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Adoption of Rice Production Technologies by Tribal Farmers of Mandla District of M.P.

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ASTRACT

Adoption of improved technologies are very important aspects in extention process. Large number of technologies evolved in the field of agriculture is not being accepted and adopted at its fullest extent by the farmers. The gap between recommendations made by the scientists and actual use by farmers is frequently encountered. The study was conducted in a tribal district Mandla of Madhya Pradesh. Four blocks, namely, Gughari, Bichiya, Narayan Ganj and Niwas were selected purposively. Results shows that the tribal farmers might have been convinced with the merits of using HYVs and nitrogen fertilizers which helped in building favourable attitude towards adoption of these technologies. Farmers are convinced about importance of pest and weed management, but they are not adopting the improved technologies due to several constraints. The extent of adoption of majority of the practices like adoption of P, K, Zn fertilizers and plant protection is either partial or nil due to lack of knowledge and awareness.

The speedy adoption of improved agricultural technologies is a crucial aspect under innovation diffusion process and most important for enhancing agricultural production at faster rate. Large number of technologies evolved in the field of agriculture is not being accepted and adopted at its fullest extent by the farmers. The gap between recommendations made by the scientists and actual use by farmers is frequently encountered. Punna Rao (2008) and Jaiswal (2005) reported about substantial technological gap in respect to seed rate, fertilizer dose and plant protection measures adopted by farmers. Several factors are responsible for such adoption gap.

The agricultural practices employed by them are primitive and are characterized by rainfed annual cropping, much of which is podu cultivation. However, in the recent past significant breakthrough has been made in the extension efforts to popularize a variety of improved crops, there by weaning away the tribals from subsistence oriented primitive cultivation systems. Paddy is the staple food for tribals and it occupies the largest acreage followed by millets like jowar, bajra, ragi and other commercial crops like ginger, brinjal and chillies, etc. in the area. Except some studies on shifting cultivation, hardly any detailed literature is there relating to dissemination and extent of adoption of improved technologies for paddy in the farming system of tribal areas. With this background, the present study was designed with the following objectives:

1. To study the extent of adoption of improved paddy cultivation technologies by the tribal farmers.
2. To understand the constraints in adoption of the improved technology.
3. To gather the suggestions of the farmers to overcome these problems.

METHODOLOGY

The study was conducted in a tribal district Mandla of Madhya Pradesh. Four blocks, namely, Gughari, Bichiya, Narayan Ganj and Niwas were selected purposively from 2 leading Tehsils of the district to conduct the study by following the stratified sampling technique. A total sample of 60 respondents, 15 from each block, was selected at random for the study with the help of probability proportionate sampling method. For identification of adoption gap, a schedule covering all the package of practices of paddy was developed and administered on the individual respondents. On the basis of the information obtained from the farmers in light of

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Table 1. The extent of Adoption of package of practice of paddy.

SI. No.	PRACTICES	FULL		PARTIAL		NIL	
		F	%	F	%	F	%
1	Land preparation	46	76.7	8	13.3	6	10.0
2	Variety	38	63.3	-	-	22	36.7
3	Seed rate	17	28.3	34	56.7	9	15.0
4	Time of sowing	60	100.0	-	-	-	-
5	Spacing	8	13.3	18	30.0	34	56.7
6	Seed treatment	-	-	-	-	60	100.0
7	Organic manures [FYM] Fertilizers	-	-	22	36.7	38	63.3
8	Basal N	16	26.7	14	23.3	30	50.0
9	P	4	6.7	-	-	56	93.3
10	K	-	-	-	-	60	100.0
11	Zn	-	-	-	-	60	100.0
12	Top dressing of N	4	6.7	24	40.0	32	53.3
13	Weed control	-	-	60	100.0	-	-
14	Plant protection	-	-	24	40.0	36	60.0
15	Harvesting method	60	100.0	-	-	-	-
16	Threshing method	60	100.0	-	-	-	-

the given schedule, the individual respondents were then personally interviewed and the data were collected using a pre-tested interview schedule in order to gather their suggestion, if any. The extent of gap between existing practices and recommended practices was assessed to measure the adoption behaviour of the tribal farmers. The data were analysed using frequencies and percentages.

RESULTS AND DISCUSSION

Land Preparation: It is observed from the table 1 that a majority (76.7%) of the respondents is fully adopting the recommended land preparation practices. Only, 13.3% farmers are partially adopting while 10 per cent of the respondents are not adopting the recommended practices.

The farmers who are cultivating high yielding varieties are fully adopting the recommended practices of land Preparation. The respondents who are partially adopting or not adopting the recommended practices either has the constraint of leveled land or that of the plough bullocks. The farmers dig the soil with the hand implement when ploughing with bullocks becomes a constraint. In order to fill the gap the extension personnel has to create awareness on the importance of land preparation.

Variety : the table 1 shows that 63.3 per cent of the respondents are adopting high yielding varieties of paddy as against only 36.7 percent of the respondents are not adopting the same. It was observed that the majority of the farmers who are adopting high yielding varieties are not using the recommended or suitable varieties to their situations. The high yielding varieties of paddy which were introduced long ago by the state agriculture department are still used by the tribals as the yields are more compared to the local strains. The farmers who are not adopting HYVs are totally depending on the traditional varieties. The reason being lack of conviction on HYVs, non availability of seed in time, high cost and lack of information about the procurement source of the seed material.

To bridge the gap extra efforts of extension personnel are required to introduce situation specific varieties of paddy and to demonstrate the performance of introduced varieties for motivating and convincing the farmers.

Seed rate: A majority of 56.7 percent respondents partially adopt the correct seed rate. Only 28.3% of the respondents adopt the recommended rate while 15 per cent do not adopt. The Partial adopters are those who use more seed rate than the recommended seed rate of 30 kg/acre. The fear of low germination leads to use of higher doses. The non adopters are those who lack in knowledge. The importance of correct seed rate and knowledge of calculating the required quantity of seed

rate based on germination tests should be taught to the farmers through awareness camps and training programmes.

Time of sowing: All the farmers take up the sowing in time and they have the knowledge about yield reduction due to delayed sowings in dry paddy.

Spacing: Up to the extent of 56.7 % of the respondents do not follow the recommended spacing in paddy. Only 13.3 per cent of the respondents adopted recommended spacing while 30 percent adopt partially. Lack of knowledge is the main reason for not adopting the spacing in paddy by the tribals. Requirement of labour, time and lack of skill leads to partial adoption with those who are aware of the importance of spacing. Most of the tribal engage their family labour only and do not hire the outside labourers. As such the labour intensive practices are neglected. This gap can be narrowed down by conducting training programs on both knowledge and skill aspects. Exposure visits and result demonstrations also helps in convincing the farmers.

Seed treatment: None of the respondents practice seed treatment. During discussion majority of the farmers expressed that they are not aware of the seed treatment. Very few farmers are aware of the benefits of seed treatment. To bridge the gap method demonstrations and awareness camps has to be conducted.

Organic manures: Majority (63.3%) of the respondents do not apply organic manures. Only 36.7 percent farmers partially adopted the practice. The tribals practice is penning of the cattle in the cultivated lands during the off season and do not practice composing of the available cow dung. Lack of knowledge and skills in preparing the compost pits and also lack of stall feeding of the animals are some of the reasons for not applying the farm yard manures in the cultivated fields. The resource poor farmers lacking in enough number of cattle do not apply farm yard manure. Insufficient quantity of organic manure is also a constraint and is responsible for partial adoption of recommended by some farmers. In order to reduce the adoption gap, demonstrations for preparing the compost pits and the benefits of using organic manures has to be explained to the tribals.

Basal application of nitrogen: Half of the respondents do not follow the practice of basal application of nitrogen. Only 26.7 percent of the respondent adopt the practice. And 23.3% partially adopt the basal application of nitrogen. The reason for non adoption is mainly due to the belief that application of nitrogen fertiliser increases the incidence of pest and diseases. Lack of knowledge of about correct dose, involvement of cost and transport problem are some of the other factors for non adoption. To reduce the gap, extension personnel have to conduct awareness camps and training programmes on the important and method of application of nitrogenous fertilizers.

Phosphorous: A whopping 93.3 percent of the respondents do not apply phosphorous. Only 6.7 per cent farmers go for basal application of phosphorous. During discussions farmers expressed that lack of awareness and knowledge about the importance of phosphorous is the reason for non adoption. The soil test results have also indicated that the soils of this region are low in ‘P’ content. For bridging the gap, awareness camps has to be organised by the extension personnel on the advantages of applying P, viz. improvement in grain weight, grain quality and development of resistance to pests and diseases, etc.

Potash: The table 1 shows that none of the respondent adopts use of potash in the paddy. The soil test results have also indicated that all the soils were low in ‘K’ content. This gap could be narrowed by conducting awareness programs on the potash by the extension personnel.

Zinc: As per the soil test results, the soils of this region is defifient in zinc content but no farmer adopted the recommendation of zinc application. The reasons for non adoption is lack of awareness and knowledge. Awareness programme on the benefit of ‘Zn’ application, like overcoming the problem of stunted growth, increase in yield and development of resistance to withstand the adverse climate conditions, has to be explained to the farmers.

Top dressing of nitrogen: More than half (53.3%) of the respondents do not follow the practice because of lack of knowledge about its importance. Partial adopters take up top dressing depending upon the financial position and the availability of N fertilizer. To narrow down the gap, exposure visit to research station should be organized for showing the advantages.

Weed control: Weed management technologies in the paddy fields are partially adopted by the respondents. The reason for partial adoption is due the fact that weeding in tribal agriculture practice is mainly done by using the family labour due to poor economic condition, and secondly the practice of broadcast method of sowing does not allow improved mechanical weeding tools. Further during the rainy days the manual weeding activity can not be taken up because of continuous down pour

and loose soil conditions. Lack of knowledge about importance of proper and timely weeding is also a reason for not adopting the practice fully.

Plant protection measures: Control measures for the pests in paddy crop were not adopted by 60% of the respondents, while 40% of the respondents were partial adopters. The reason for non adoption and partial adoption is mainly due to lack of knowledge about the different methods of controlling the pest and specifically the chemical control methods. The technical know how about spray mixture, time and quantity of application, etc. are not fully known to the tribal farmers. The tribal farmers generally depend on the non chemical methods which are in-sufficient to control pests. The knowledge of IPM is to be imparted to bridge the gap.

Harvesting and threshing: The tribal farmers are good at deciding the time for harvest of the crop. The tribal celebrate festivals synchronizing with the harvest of the crop. Full adoption was observed with regard to harvesting and threshing technologies.

CONCLUSION

Half of the tribal farmers are using high yielding varieties of paddy, and either fully or partially apply nitrogenous fertilizers. Nil adoption of 'P', 'K' and 'Zn' fertilizers was observed with all the farmers even though the soil test results are indicating that the soil are low in these nutrients. Plant protection practices were partially adopted by 40% respondents. These observations are similar to that as reported by Bhoite and Barve (2008), but in contradiction with the report of Bhagat (2007) that all the farmers were partially adopting nitrogen and phosphorus fertilizers and some of them were using potassium fertilizers, insecticides and fungicides.

The study clearly depicts that the tribal farmers might have been convinced with the merits of using HYVs and nitrogen fertilizers which helped in building favourable attitude towards adoption of these technologies. Farmers are convinced about importance of pest and weed management, but they are not adopting the improved technologies due to several constraints. The extent of adoption of majority of the practices like adoption of P, K, Zn fertilizers and plant protection is either partial or nil due to lack of knowledge and awareness. The extension agencies will have to take care about the nil and partial adoption by conducting all means of extention activities, especially exposure visits and method/result demonstrations.

Hence there is an urgent need for deeper probe into the tribal farming system in order to know the extent to which the improved agricultural technology is known and adopted by them and the constraints operating there in. As agriculture is main stay for tribals and the new agricultural technology is disseminated by the research stations and the developmental agencies.

REFERENCES

Jaiswal H.S. 2005. Adoption behaviour of the tribal farmers from Surgana Taluk (Nasik district) in respect of paddy cultivation. Tribal Research Bulletin IX (ii): 15-17.

Bhagat L.N. 2007 Some aspects of Agricultural in tribal areas, Bihar. Stagnation or Growth. Spectrum publishing house, New Delhi.

Bhoite H.S. and Barve N.K. (2008). Adoption pattern of cultivation practices of tribal farmers Maharastra Journal of Extension education 111:125-127.

Punna Rao P. (2008). A study on adoption of improved agricultural technology by the tribal farmers in high attitude & tribal zone of Andhra Pradesh. Ph.D. Thesis.