

Agrarian impact of wheat frontline demonstrations among the farmers of Malwa region of Madhya Pradesh

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Abstract

Wheat is the most important and popular cereals crop in India. In India wheat is grown at approximately 305.97 lakh hectares, with an estimated production of 98.38 million tons and Productivity at 3216 kg / ha (2016-17). The study was conducted in five district of the Malwa region of Madhya Pradesh. The total sample was consist 300 farmers (150 beneficiary farmers and 150 non-beneficiary farmers). A comparison between beneficiary and non-beneficiary farmers, a large number 60.00 percent of the respondents had high adoption of wheat production technology, out of 150 non beneficiary famers; best part 48.00 percent of the respondents had high adoption about wheat production technology. Out of twenty four variables of beneficiary and non-beneficiary farmers four variable namely- age, family type, family size and mass media exposure didn't ascertain any significant relationship with adoption of wheat frontline demonstrations practices. The reactions from the farmers show that majority 86.67 percent of the farmers expressed that less price of MSP and got (Ist rank) in seriousness. The next serious reaction of the farmers (IInd rank) high cost of input 85.00 per cent.

Key words- Agrarian, Impact, Adoption, Frontline Demonstrations, Relationship and constraint

Introduction

Wheat (*Triticum aestivum* L.) is the most widely grown crop in the world. In India it is a staple food after rice. Wheat is one of the oldest and most important grain crops and their many species known, the most important being the common wheat (*Triticum aestivum*), used to make brad or Chapati; Duram wheat is used to make pasta like spaghetti and macaroni. In addition, some wheat is used by industries to produce starch, paste, malt, dextrose, gluten, alcohol and other products. Wheat is the main source of nutrients and energy in the human diet. Wheat differs in the sense that a large number of different products such as chapatti, pasta, bread, biscuits, halva, noodles, dalia and maida. Wheat is widely used in many industries such as milling, bread and bakery. Wheat gluten (protein) is useful in the preparation of adhesives, polymers and resins. Wheat starch is used in the

cosmetics, paper, and pharmaceutical industries. Wheat is also used as cattle feed like hay and silage.

Frontline demonstration is a unique way of providing direct communication between the researcher and the farmers as scientists are directly involved in planning, implementation and monitoring demonstrations of technologies developed by them and receiving direct feedback from the farmer. This enables scientists to develop a more efficient research program. In FLDs, the subject specialist provides technical input to extension scientists to organize the demonstration. Frontline demonstrations therefore provide an opportunity for research and extension workers to understand farmers' resources and the need for fine tuning and / or technological modification to facilitate adaptability to the farmer's field.

ICAR-IARI Regional Research Station on Wheat, Indore (M.P.) and Krishi Vigyan Kendras of RVSKVV, Gwalior and JNKVV, Jabalpur has been tasked with conducting FLDs in Madhya Pradesh. The emphasis was on increasing productivity in each area

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through the most productive wheat varieties in accordance with the package and processes. Although many studies have been conducted to discuss crop yields and the mechanisms for making these demonstrations, limited studies have been conducted to assess the impact of FLD on knowledge and the level of acceptance of farmers, Impact of Frontline Demonstrations in terms of agriculture, economics, Social, personal, psychological, and communication signals to explore available infrastructure resources, and to identify potential issues in the adoption of Recommended Production technology.

Therefore, the current study is an attempt to assess the impact of FLD on the knowledge and level of acquisition of wheat farmers of Indore, Ujjain, Dewas, Dhar, and Jhabua Districts (M.P) The study was designed to investigate the scientific background of the beneficiaries of the FLD program and its beneficiaries and the factors that affect the scientific spirit of farmers. Therefore, the review focuses on findings related to the scientific status of FLD beneficiaries and non-beneficiaries and we arrive at the appropriate hypothesis for research theory. The main objectives of the research are the following:

1. To study the extent of adoption of demonstrated technologies among beneficiary and non beneficiary farmers.
2. To explore the relationship between profile of beneficiary & non beneficiary farmers of WFLD's with adoption of demonstrated technologies.
3. To identify the constraints in adoption of recommended technologies

Materials and Methods

The study was conducted in the Malwa region of Madhya Pradesh. Indore, Dewas, Ujjain, Dhar and Jhabua districts were deliberately selected because ICAR-IARI Regional Station, Indore (M.P) is conducting the Front Line Demonstration of wheat during 2016-2020. A districts selection list was prepared and three villages in each district were deliberately selected. The list of farmers making wheat FLDs was prepared and 10 beneficiary farmers and 10 non-beneficiary farmers in each village were randomly selected. Thus, the total sample included 300 farmers in 15 selected villages. The data were collected through survey method with the help of a pre-tested interview schedule, which was prepared on the basis of the objectives. The primary data were collected from the respondents by using a semi-structured interview schedule, which was pre-tested before actual

application. The respondents were interviewed individually by the investigator. Secondary data were collected from records & statistical office. Statistical tools like- mean, SD, percentage and Karl Pearson's coefficient of correlation were used for analysis of data.

Results and Discussion

Extent of Adoption of Demonstrated Technologies

The extent of adoption of recommended production technology of wheat by the beneficiary and non beneficiary farmers was assessed and is presented in Table 1.

Extent of adoption of WFLDs practices among the beneficiary farmers-

As concern about improved variety, the majority 60.67 per cent of beneficiary farmers were found high level of adoption followed by 24.67 per cent of the respondents had medium category of adoption and only 14.66 per cent of the respondents were found in low category of adoption about improved varieties of wheat.

While, in case of seed treatment, a majority of the respondents 62.00 per cent had possessed high level of adoption, followed by 28.00 per cent respondents had medium level of adoption and only 10.00 per cent of the respondents possessed low level of adoption.

With regards to seed rate, majority of the respondents 66.67 percent had possessed high level of adoption, followed by 26.00 per cent had medium level of adoption and only 07.33 percent of the respondents had low level of adoption regarding recommended seed rate of wheat.

In respect of manure and fertilizer, the majority, 60.00 per cent respondents had high level of adoption, followed by 24.67 per cent had medium level of adoption and only 15.33 per cent respondents had low level of adoption about recommended dose of manure & fertilizers.

In case of spacing, most of the respondents 49.33 per cent had high level of adoption, followed by 28.67 per cent had medium level of adoption and only 22.00 per cent had low level of adoption regarding to spacing in wheat production technology.

With concern about sowing time & method, majority of the respondents 62.67 percent had high category of adoption followed by 24.00 per cent had medium adoption and only 13.33 per cent respondents had low category of adoption about sowing time and method of wheat production.

Table 1: Distribution of respondents according to their extent of adoption of WFLDs practices

S. No.	Name of technology	Extent of adoption					
		Beneficiary farmers			Non beneficiary farmers		
		L	M	H	L	M	H
1.	Improved variety	22(14.66)	37(24.67)	91(60.67)	22(14.66)	67(44.67)	61(40.66)
2.	Seed treatment	15(10.00)	42(28.00)	93(62.00)	24(16.00)	52(34.67)	74(49.33)
3.	Seed rate	11(07.33)	39(26.00)	100(66.67)	26(17.33)	59(39.33)	65(43.34)
4.	Manure and fertilizer	23(15.33)	37(24.67)	90(60.00)	37(24.66)	43(28.67)	70(46.67)
5.	Spacing	33(22.00)	43(28.67)	74(49.33)	36(24.00)	43(28.67)	71(47.33)
6.	Sowing time and method	20(13.33)	36(24.00)	94(62.67)	30(20.00)	36(24.00)	84(56.00)
7.	Irrigation and drainage	22(14.67)	38(25.33)	90(60.00)	28(18.67)	48(32.00)	74(49.33)
8.	Weed control	32(21.33)	26(17.33)	92(61.34)	39(26.00)	39(26.00)	72(48.00)
9.	Plant protection measures	20(13.33)	44(29.33)	86(57.34)	28(18.67)	45(30.00)	77(51.33)
	Overall adoption	22(14.66)	38(25.33)	90(60.00)	30(20.00)	48(32.00)	72(48.00)
	Total	150(100%)	150(100%)				

In case of irrigation and drainage, majority of the respondents 60.00 per cent had found in high category of adoption, followed by 25.33 per cent respondents had medium category of adoption and only 14.67 per cent respondents had found in low category of adoption regarding recommended practice of irrigation and drainage in wheat production.

With regards to the weed control, majority of the respondents 61.34 per cent had possessed high level of adoption, followed by 17.33 per cent medium level of adoption and 21.33 per cent of the respondents had possessed low level of adoption regarding weed control in wheat production.

While, in respect of plant protection measures, a higher percentage of beneficiary farmers (57.34 per cent had possessed high level of adoption, followed by 29.33 per cent respondents had medium level of adoption and only 13.33 per cent of the respondents had possessed low level of adoption about recommended plant protection in wheat production technology.

Extent of Adoption of WFLDs Practices Among the Non-Beneficiary Farmers

Regarding improved variety, a good number of the non beneficiary farmers 44.66 per cent were found medium level of adoption followed by 40.67 of the respondents had high category of adoption and only 14.66 per cent of the respondents were found in low category of adoption about improved varieties of wheat.

While, in case of seed treatment, a best part of the non beneficiary farmers 49.33 per cent had possessed high level of adoption, followed by 34.67

per cent respondents had medium level of adoption and only 16.00 per cent of the respondents possessed low level of adoption.

With regards to seed rate, majority of the non beneficiary farmers 43.34 percent had possessed high level of adoption, followed by 39.33 per cent had medium level of adoption and only 17.33 per cent of the respondents had low level of adoption regarding recommended seed rate of wheat.

In concern about manure and fertilizer, the majority, 46.67 per cent of non beneficiary farmers had high level of adoption, followed by 28.67 per cent respondents had medium level of adoption and only 24.66 per cent respondents had low level of adoption about recommended dose of manure & fertilizers.

In case of spacing, most of the non beneficiary farmers 47.33 per cent had high level of adoption, followed by 28.67 per cent respondents had medium level of adoption and only 24.00 per cent had low level of adoption regarding to spacing in wheat production technology.

With regards to sowing time & method, majority of the non beneficiary farmers 56.00 percent had high category of adoption followed by 24.00 per cent respondents had medium adoption and only 20.00 per cent respondents had low category of adoption about sowing time and method of wheat production.

In case of irrigation and drainage, majority of the non beneficiary farmers 49.33 per cent had found in high category of adoption, followed by 32.00 per cent respondents had medium category of adoption and only 18.67 per cent respondents had found in low

Table 2: Distribution of the respondents according to their overall adoption of WFLDs practices

S. No.	Category	Beneficiary farmers	Percent	Non beneficiary farmers	Percent
1	Low	22	14.67	30	20.00
2	Medium	38	25.33	48	32.00
3	High	90	60.00	72	48.00
	Total	150	100	150	100

Table 3: Variables wise value of correlation coefficient (r)

S. Variable	Beneficiary farmers Correlation coefficient (r)	Non-beneficiary farmers Correlation coefficient (r)
1 Age	0.121 ^{NS}	0.092 ^{NS}
2 Education Status	0.422 ^{**}	0.436 ^{**}
3 Family type	-0.052 ^{NS}	-0.053 ^{NS}
4 Family size	-0.024 ^{NS}	-0.041 ^{NS}
5 Farming Experience	0.372 ^{**}	0.383 ^{**}
6 Institutional Experience	0.237 [*]	0.226 [*]
7 Operational Land holding	0.248 [*]	0.237 [*]
8 Area under wheat cultivation	0.396 ^{**}	0.387 ^{**}
9 Annual Income	0.293 ^{**}	0.309 ^{**}
10 Farm mechanization	0.401 ^{**}	0.423 ^{**}
11 Irrigation Index	0.245 [*]	0.248 [*]
12 Cropping Intensity	0.082 ^{NS}	0.242 [*]
13 Material Possession	0.367 ^{**}	0.376 ^{**}
14 Information Source	0.258 [*]	0.243 [*]
15 Information seeking behaviour	0.337 ^{**}	0.224 [*]
16 Extension Participation	0.294 ^{**}	0.318 ^{**}
17 Mass Media Exposure	0.072 ^{NS}	0.083 ^{NS}
18 Cosmopolitaness	0.248 [*]	0.342 [*]
19 Innovativeness	0.389 ^{**}	0.392 ^{**}
20 Risk Orientation	0.227 [*]	0.235 [*]
21 Scientific orientation	0.238 [*]	0.227 [*]
22 Economic motivation	0.405 ^{**}	0.254 [*]
23 Marketing orientation	0.428 ^{**}	0.416 ^{**}
24 Knowledge about wheat production	0.572 ^{**}	0.492 ^{**}

category of adoption regarding recommended practice of irrigation and drainage in wheat production.

With regards to the weed control, a mainstream of the non beneficiary farmers 48.00 per cent had possessed high level of adoption; followed by 26.00 per cent respondents had found each in medium and low level category of adoption regarding weed control in wheat production.

While, in case of plant protection measures, a superior percentage of non beneficiary farmers 51.33 per cent possessed high level of adoption, followed by 30.00 per cent respondents had medium level of adoption and only 18.67 per cent of the respondents

had possessed low level of adoption about recommended plant protection in wheat production technology.

Distribution of Respondents According To Their Overall Adoption of WFLDs Practices

It could be pragmatic that the table 2 shows that out of 150 beneficiary farmers, a large number 60.00 percent of the respondents had high adoption of wheat production technology, followed by 25.33 percent of the respondents had medium adoption about wheat production technology, and only 14.67 percent of the respondents had low adoption about wheat production technology after conducting the WFLDs.

Table 4: Constraints in adoption of recommended technologies

S.No.	Constraints	Frequency	Percentage	Rank
1	Training is not regularly and timely organised	165	55.00	VI
2	Lack of technical guidance/knowledge about production technology	175	58.00	V
3	Number of demonstrations are to less	130	43.33	VII
4	Literatures are not available	122	40.67	IX
5	Critical inputs are not timely available	240	80.00	III
6	High cost of input	255	85.00	II
7	Less price of MSP	260	86.67	I
8	Lack of location specific technologies	101	33.67	X
9	Loan is not available in time with subsidised rate	125	41.67	VIII
10	Lack of transportation & market facilities	192	64.00	IV

Correlation analysis

Relationship between profile of beneficiary farmers with their adoption about WFLDs practices. The coefficient of correlation of each of the characteristics with their adoption behavior about WFLDs of farmers has been furnished in Table 3.

The coefficient of correlation of between profile of beneficiary farmers viz., education status, farming experience, area under wheat cultivation, annual income, farm mechanization, material possessions, extension participation, innovativeness, economic motivation, market orientation and knowledge about WFLDs practices showed positive and significant relationship with adoption about WFLDs practices at 0.01 level of probability. Out of twenty four independent variables eleven variables were found highly significant relationship with adoption about adoption of WFLDs practices in 1% level of probability.

The coefficient of correlation of between profile of beneficiary farmers viz., institutional experience, operational lad holding, irrigation index, information source, information seeking behavior, cosmopolitans, risk orientation and scientific orientation showed positive and significant relationship with adoption of WFLDs practices at 0.05 level of probability. Out of twenty four independent variables eight variables were found significant relationship with adoption about adoption of WFLDs practices in 5% level of probability.

Whereas remaining five variables namely- age, family type, family size, cropping intensity and mass media exposure didn't ascertain any significant relationship with adoption of wheat frontline demonstrations practices.

Relationship between profile of non-beneficiary farmers with their adoption about WFLDs practices

The coefficient of correlation of between profile

of beneficiary farmers viz., education status, farming experience, area under wheat cultivation, annual income, farm mechanization, material possessions, extension participation, innovativeness, market orientation and knowledge about WFLDs practices showed positive and significant relationship with adoption about WFLDs practices at 0.01 level of probability. Out of twenty four independent variables ten variables were found highly significant relationship with adoption about adoption of WFLDs practices in 1% level of probability.

The coefficient of correlation of between profile of beneficiary farmers viz., institutional experience, operational lad holding, irrigation index, cropping intensity, information source, information seeking behavior, cosmopolitans, risk orientation scientific orientation and economic motivation showed positive and significant relationship with adoption of WFLDs practices at 0.05 level of probability. Out of twenty four independent variables ten variables were found significant relationship with adoption about adoption of WFLDs practices in 5% level of probability.

Whereas remaining four variables namely- age, family type, family size, and mass media exposure didn't ascertain any significant relationship with adoption of wheat frontline demonstrations practices.

3. Constraints in Adoption of Recommended Technologies

During investigation, the farmers expressed many problems faced by them during the study. These views were termed as constraints in this study and are expressed.

It is fact that farmer's training is an important factor in our agricultural development programme. The opinion of farmers regarding problems faced by them in getting training has a significant importance the

standard and quality of training programmes of KVKs. Hence, it become utmost important to know the opinion & various problems experienced by the farmers during the study as well as WFLDs were organized by the KVKs. So that useful suggestions and proper importance may be made in improving the knowledge and socio-economic status of these trainees. Keeping this view, the various constraints & problems expressed by the farmers were presented in Table 4.

The reactions from the farmers show that majority 86.67 percent of the farmers expressed that less price of MSP and got (Ist rank) in seriousness. The next serious reaction of the farmers (IInd rank) high cost of input 85.00 percent. However, 80.00 percent and IIIrd rank of seriousness) respondents expressed, critical inputs are not timely available. Majority, 64.00 percent of the respondents articulated lack of transportation & market facilities. Lack of technical guidance/knowledge about production technology reported by 58.00 percent respondents and got Vth ranked. The Table 4 shows that 55.00 percent of the respondents reported training is not regularly and timely organized. It is clearly indicated in table that number of demonstrations are to less is accounted by 43.33 percent of the respondents. Loan is not available in time with subsidized rate stated by 41.67 percent of the respondents and got VIIIth ranked. However, 40.67 per cent and IXrd rank of seriousness, respondents expressed literatures are not available and followed by 33.67 percent respondents said that lack of location specific technologies.

Conclusion

The study was conducted in five district of the Malwa region of Madhya Pradesh. The total sample was consist 300 farmers (150 beneficiary farmers and 150 non-beneficiary farmers). A comparison between beneficiary and non-beneficiary farmers, a large number 60.00 percent of the respondents had high adoption of wheat production technology, out of 150 non beneficiary famers; best part 48.00 percent of the respondents had high adoption about wheat production technology. Out of twenty four variables of beneficiary and non-beneficiary farmers four variable namely- age, family type, family size and mass media exposure didn't ascertain any significant relationship with adoption of wheat frontline demonstrations practices. The reactions from the farmers show that majority 86.67 percent of the farmers expressed that less price of

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