



Assessment of adoption of improved wheat production technology and its constraints

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ABSTRACT:

The adoption behaviour of wheat growing farmers for improved wheat technology and its constraints were analysed in four adopted villages Uchehra, Kakraha of Satna district and Kapsa, Amrah of Rewa district in Madhya Pradesh. The results of the study revealed that majority of the wheat growing farmers exhibited medium level of adoption trend in marginal and small group of farmers. The marginal farmers were found to adopt more improved technologies than that of small farmers. 95% adoption of specific technology i.e. use of seeds of high yield varieties and use of recommended dose of fertilizer were found in marginal farmers. Probably due to more capacity of adoption and extension contract. While, in small farmers the maximum (59.38%) adopted technology was the use of original material for improving nutrient status the study also exhibited drought problems as major constraints in wheat cultivation as perceived by the farmers in rabi during flowering and grain filling stages.

KEYWORDS: Wheat, Food, Technology, wheat production technology

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INTRODUCTION:

Wheat (*Triticum estivum* L.) is an important winter-season food cereal. Currently, India's total wheat production is 92.29 million metric tons from an area of more than 35 million hectares (Anon. 2016). The production is 18410000 metric tons with yield of 3115 kg per hectare from an area of 5911000 hectare in M.P. In district Rewa the production is 398000 metric tons with yield of 2107 kg/ha from an area of 189000 hectare. And in Satna district the production is 390000 metric tons with yield of 2952 kg/ha from an area of 132000 hectare. To meet the growing demand of population it is very important to give more emphasis in wheat cultivation through improved cultivation technology. A good number of high yielding varieties, recommended doses of fertilizers with nitrogen coupled with the control of weeds, insects and disease can help in increasing the productivity. In the project we have demonstrated the improved wheat cultivation technology under FLD's amongst the marginal and small farmer during 2011-12, therefore, this study was aimed to analyzed the adoption behaviors of wheat farmers for improved cultivation technologies and its constraints, which will help in understanding the problems and also in developing suitable strategies in the spreading of recommended technologies in order to increase the production.

MATERIALS AND METHODS:

Eight important production technologies which had major role in the wheat production were selected for the study. The study was conducted in four adopted villages Uchehra, Kakraha of Satna district and Kapsa, Amrah of Rewa district in Madhya Pradesh during the year 2011-12. Data were collected from 50 wheat growing farmers comprising of marginal and small categories. The important technologies viz. use of seeds of high yielding varieties, use of organic material for improving nutrient status, seed treatment with fungicides, use of recommended dose of fertilizers, use of herbicide for weed control, use of insecticides for pest control and use of fungicides for disease control at appropriate time were assessed for their adoption level in different categories of wheat growing farmers. Meetings were held with farmers and objectives and activities of based on wheat production technology components and their timely applications



were explained to farmers i.e. improved variety HD 2864, balanced dose of fertilizer (100N:60P:40K) and PSB and Azotobactor @ 5gm/kg of seed as seed treatment were taken. A total 20q seed of wheat variety HD 2864, (40kg for each farmer) was distributed in target villages. Fifty demonstrations were conducted in 50 farmer's field at target during 2011-12 *rabi* crop season. The major constraints in wheat cultivation as perceived by wheat growing farmers were also analyzed and ranked accordingly.

RESULTS AND DISCUSSION:

Data in relation to yield showed that the concern variety shown better yield performance with an average of 2.34 t/ha in respect to desi / local varieties used by farmers with an average of 2.06 t/ha. Therefore, farmers preferred 'variety HD 2864' at Satna and Rewa district because of higher yield and grain quality. The tested variety of wheat grown in targeted villages of district Satna and Rewa were profitable and cost-effective.

The adoption behaviour of specific recommended practices of wheat production technologies by the wheat growing farmers was analyzed using percentage. The data in table 1 exhibited that 95% of marginal farmers had adopted fully to important recommended technology i.e. the use of seeds of high yielding varieties and recommended doses of fertilizer followed by the use of insecticides at appropriate time (91.2%). While small farmers had maximum adoption (83.13%) of use of organic material in their field for improving nutrient status probably due to their less buying capacity of in organic fertilizer. It is interesting to note with regards to both categories of farmers the maximum adoption (82%) of use of recommended doses of fertilizers because even category of small farmers were also aware that for obtaining the maximum production recommended doses of fertilizer practices play important role.

The practices which are less adopted by both the categories of farmers were, use of fungicide for diseases control at appropriate time (51%), use of insecticides for pest control (41%) at appropriate time and use of herbicide for weed control (35%). The adoption of their recommended technologies has been presented in table 1. The data pertaining to distribution of respondents based on their level of adoption of recommended wheat production technologies by the wheat growing farmers is presented in table 2. The result showed that 50% of marginal



farmers belonged to medium adoption category while, high and low adoption categories was 35% and 15% respectively. In comparison to this a 28% of small farmers belonged to low level of adoption category. Hence the adoption behaviour of both marginal and small farmers was quite dissimilar. Further in the pooled sample it was found that more number of farmers (45%) belonged to medium level of adoption.

In order to find out the major constraints as perceived the wheat growing farmers have been presented in table 3 and it was found that the drought problem in *rabi* was perceived the most important constraint by the farmers. The other constraints in order to rank were on word, low fertility status in upland, problem of improved high yielding seeds material more damage to crop due to aphids attack and occurrence of fusarium head blight and leaf rust on leaves causing low yield. The findings of the study are similar to the results of Kumbhare and Singh (2011), Njane and Wangare (2007), Judicate et. al. (1998), Ndiema (2002), and Yirga and Beyene (1990)

CONCLUSION:

It is concluded from the adoption percentage was more in marginal farmers than small farmers for improved wheat production technologies 95% adoption were found in the use of improved high yielding varieties and use of recommended dose fertilizers in marginal farmers while the small farmers had higher adoption (83.13%) of use of organic material for improving nutrient status of the soil. Weeds problem coupled with terminal drought was found as major constraints in the wheat production.

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Table I: Adoption of specific recommended practices of wheat production technology by the wheat growing farmers.

S.No.	Practices adoption	Marginal farmers (n=25)				Small farmers (n=25)				Total farmers (n=50)			
		Adopted		Not adopted		Adopted		Not adopted		Adopted		Not adopted	
		f	%	f	%	f	%	f	%	f	%	f	%
1	Improved varieties	24	95.00	1	5.00	15	59.38	10	40.63	39	77	11	23
2	Use of organic material for improving nutrient status	20	79.80	5	20.20	21	83.13	4	16.88	41	81	9	19
3	Seed treatment with fungicides	22	89.30	3	10.70	14	55.10	11	44.90	36	72	14	28
4	Use of recommended dose of fertilizer	24	95.00	1	5.00	17	69.35	8	30.65	41	82	9	18
5	Split application of fertilizer (N)	20	79.80	5	20.20	17	67.45	8	32.55	37	74	13	26
6	Use of herbicide for weed control	22	89.30	3	10.70	10	39.90	15	60.10	32	65	18	35
7	Use of insecticide for pest control at appropriate time	23	91.20	2	8.80	7	27.55	18	72.45	30	59	20	41
8	Use of fungicide for disease control at appropriate time	19	75.05	6	24.95	6	23.75	19	76.25	25	49	25	51

f = Frequency, % = Percentage

Table 2: Adoption of different categories of farmers in adopting wheat production technology

S.No.	Categories	Marginal farmers		Small farmers		Total farmers	
		F	%	f	%	f	%
1	Low	4	15	7	28	11	21.5
2	Medium	13	50	10	40	23	45
3	High	9	35	8	32	17	33.5
4	Total	25	100	25	100	50	100

f = Frequency, % = Percentage

Table 3: Major constraints in wheat cultivation as perceived by wheat growing farmers of Satna and Rewa district of M.P.

S.No.	Perceived/constraint	Marginal farmers			Small farmers			Total farmers		
		F	%	Rank	%	f	Rank	f	%	Rank
1	Improved seed problem	22	87.5	IV	23	93.7	III	45	90.6	IV
2	Low fertility status in up lands	25	100	I	25	100	I	50	100	I
3	Drought at flowering and onwards	23	93.7	II	24	97.9	II	48	95.8	II
4	Insect problems	23	91.6	III	24	95.8	IV	47	93.7	III
5	Disease problem	10	41.6	V	22	87.5	V	32	64.55	V

f = Frequency, % = Percentage