of the respondents having low level of utilization of information sources.

3. Relational analysis

The utilization of information sources has been function of different factors. In order to identify the factors influencing utilization of information sources, the data were subjected to correlation analysis and results obtained were depicted in Table1.

Table 1 : Correlation coefficient of independent variables with utilization of information sources

Sr. No.	Variable	'r' Value
1	Age	0.2345*
2	Education	0.028^{NS}
3	Occupation	-0.035^{NS}
4	Annual income	0.066^{NS}
5	Land holding	0.199*
6	Social participation	-0.077^{NS}
7	Innovativeness	-0.070^{NS}
8	Economic motivation	0.442**
9	Irrigation status	0.258*

** Significant at 0.05 level of probability*
*** Significant at 0.01 level of probability*
NS- Non- significant

It was observed from Table 1, that out of nine independent variables four variables namely age, land holding, economic motivation and irrigation status were found to be positive and significant relationship with information sources utilization of orange growers. Whereas, the independent variables like education, occupation, annual income, social participation and innovativeness were non-significantly correlated with information sources utilization by the orange growers.

Conclusion

The mobile (cell phones), television, friends, neighbours, relatives and group discussions were important sources utilized by the orange growers for agricultural information. The extension workers may utilized these sources for transfer of agricultural technology. The orange growers have to be encouraged to participate in various extension programmes like field tours, exhibitions, campaigns, training, farmers rallies and use of internet/ emails.

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Participation of Woman Grampanchayat Members in Religious, Cultural and Agricultural Development Programmes

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Grampanchayat is a third and important tier of Panchayat Raj system at village level. In all the Grampanchayat, one-third seats are reserved for women. So, The role of women in village development is very crucial. Their participation in various activities of village development will certainly decide the speed and success of rural development programme implemented by state and central government. on this background, it was decided to study the participation of woman members of Grampanchayat in village development with an objectives to study the socio economic profile of woman members of Grampanchayat, their participation in Religious and cultural Programmes and participation in Agricultural Development Programmes.

Methodology

The study was conducted in Kolhapur district of the Western Maharashtra. From this district ,Two tahsils and from each tahasil 8 Gram panchayat were selected randomly. Thus, 50 woman members from 8 Gram Panchayats were interviewed.

Findings

1 Profile of the woman Gram Panchayat members

Majority (86.00 per cent) of the women were members of Gram panchyat, while 6.00per cent women were Sarpanch and 8 per cent women were Deputy Sarpanch. Maximum number36 per cent of the woman members had completed primary education followed by secondary (34.00 per cent) level of education. more than two –fifth (22.00per cent) of the woman members had completed higher secondary education. Majority (60.00 per cent)of the woman members were of middle age, while 26.00 per cent were Young and 14.00 per cent were of old age. All the woman members were married. Majority (60.00 per cent) of the woman members had marginal land holding followed by semi-medium land holding (18.00per cent). About 46.00 per cent of the woman members had medium family size, while nearly, one-third (30.00 percent) of the woman members had big family size. Majority of (68.00 per cent)woman members had joined type of family, while nearly one third (32.00 per cent) of them had individual family. Main family occupation of large majority (84.00 per cent) of the women members of farming. Annual income of majority (72.00 per cent)of the woman members was high. Majority (68.00 per cent)of the women members had high social participation. With regard to mass media exposure, it was observed that the large majority (84.00 per cent) of the woman members had high level of mass media exposure. The large majority (96.00 per cent) of

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the woman members had high level of leadership ability.

2. Participation Woman Grampanchayat members in Religious and cultural Programmes

The information regarding the participation of woman members of Grampanchayat in Religious and cultural Programmes is presented in The data revealed that large majority (more than 90.00 per cent) of the woman memberas of grampanchayat motivated the people for participation in Organization of Yatra, Celebration of national days, Celebration of cultural festival, Celebration of Religious ceremonies, Removal of untouchability, Construction of temple,care and repair.

3. Participation in Agricultural Development Programmes

The data regarding participation of woman members of Gram Panchayat in Agricultural Development Programmes are presented in Table 1

Table 1 : Participation in Agricultural Development Programmes

Sr. No	Agricultural Development Programmes	Not applicable	Motivate people for participation	Help in Planning of programme	Help in raising fund and allocation of funds	Help in implementation of program	No participation
1	Implementation of IPM/crop protection campaign	12(24.00)	31(62.00)	22(44.00)	21(42.00)	29(58.00)	04(8.00)
2	Water shed development programme.	15(30.00)	30(60.00)	23(46.00)	22(44.00)	25(50.00)	04(8.00)
3	Development of irrigation facilities	05(10.00)	37(74.00)	27(54.00)	26(52.00)	31(62.00)	06(12.00)
4	Establishing Dairy/co-operative dairy society	06(12.00)	40(80.00)	30(60.00)	29(58.00)	30(60.00)	06(12.00)
5	Nala Bunding/land levelling programme	12(24.00)	34(68.00)	19(38.00)	18(36.00)	21(42.00)	07(14.00)
6	Organizing farmer rally/seminar	06(12.00)	37(74.00)	25(50.00)	26.00(52.0)	33(66.00)	03(6.00)
7	Organizing field day	07(14.00)	36(72.00)	20(40.00)	19(38.00)	27(54.0)	06(12.0)
8	Organizing farmers tour	08(16.00)	31(62.00)	28(56.00)	23(46.00)	30(60.00)	05(10.0)
9	Organizing field trips	10(20.0)	30(60.0)	21(42.0)	20(40.0)	27(54.0)	07(14.0)

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Sr. No	Agricultural Development Programmes	Not applicable	Motivate people for participation	Help in Planning of programme	Help in raising fund and allocation of funds	Help in implementation of program	No participation
10	Organizing farmers training	6(12.0)	36(72.0)	28(56.0)	28(56.0)	33(66.0)	07(14.0)
11	Forming farmers club	13(26.0)	29(58.00)	19(38.0)	21(42.0)	25(50.0)	08(16.0)
12	Organizing rally for loan proposals	11(22.0)	29(58.0)	28(56.0)	24(48.0)	28(56.0)	07(14.0)
13	Organizing animal disease diagnosis camp	16(32.0)	26(52.0)	28(56.0)	25(50.0)	26(52.0)	06(12.0)
14	Organizing artificial insemination programme	15(30.0)	27(54.0)	28(56.0)	26(52.0)	27(54.00)	07(14.0)
15	Constucting godowns and ware houses	28(56.00)	16(32.0)	14(28.0)	16(32.0)	14(28.00)	08(16.0)
16	Establishing farm produce marketing	26(52.0)	20(40.0)	12(24.0)	12(24.00)	13(26.00)	03(6.00)

(Figures in the parentheses indicates percentages)

It is revealed from Table 1 that Majority more than (60.00 per cent) of the woman memberas of grampanchayat motivated the people for participation in Implementation of IPM/crop protection campaign, Water shed development programme, Development of irrigation facilities,Establishing Dairy /co-operative dairy society, Nala Bunding /land levelling programme, Organizing farmer rally / seminar, Organizing field day, Organizing farmers tour,Organizing farmers training,Implementing seed village scheme, Goat keeping.

Conclusion

That majority (86.00 per cent)of the women were members of Gram panchyat, while 6.00per cent women were Sarpanch and 8 per cent women were Deputy Sarpanch.Annual income of majority(72.00 per cent)of the woman members was high. Majority(68.00 per cent)of the women members had high social participation .With regard to mass media exposure, it was observed that the large majority(84.00 per cent) of the woman members had high level of mass media exposure. The large majority(96.00 per cent) of the woman members had high level of leadership ability That large majority (more than 90.00 per cent) of the woman memberas of grampanchayat motivated the people for participation in Organization of Yatra, Celebration of national days, Celebration of cultural festival, Celebration of Religious ceremonies, Removal of untouchability, Construction of temple, care and repair. Majority more than (60.00 per cent) of the woman memberas of grampanchayat motivated the

people for participation in Implementation of IPM/crop protection campaign, Water shed development programme, Development of irrigation facilities, Establishing Dairy/Dairy society,Nala bunding/land leveling programme, organizing farmer rally/seminar,organizing field day, organizing farmers tour, organizing farmers training, implementing seed village scheme, Goat Keeping.

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Dr. V. S. Shirke
Secretary, MSEE

Report of the Secretary for the year 2013

Dear Members,

I take this opportunity with immense pleasure to present the progress report of Maharashtra Society of Extension Education before the distinguished members of the society.

The Maharashtra Society of Extension Education was formed in the year 1980 at the College of Agriculture, Nagpur and registered in the year 1982 with the strong and motivated initiative of the founder members Dr. R.R. Sinha, Dr. V.R. Kubde and Dr. D.M. Nikhade. The society was established with the following objectives.

1. To publish a scientific journal devoted to the research in the field of extension education
2. To organize National level seminars, workshops, conferences on various need based aspects in extension education to come out with valuable recommendations for national and state level policy makers
3. To institutionalize and award various prizes to encourage and improve professional competence of students, researchers and teachers

Ever since its inception, the society has made formidable progress and has come to the forefront with the inspiration and able guidance of Dr. A.G. Sawant, President, Dr. R.R. Sinha and Dr. K.D. Kokate,Vice-Presidents, all Stalwarts and internationally acknowledged scientists in the field of extension education. The society has been regularly organizing events like national seminars and publishing its journal. The Maharashtra Journal of Extension Education has been renamed as Asian Journal of Extension Education and is being published with its new name since 2004 in continuation with its earlier volume numbers. During previous years we have published Journal volumes of the year 2010, 2011and 2012 and during this current year the volume for the year 2013 has been published.

During the Annual General Body meeting of the society held at Goa on September 26, 2008, it was decided to shift the office of the MSEE from the Directorate of Extension Education, MPKV, Rahuri to the Division of Extension Education at College of Agriculture, Pune.

NAAS Rating of the Journal :

I am very glad to inform that the proposal for NAAS Rating of the Journal was made to the ICAR. The sincere efforts were made to comply the formalities thereof. However, it is proud to know to all our dignitaries, officials and members of the Society that the Asian Journal of Extension Education has been NAAS Rated as 2.4 by the ICAR in the month of December 2010.

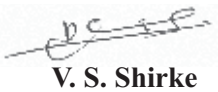
It also gives me immense pleasure to inform the members that the Society has started its website and was inaugurated at the hands of Dr. K.D. Kokate, Hon'ble DDG, ICAR during National Seminar held at DBSKKV, Dapoli on 5th March, 2010. In order to facilitate paperless fast and efficient submission of research articles for publishing in the journal and all other related correspondence, the **e-mail** address of the society **mseepune@gmail.com** has been started and being used for communication and correspondence.

On the financial scenario, presently the society has capital funds worth Rs. 4,00,000/- alongwith fixed deposits worth Rs. 1,54,000/- in all.

I am confident that with the farsighted leadership at the helm of this society, it shall continue to grow, progress and prosper at an accelerated pace.

I wish to appreciate the painstaking efforts made by my colleagues Dr. V.J. Tarde, Treasurer and Dr. H.P. Sonawane in bringing out this issue of the Asian Journal of Extension Education for the years 2013. I sincerely thank the members of the Executive Body of MSEE and Editorial Board of the Asian Journal of Extension Education and the distinguished members of MSEE for their whole hearted co-operation and encouragement towards the noble cause of the society.

Pune
November 2013



V. S. Shirke

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