

ASSESSMENT OF FARMERS PARTICIPATION AND BENEFITS PERCIEVED FROM VARIOUS AGRICULTURAL TECHNOLOGIES DISSEMINATION IN CHHATTISGARH

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ABSTRACT

Increase in productivity and production could only be achieved by adopting new technological interventions in the farming. Various efforts from government as well as non-government organizations are regularly applied but the results are still not satisfactory in accordance with potential of the sector important extension programs being implemented in Chhattisgarh state were assessed to know the participation and benefits received by the farmers with a sample size of 144 farmers equally contributed by marginal, small and big farmers. The data were personally collected in the year 2008. The findings show that most of the farmers were middle to old age and having medium socio-economic status. Farmers' participation were not found much in the selected programs however, higher participation were recorded in the IPM, oilseed and pulse related programs and big farmers were having more participation. In other hands majority of the respondents perceived that they were acquired maximum benefits from rice, oilseed-pulse and IPM related programs. The benefits expressed by few respondents in terms of new implements, time saving, training and cost effectiveness. The marginal, small and big farmers expressed benefits in varying manners. Taking all the programs in to consideration, it is revealed that benefits were more in rice, oil seeds and pulses, IPM sugar cane and farm machanization. These findings may be considered as beacon of light for the extension functionaries to intensify their efforts, seeking higher participation of farmers in every stage of each program implementation so that the outcome can be realized by the farmers up to the satisfaction level.

(Key words : Farmers' participation, technology dissemination, extension programmes)

INTRODUCTION

The impact of extension programmes are broadly based on the reliability and sustainability of the technology dissemination system. The sustainability of extension system has been discussed at many levels. Shortage of human resources in agricultural extension, inadequate knowledge level and differential work load and budget allocation if taken together we may find that present system is not as sustainable as desired. In the state like Chhattisgarh, out of the total population of above 2 crores, about 80% of them depend on agriculture. Rice is the principal crop, and other crops are, pulses, oilseeds, sugarcane and some horticultural crops under cultivation. In the agricultural map of India, the position of Chhattisgarh is not much encouraging in terms of productivity. So far as sustainability of extension is concerned, the government does invest a significant amount for field activities like demonstrations, inputs and incentives as required. But after the input is taken out, the same feeling towards adoption does not exist. To make the dissemination programmes successful, effective participation of farmers is essentially required. Marketing credit, processing and value addition, product planning, marketing information alterative

marketing, and linkage with research and developing agencies would enrich our system of approaching farm families to a considerable extent. To make the dissemination programmes successful, effective participation of farmers is essentially required.

Market led extension system provides authentic, broad based and need based information about tested technologies, quality inputs, and dependable markets, considering the resources of the farmers and infrastructure available in the area for holistic development, irrespective of their socio-economic conditions. Poor involvement of farmers, short supply of extension workers, lack of adequate technical knowledge, loaded with more work with inadequate time and money, the extension system has not been able to deliver expected services at the door step of the farmeres particularly in crucial times. The extension density in terms of number of farmers per extension worker varies considerably through out the globe. It was commonly felt that evaluation of on-going extension projects in the light of awareness and participation and the status of clientele be given priority. The study was selected to add into the domain of tansfer of technology. No such studies were undertaken for assessing the effectiveness of such programmes. Keeping the above-mentioned status, an attempt was made to investigate into the

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analysis of farmers' participation and benefits received from the important agricultural extension programmes implemented which may be the key for the success of any program as reported by Singh and Prasad (2000) that IRDP programme has contributed for improving the standard for living (72.5%), increase in dietary standard (66.5%) and consciousness about education of children (61.5%). However, the changes perceived by the respondents above 25 per cent emerged as, status in caste and communities have improved (44%), able to maintain social relation (30%), and habit of small savings developed (29%).

MATERIALS AND METHODS

Chhattisgarh state comprising of three Agro-climatic Zones i.e. Chhattisgarh plains, Bastar Plateau and Northern Hills having 18 districts. For this investigation, Raipur, Durg, Dhamtari and Mahasamund districts of Chhattisgarh plain zone were considered purposively because this patch of the districts have homogenous characteristics in implementing the technology extension program. By applying random sampling technique, two blocks from each of the four selected districts (total 8 blocks) were identified. From each selected block two villages (total 16 villages) were selected for this study randomly. From each selected village, equal number of respondent belonging to marginal small and big farm families were selected. The final selection thus consisted of 48 marginal, 48 small and 48 big farmers with total 144 respondents. The study was designed within the framework of ex-facto research. Five important extension programmes related to rice, sugarcane, oilseeds and pulses, integrated pest management (IPM) and agricultural implements were taken into consideration for this study. The data were collected for socio-economic profile, participation and benefit perceived from the selected programme. The respondents were personally interviewed using pre-tested interview schedule in hindi during the year 2008 for Ph.D. degree of Pt. Ravishankar University, Raipur.

RESULTS AND DISCUSSION

Socio-economic characteristics of respondents :

Most of the respondents belonged to middle

age group and educated upto the middle school level (Table 1). The percentage of higher/college educated respondents were more in big farmers than the marginal and small farmers. Other backward castes were dominating among all categories of respondents followed by general caste respondents. A total of about 52,50 and 42 per cent of marginal, small and big respondent respectively were having less than 6 members in their families. A considerable number (35.42%) of joint families were also residing in the study area. Regarding annual income of respondents, more than 47 per cent marginal and 41 per cent small farmers earned less than Rs. 40000 annum⁻¹ family⁻¹. In case of big farmers the distribution was mostly varied from Rs. 40000 to Rs. 1.2 lacks annum⁻¹. The finding concludes that the marginal and small farmers were involved in more occupations to sustain their livelihood because small size of holdings can not produce enough to cater the needs of whole family round the year. Contrast to that big farmers were engaged in agriculture as primary occupation followed by animal husbandry and some other businesses. The investigation revealed that all the respondents were taking short term credits especially for agricultural inputs i.e. seeds, fertilizers, pesticides etc. The big farmers were also taking short term credit mostly for the labour payment. The marginal and small farmers were reluctant to acquire medium and long term credit, may be because of their poor economic base and repaying capacity. Khan (2002) also reported that the farm credits were mostly utilized by the big farmers due to their better repaying capacity. About 25 and 6 per cent of the big respondents respectively had also borrowed medium and long term credit from various institutions. This loan was mostly taken for buying implements and other farm machinery items. In all about 21 per cent of the respondents did not take loan as also reported by Singh and Bhagat (2002). Non repaying capacity was due to low returns from and lack of remunerative crop were the major factors for non repayment of agricultural loans (Virk *et al.*, 2003).

Participation in rice programme :

Participation of farmers on ten specific areas related with rice cultivation observed to be in great variations (Table 2). Maximum respondents were taking up new varieties of rice. The other areas of

participation were contact with extension personnel, harvesting, demonstration and trainings. The minimum participation was observed in the activities like planning and group action. In short program on rice has not been able to register impact on educational aspect. Comparing three groups of farmers it is observed that marginal and small farmers were much behind of the big farmers. Similarly Helen *et al.* (2004) reported that high yielding varieties of rice created a greater impact among the participating farmers. Chaudhary *et al.* (2008) and Prakash *et al.* (2005) pointed out that technological gap exist in adoption of rice cultivation practices.

Participation in sugarcane programme :

Data contained in table 3 revealed that participation in case of attending meetings on sugarcane was highest followed by more production and contact with extension agencies. The other areas of participation were found to be technical guidance, demonstration, harvesting, use of new varieties and group action. The participation in case of group action and planning the program was found minimum. Again, small and marginal farmers were lagging much behind compared to big farmers in all activities of sugarcane improvement programmes. Experiences revealed that the farmers need to be trained in the activities so that their contribution can be ensured by imparting knowledge as suggested by Arya *et al.* (2003).

Participation in oilseeds and pulses programme :

The country is paying more attention to boost up productivity of oilseeds and pulses. The major oilseeds are groundnut, soybean, mustard, sesame, niger and linseed where as important pulses include gram, mung, urid, pigeonpea, lentil and peas. Taking all these crops into consideration, the participation of respondents was considered as given in table 4. The program has been able to register good impact as evidenced from participation in meeting demonstration more production and trainings. There has been good response for technical guidance and contact with extension agencies. The marginal and small farmers were much behind than big farmers for participation in many activities. As per results planning at village level and introduction of new varieties are two important aspects which appear to

be neglected. It needs close relation with research unit to take up breeding programmes on pulses keeping the location specific requirements. Similarly, Rathore *et al.* (2003) suggested for regular training capacity building and method demonstration to achieve higher participation and production from mustard crop.

Participation in Intergrated Pest Management (IPM):

IPM is of greater importance from ecological and cost of production point of views. To create interest in the mind of farmers about IPM the Government had made a number of attempts. Information contained in table 5 shows that the extent of participation of respondents was in progress. A look at the table reveals that participation in case of contact with extension agencies looking for technical guidance training and meeting were found in descending order. Among three groups participation was the highest in case of big farmers. The overall picture reveals that IPM had not registered good impact on the farmers. So far as participation in various activities is concerned. The concept of IPM should be carried out to the farmers effectively.

Participation in farm mechanization :

Mechanization is one of the answers to reduce cost of labour. The study of participation of sample farmers in farm mechanization revealed (Table 6) that the participation of farmers in farm implements was very poor. There was some response in case of attending meeting demonstration visiting exhibits and sale centres The marginal and small farmers were not involved in the programme as evidenced from their poor participation. The poor response as reflected above may be due to a variety of reasons. The introduction of high-tech and skill proved to be of major concern not only in the field of agriculture but also in all other cases. Dadheech *et al.* (2008) reported that the exposure to reliable source of information was one of the important factors for farmer's participation in agriculture programmes.

Overall participation in 5 important programmes

Again within the framework of the study an attempt was made to investigate into the differential participation of three categories of farmers in farm

mechanization as given in table 7. Data analysis reveals that participation was highest in cases of IPM followed by oilseeds and pulses sugarcane and rice in order. However minimum participation was observed in case of Farm Mechanization. Further farmer group wise the participation was found to be the highest with big farmer followed by small and marginal farmers.

Correlation between attitude towards programme and overall participation :

Further, attempt was made to correlate attitude with participation in different programmes. The attitude towards program was measured in three-point scale like Agree, Disagree and Neutral. The correlation value is given in table 8. The correlation value indicates that at all levels the attitude and participation was found to be significantly correlated. In case of farm implements the farmers have not developed positive attitude and therefore, their participation was low. The 'r' value of significance revealed that farmers have not yet given adequate attention in case of sugarcane and mechanization.

Benefits perceived from rice development programme :

Rice development programme is operating in Chhattisgarh to provide technical back up, subsidized input and marketing support through price policy. In finding out benefits derived from the programme the responses were compiled in the tabel 9. The table reveals that farmers expressed benefits in terms of new varieties, more production, training, exposure and profit in that order. In our society the small and marginal farmers always remain at the end. Their poor standing in society, limited resources, non-contact and traditional ways of living have not made them capable of taking benefits. In all cases, the benefits are less than 50%. Again in terms of benefits a clear-cut difference is marked among three groups of farmers. Prakash *et al.* (2003) rightly pointed out that knowledge plays important role in rice production.

Benefits perceived from sugarcane imporvement programme :

Data contained in table 10 reveals that

programme on sugarcane has benefited farmers in terms of exposure to technology, training, new varieties, production and profit. The big farmers have gained more than marginal and small farmers. The profit in case of sugarcane is market linked and processing linked and varied time to time. Attempts to mere increase in production did not help the situation without ensuring profit to the farmers because of high fluctuation of market price. The farmers, market, government policy have to move at the same direction. It is not surprising that many of the good farmers are closing their farm business owing to uncertainty in price structure.

Benefits perceived from oilseeds and pulses :

The state covers 8.7 and 2.8 lacks hectares under pulses and oilseeds. The participation of marginal and small farmers was more in oilseeds and pulses. A look at the table 11 reveals that sample farmers have obtained benefits from the programmes of oilseeds ad pulses in the counts of exposure to new technology, training, more of products profit and new varieties. Programmes on oilseeds and pulses have covered good numbers of marginal small and big farmers. The crops under oilseeds and pulses are close to the farmers because these crops are grown mostly in rainfed areas. These crops ensure some benefits even at the worst situation. More profits depend upon more production and good market. The government agencies have not correlated these aspects for which farmers have to bear loss. Rathore *et al.* (2002) rightly pointed out that training and contact with extension agents is helpful in improving productivity of mustard crop.

Benefits perceived from integrated Pest Management (IPM) :

There has been a constant effort to reduce chemical pesticides because of its adverse residual effects. The benefits derived from IPM are recorded in table 12. Reactions of respondents revealed that they perceived these in terms of less use of chemical pesticides decrease in investment in farming reduction in cost and training. The gap exists between marginal small and big farmers in perceiving benefits of IPM. It is interesting to note that pest control was not achieved to greater extent in case of IPM. It may be due to fact that adoption of recommendations has not increased or the correct adoption has not been

Table 1. Percentage distribution of respondents according to their socio-economic characteristics

Characteristics	Percentage distribution of respondents			
	Marginal (N=48)	Small (N=48)	Big (N=48)	Pooled (N=144)
Age				
Young (<35 years)	27.08	29.17	18.75	25.00
Middle (35 to 50 years)	39.59	43.75	35.42	39.58
Old (>50 years)	33.33	27.08	45.83	35.42
Education				
Illiterate	4.17	6.24	0.00	3.48
Primary	33.33	25.00	20.83	26.39
Middle school	35.42	41.67	37.50	38.19
High school	25.00	22.92	29.17	25.69
College and above	2.08	4.17	12.50	6.25
Caste				
Scheduled Caste	12.50	4.17	8.33	8.33
Scheduled Tribe	8.33	6.25	2.08	5.56
Other Backward Class	62.50	81.25	64.59	69.44
General	16.67	8.33	25.00	16.67
Family size				
Small (up to 5 members)	52.08	50.00	41.66	47.92
Medium (6 to 8 members)	16.67	22.92	18.75	19.44
Big (9 to 12 members)	22.92	20.83	29.17	24.31
Very Big (> 12 members)	8.33	6.25	10.42	8.33
Family type				
Nuclear	66.67	70.83	56.25	64.58
Joint	33.33	29.17	43.75	35.42
Annual Income				
Upto Rs. 40,000	47.92	41.67	18.75	36.10
Rs. 40,001 to Rs. 80,000	22.92	25.00	25.00	24.31
Rs. 80,001 to 1,20,000	20.83	27.08	31.25	26.39
Rs. 1,20,001 to Rs 1,60,000	8.33	6.25	14.58	9.72
Rs. 1,60,001 and above	0.00	0.00	10.42	3.47
Occupation				
Agriculture alone	0.00	2.08	4.17	2.08
Agri.+Animal husbandry	8.33	12.50	43.75	21.53
Agri.+Service/labour	70.84	56.25	12.50	46.53
Agriculture+Business	12.50	22.92	25.00	20.14
Agri.+other occupations	8.33	6.25	14.58	9.72
Credit acquisition *				
Nil	29.17	20.83	12.50	20.83
Short term credit	70.83	85.42	83.33	79.86
Medium term credit	0.00	2.08	25.00	9.03
Long term credit	0.00	0.00	6.25	2.08

*Multiple responses

Table 2. Participation in rice development programme

(N=144)

Areas of participate	MF	SF	BF	Pooled	
				No.	Per cent
1. Attending meetings	15	16	20	51	39.41
2. Attending training	6	6	8	20	13.88
3. Attaining more production	14	15	19	48	33.33
4. Group action	3	8	7	18	12.50
5. Demonstration	2	10	12	24	16.66
6. Harvesting	3	12	14	29	20.13
7. Program planning	0	2	8	10	6.94
8. Use of new varieties	15	20	25	60	41.66
9. More of technical guidance	8	9	11	28	19.44
10 Contact with extension agencies	10	15	18	43	29.86

Table 3. Participation in sugarcane development programme

(N=144)

Areas of participate	MF	SF	BF	Pooled	
				No.	Per cent
1. Attending meetings	15	16	20	51	35.41
2. Attending training	13	13	18	44	30.93
3. Attaining more production	12	16	18	46	31.94
4. Group action	8	10	12	32	22.22
5. Demonstration	10	12	15	37	25.89
6. Harvesting	4	11	21	36	25.00
7. Program planning	2	8	13	23	15.97
8. Use of new varieties	6	12	15	33	22.91
9. More of technical guidance	6	15	16	37	25.59
10 Contact with extension agencies	8	18	20	46	31.94

Table 4. Participation in the programmes of oilseeds and pulses

(N=144)

Areas of participate	MF	SF	BF	Pooled	
				No.	Per cent
1. Attending meetings	23	28	40	91	63.19
2. Attending training	12	15	18	45	31.25
3. Attaining more production	10	17	19	46	31.94
4. Group action	8	10	12	30	20.83
5. Demonstration	10	22	28	60	41.66
6. Harvesting	9	12	19	40	27.77
7. Program planning	3	2	6	11	7.63
8. Use of new varieties	8	8	10	26	18.05
9. More of technical guidance	89	12	14	35	24.30
10 Contact with extension agencies	10	10	15	35	24.30

Table 5. Participation in IPM

(N=144)

Areas of participate	MF	SF	BF	Pooled	
				No.	Per cent
1. Attending meetings	5	6	20	31	21.52
2. Attending training	6	7	18	31	4.52
3. Demonstration	3	9	8	20	13.88
4. Technical guidance	10	10	12	32	22.22
5. Contact with extension agencies	12	10	13	3	24.36
6. Field visit	3	2	8	13	5.55

Table 6. Participation in farm mechanization

(N=144)

Areas of participate	MF	SF	BF	Pooled	
				No.	Per cent
1. Attending meetings	5	8	13	26	18.05
2. Attending training	0	2	5	7	4.86
3. Demonstration	2	6	8	16	11.11
4. Implement exhibition	0	2	10	12	8.33
5. Visit to sale centre	0	0	0	8	5.55

Table 7. Differential participation in all five important programmes (Average)

Programmes related with	MF	SF	BF	Pooled
1. Rice	16.66	22.91	29.16	22.91
2. Sugarcane	16.66	27.08	25.41	23.61
3. Oilseed and pulses	20.53	29.16	37.50	27.10
4. IPM	12.50	14.58	27.08	33.33
5. Farm mechanization	2.08	4.16	18.75	9.72
Average	13.68	19.58	29.58	23.74

Table 8. Correlation ('r' value) between attitude and over all participation

Programme related with	MF	SF	BF
1. Rice	0.56*	0.78*	0.79*
2. Sugarcane	0.44*	0.69	0.89*
3. Oilseed and Pulses	0.67*	0.68*	0.70*
4. IPM	0.24	0.46*	0.65*
5. Farm Mechanization	0.21	0.14	0.25**

* & ** Significant at 5% and 1% level

Table 9. Benefits perceived from rice development programmes

Benefits	MF	SF	BF	Pooled	
				No.	Per cent
1. New varieties	20	21	27	68	47.22
2. More production	16	17	25	58	40.27
3. More profit	12	13	18	43	29.86
4. Training & skill	15	18	20	53	38.80
5. Exposure to technology	15	19	22	56	38.88

Table 10. Benefits perceived from sugarcane improvement programme

Areas of participate	MF	SF	BF	Pooled	
				No.	Per cent
1. New varieties	12	12	16	40	27.77
2. More production	11	10	8	29	20.13
3. More profit	6	7	9	22	15.27
4. Training & skill	15	18	23	56	38.88
5. Exposure to technology	20	25	25	70	48.61

Table 11. Benefits perceived from oilseeds and pulse programme

Benefits	MF	SF	BF	Pooled	
				No.	Per cent
1. New varieties	15	16	17	48	33.33
2. More production	12	14	21	49	34.02
3. More profit	10	18	23	51	35.41
4. Training & skill	18	20	25	63	43.75
5. Exposure to technology	19	23	25	67	46.52

Table 12. Benefits perceived from Integrated Pest Management programme

Benefits	MF	SF	BF	Pooled	Percentage
1. Less use of chemical pesticides	25	25	36	86	59.72
2. Decrease in investment	19	22	27	68	47.22
3. Reduction in labour cost	18	20	22	60	41.66
4. Better control of pests	12	18	23	50	34.72
5. Training and skill	15	18	21	54	37.50

Table 13. Benefits perceived from Farm Mechanization

Benefits	MF	SF	BF	Pooled	
				No.	Per cent
1. New implements	0	0	3	3	2.08
2. Labour saving	3	5	8	16	11.11
3. Cost effective	0	0	5	5	3.47
4. Time saving	0	0	10	10	6.94
5. Training and skill	3	2	5	10	6.94

Table 14. Overall benefits perceived from all selected programmes

Programme	Benefits (Average)
1. Rice Development	38.84
2. Sugarcane improvement	30.13
3. Oilseeds and pulses	38.60
4. Integrated Pest Management	37.22
5. Farm Mechanization	6.10

MF= Marginal Farmers

SF= Small farmers

BF= Big farmers

achieved so far, may be because of poor economic status of farmers as stated by Chander and Singh (2003), that economic constraints were most serious in adoption of IPM technologies. The attempt to increase adoption of IPM practices should be given increased attention and support.

Benefits perceived from farm mechanization :

Modern farming system needs use of farm machineries like tractor, power tiller, harvester and electricity in farming. Results reveal that some respondents were benefitted from the programmes on farm implements. However, big farmers expressed benefits in labour and time saving and training. As the use of costly implement is limited and the farmers have yet to receive skill for operation, it is obvious to observed result as shown above. There have been a number of studies on these aspects but the results have not been very encouraging.

Overall benefits perceived :

Comparing the benefits of all the five programmes to the respondents, the following results were obtained. The results reveal that rice, sugarcane, oilseeds and pulses and IPM have been perceived equally in giving benefits to farmers. However, farm mechanization is yet to play role and hence needs more extension efforts. The farmers of Chhattisgarh have yet to imbibe the ideas of mechanization. Kumar and Arya (2003) studied the rice growers of Meghalaya and Arunachal Pradesh and they reported that involvement of farmers in rice cultivation will enhance the production and benefit.

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