AU DOI: 10.15740/HAS/AU/11.3/258-264 *Agriculture Update*
Volume **11** | Issue 3 | August, 2016 | 258-264
Visit us : *www.researchjournal.co.in*
e ISSN-0976-6847

RESEARCH ARTICLE :

Constraints faced by mustard growers of Bharatpur, Rajasthan

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ARTICLE CHRONICLE :
Received :
29.10.2015;
Revised :
30.06.2016;
Accepted :
11.07.2016

SUMMARY : This research study was conducted in Bharatpur district of Rajasthan, where Directorate of Rapeseed-Mustard Research is situated. After interviewing three hundred farmers personally who belong to different categories of farmers was found that crop failure due to aberrant weather, high cost of fertilizers, lack of knowledge about plant protection measures and technical staff working in the field is not available when needed were the most perceived constraints by the all three categories of farmers.

How to cite this article : Bhati, D.S., Sharma, Y.K. and Sharma, S.K. (2016). Constraints faced by mustard growers of Bharatpur, Rajasthan. *Agric. Update*, **11**(3): 258-264, **DOI : 10.15740/HAS/AU/11.3/258-264.**

KEY WORDS :
Constraint, Technical, Economical, Infrastructural, Crop

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BACKGROUND AND OBJECTIVES

The main problem as it exists today is that of transfer of fruitful technologies and their skills pertaining to various practices of mustard cultivation among the farmers. It has also been observed that even if the farmers have technological know –how, they restrict adoption, as they are unskilled in utilization of technology in their fields. No specific efforts have been made particularly in mustard cultivation to know the extent of technological skill proficiency and the factor that restrict in their accomplishment. Keeping this in view a study one the constraints responsible for technological gap between the recommended and adopted mustard production technology was undertaken.

RESOURCES AND METHODS

An attempt was made to identify and analyse the constraints responsible for partial adoption, or non-adoption of the recommended technology of mustard cultivation by big, small and marginal farmers in the area under investigation. For this purpose constraints encountered by the different categories of farmers were gathered by the discussion held with the extension personnel working in the area of study, few farmers of various status and officials of NRCRM, Sewar, Bharatpur (Rajasthan).

Later on these constraints were classified into technological, economical, educational and infrastructural constraints. A schedule was developed to get identified the above-mentioned constraints. The response was converted into percentage.

OBSERVATIONS AND ANALYSIS

The constraints responsible for

technological gap in improved technology of mustard cultivation as perceived by the respondents (big, small and marginal farmers) were pertaining to technological, economical, educational and infrastructure aspects, which were as follows:

The results have been presented from Table 1 to 5.

Technological constraints :

Table 1 incorporates the findings of technological constraints reported by big, small and marginal farmers. Data in Table 1 explain that on the whole 'crop failure due to aberrant weather' and 'crop susceptible to pests and diseases and hence risky' were perceived by 73.67 per cent and 69.66 per cent of the total farmers (big, small and marginal farmers), respectively and as such these were ranked I and II in their rank order followed by 'dry fodder is not used for cattle feed' (45 %)" and 'less reliable recommendation' (20.67 %).

Farmer's category-wise analysis showed that the most important technological constraints faced by big farmers were 'crop failure due to aberrant weather' (72 %) and 'crop susceptible to pests and diseases and hence risky' (66 %) and ranked first and second, respectively. Whereas 'dry fodder is not used for cattle feed' was reported by 41 per cent big farmers and as such it was ranked third. The least important technological constraint confronted by the big farmers was 'less reliable recommendations' (18 %) which was ranked at the last position.

Almost similar trend was observed in case of small farmers. The small farmers have also repeated that very ranks in the same order to the aforesaid technological constraints. However, a slight difference was observed in case of marginal farmers. 79 per cent marginal farmers confronted the technological constraint 'crop susceptible to pest and diseases and hence risky' and it was ranked first in order of importance. The second and third ranks were accorded to the technological constraints 'crop failure due to aberrant weather' (76 %) and 'dry fodder is not used for cattle feed' (52 %). The last rank was awarded to the constraint 'less reliable recommendations' (14 %).

The comparative analysis of the technological constraints indicated that more or less similar trend was observed in the rank order of various constraints awarded by the different categories of farmers. Only marginal farmers varied slightly in awarding the ranks but it did not make any difference in overall ranks of the constraints.

Economic constraints :

Table 2 incorporates the findings of the economic constraints as perceived by big, small and marginal mustard growers in filling the gap between recommended

Table 1 : Technological constraints responsible for technological gap in the recommended mustard production technology as perceived by the different categories of farmers

Sr. No.	Constraints	Big farmers (n=46)		Small farmers (n=109)		Marginal farmers (n=145)		All categories farmers (n=300)	
		Percentage	Rank	Percentage	Rank	Percentage	Rank	Percentage	Rank
1.	Less reliable recommendations	18	IV	30	IV	14	IV	20.67	IV
2.	Crop failures due to aberrant weather (cold winds)	72	I	73	I	76	II	73.67	I
3.	Crop susceptible to pests and diseases and hence risky	66	II	64	II	79	I	69.66	II
4.	Dry fodder is not used for cattle feed	41	III	42	III	52	III	45.00	III

Table 2 : Economic constraints responsible for technological gap in the recommended practices of mustard cultivation as perceived by the different categories of farmers

Sr. No.	Constraints	Big farmers (n=46)		Small farmers (n=109)		Marginal farmers (n=145)		Farmers of all three categories (n=300)	
		Percentage	Rank	Percentage	Rank	Percentage	Rank	Percentage	Rank
1.	High cost of HYV seeds	38	V	46	V	62	V	48.67	V
2.	Increasing cost of field preparation	25	VI	12	VI	32	VI	23.00	VI
3.	Low resource endowments	64	III	78	I	83	II	75.00	II
4.	Unpredictable price for produce	44	IV	61	III	70	IV	58.33	IV
5.	High cost of fertilizer	81	I	72	II	84	I	79.00	I
6.	High cost of plant protection measures	67	II	60	IV	80	III	69.00	III

and adopted package of practices of mustard cultivation. Data in Table 2 indicated that on the whole 'high cost of fertilizer' and 'low resource endowments' were perceived as the most important constraints by 79 and 75 per cent of total mustard growers and were ranked I and II, respectively followed by 'high cost of plant protection measures' (69 %), 'unpredictable price for produce' (58.33 %) and 'high cost of HYV 's seeds' (48.6 %) and so on.

Farmer's category-wise analysis pointed out that 'high cost of fertilizer' (81 %) and 'high cost of plant protection measures' (67 %) were perceived as the most important economic constraints (ranked I and II, respectively) by big farmers. Similarly, 'low resource endowments', 'unpredictable price for produce' and 'high cost of HYV seeds' were reported by 64, 44 and 38 per cent of big farmers. Which were ranked III, IV and V, respectively. While, 'increasing cost in field preparation' was encountered by 25 per cent of big farmers and was ranked as last position.

Similarly 78 per cent small farmers faced 'low resource endowments' as the most important economic constraint which was ranked as first position followed by 'High cost of fertilizers' (72 %), 'unpredictable price for produce' (61 %), 'high cost of plant protection measures' (60 %), 'high cost of HYV seeds' (46 %) and 'increasing cost in field preparation' (12 %).

In the same way the economic constraints like 'high cost of fertilizer' and 'low resource endowments' were perceived as the most important economic constraints reported by 84 and 83 per cent of marginal farmers and ranked I and II, respectively. The third, fourth and fifth ranks were accorded to 'high cost of plant protection measures' (80 %), 'unpredictable price for produce' (70 %) and 'high cost of HYV seeds' (62 %), respectively by the marginal farmers. Only 32 per cent of marginal farmers reported that 'increasing cost in field preparation' as economic constraints and ranked last in order of importance.

From the above description it may be deduced that 'high cost of fertilizer' had emerged out as the most important economic constraint confronted by the total farmers. Looking to the farmers category-wise analysis it may be noted that marginal farmers viewed ditto as the big farmers. While the small farmers were having little different view in ranking the constraints but not to a significant mark.

Educational constraints :

Table 3 reflected the findings of the educational constraints responsible for technological gap in mustard production technology. The data revealed that on the whole about two third of the respondents reported "lack of knowledge about plant protection measures "(64 %) as the most important constraints and ranked first, followed by "lack of knowledge and skills about proper methods of sowing" (56 %), "lack of knowledge and skill about operating implements and equipments such as sprayers, dusters etc." (31 %) and so on.

Farmer's category-wise analysis depicted in Table 3 explained that "lack of knowledge about chemical fertilizers and the proper application methods" and "lack of knowledge about plant protection measures" were perceived as the most important educational constraints by 48 and 35 per cent of big farmers, respectively and ranked I and II, in order.

Similarly, III and IV ranks were accorded to "lack of knowledge and skill about proper methods of sowing" and "lack of knowledge and skill about operating implements such as sprayers, dusters, etc." which were

Table 3 : Educational constraints responsible for technological gap in the recommended mustard production technology as reported by different categories of farmers

Sr. No.	Constraints	Big farmers (n=46)		Small farmers (n=109)		Marginal farmers (n=145)		Farmers of all three categories (n=300)	
		Percentage	Rank	Percentage	Rank	Percentage	Rank	Percentage	Rank
1.	Lack of confidence in HYV's	18	V	15	V	33	V	22.0	V
2.	Lack of knowledge and skill about proper methods of sowing	31	III	76	I	61	III	56.0	II
3.	Lack of knowledge about chemical fertilizers and the proper application methods	48	I	53	III	62	II	54.3	III
4.	Lack of knowledge about plant protection measures	35	II	73	II	84	I	64.0	I
5.	Lack of knowledge and skill about operating implements such as sprayers, dusters, etc.	21	IV	36	IV	36	IV	31.0	IV

reported by 31 and 21 per cent big farmers, respectively. 18 per cent big farmers perceived "lack of confidence in HYV's" as the least important educational constraints.

The small farmers have rated "lack of knowledge and skill about proper methods of sowing" as the most important educational constraints and as such it was ranked first. "Lack of knowledge about plant protection measures" and "lack of knowledge about chemical fertilizers and the proper application methods" were the second and third important educational constraints, respectively faced by 73 and 53 per cent of small farmers, respectively. The least important constraint expressed by only 15 per cent small farmers was "lack of confidence in HYV's".

Majority of the marginal farmers (84 %) had viewed "lack of knowledge about plant protection measures" as the most important educational constraints followed by "lack of knowledge chemical fertilizer and the proper application methods" (62 %), "lack of knowledge and skill about proper methods of sowing "(61 %), "lack of knowledge's skill about operating implements such as sprayers, dusters, etc." (36 %) and so on.

From the above narration it may be deduced that all the farmers had regarded "lack of knowledge about plant protection measures" as the most important educational constraint responsible for technological gap in the mustard production technology. Further it may also be noted that different categories of farmers did not differ significantly in awarding the ranks to various educational constraints. Slightly divergent views were expressed by different categories of farmers in case of "lack of knowledge about chemical fertilizers and proper application methods".

Infrastructural constraints:

In addition to technological constraints some infrastructural constraints were also studied. The infrastructural constraints in this study were the impediments pertaining to organisation in the way of adoption of recommended mustard production technology which were responsible for technological gap in the crop. The possible infrasturctural constraints were given in the interview schedule and their intensity was computed by calculating percentage according to the frequencies of the respondents against each of the constraints. Then they were assigned rank on the basis of percentage against each constraint. The information regarding the same is presented in Table 4.

Table 4 revealed that on the whole "technical staff working in the field is not available when needed", "insufficient supply of electricity for irrigating field" and "agriculture department does not provide proper guidance

Table 4 : Infrastructural constraints responsible for technological gap in the recommended mustard production technology of different categories of farmers

Sr. No.	Constraints	Big farmers (n=46)		Small farmers (n=109)		Marginal farmers (n=145)		Farmers of all three categories (n=300)	
		Percentage	Rank	Percentage	Rank	Percentage	Rank	Percentage	Rank
1.	Agriculture department does not provide proper guidance when required	43.0	III	45.0	III	58.5	II	48.8	III
2.	Technical staff working in the field is not available when needed	48.5	II	61.0	I	67.0	I	58.8	I
3.	Technical staff working in the field is not professionally devoted to the work	41.0	IV	38.0	V	28.0	IX	35.6	VII
4.	Too much difficulty in purchasing agricultural inputs from market and cooperative societies	19.5	X	24.5	X	26.5	X	23.5	X
5.	The inputs required for mustard production technology are not available in market like weedicides	21.0	IX	37.0	VI	35.0	VII	30.6	IX
6.	Adulteration in agricultural inputs	37.0	V	43.0	IV	30.5	VIII	36.8	V
7.	Credit facilities and services provided by banks are not timely and delayed in credit disbursals	36.0	VI	36.0	VII	40.5	VI	37.5	IV
8.	Problem of nepotism and favouritism in providing technical facilities	32.5	VII	33.0	VIII	43.5	IV	36.3	VI
9.	Unavailability of machinery and spray equipments for dusting and spraying in time	31.5	VIII	32.0	IX	42.0	V	35.1	VIII
10.	Insufficient supply of electricity for irrigating field	52.0	I	58.5	II	44.0	III	51.5	II

when required" were perceived by 58.8, 51.5 and 48.8 per cent of the farmers, respectively and as such they were ranked I, II and III in their respective rank order followed by "credit facilities and services provided by banks are not timely and delayed in credit disbursals" (37.5 %), "adulteration in agricultural inputs" (36.8 %), "problem of nepotism and favouritism in providing technical facilities" (36.3 %) and so on.

Category-wise analysis showed that "insufficient supply of electricity for irrigating field", "technical staff working in the field is not available when needed" and "agriculture department does not provide proper guidance when required" were perceived as most important infrastructural constraints responsible for technological gap in the recommended mustard production technology, reported by 52, 48.5 and 43 per cent of big farmers, respectively (rank I, II and III, in order). Among the all infrastructural constraints perceived by big farmers "unavailability of machinery and spray equipments for dusting and spraying in time" and "too much difficulty in purchasing agricultural inputs from market and co-operative societies "were perceived as the least important infrastructural constraints as reported by 31.5, 21 and 19.5 per cent of the big, respectively and were ranked VIII, IV and X, in order.

While, among the all infrastructural constraints "technical staff working in the field is not available when needed", "insufficient supply of electricity for irrigating field" and "agriculture department does not provide proper guidance when required "were perceived as most important infrastructural constraints by 61, 58.5 and 45 per cent of small farmers, respectively and ranked I, II and III, in order. Whereas "unavailability of machinery and spray euipments for dusting and spraying in time" and "too much difficulty in purchasing agricultural inputs from market and co-operative societies" were perceived as least important infrastructural constraints reported by 32 and 24.5 per cent of small farmers (ranked ix and x) respectively.

Data in the table also showed that "technical staff working in the field is not available when needed" and "agriculture department does not provide proper guidance when required" were perceived as most important infrastructural constraints reported by 67 and 58.5 per cent of marginal farmers and ranked I and II, respectively.

The table further revealed that "adulteration in agricultural inputs", "technical staff working in the field is not available when needed" and "too much difficulty in purchasing agricultural inputs from market and co-operative societies" were perceived as the least important infrastructural constraints by 30.5, 28 and 26.5 per cent of the marginal farmers (ranked VIII, IX and X), respectively.

It may be concluded from the findings that technical staff working in the field is not available when needed, insufficient supply of electricity and lack of technical advice had been regarded as the most important infrastructural constraints responsible for technological gap in the mustard production technology by all categories of farmers. Further, the comparative analysis of the infrastructural constraints showed that there was no variation in the rank order of various infrastructural constraints awarded by the different categories of farmers.

Relative positions of different categories of constraints perceived by different categories of mustard growers.Finally, the relative positions or the degree of importance of the different categories of the constraints were worked out on the basis of mean percentage of farmers who expressed the constraints and presented in Table 5.

A critical examination of data presented in the Table 5 reveal as a whole that economic constraints have possessed the first position as perceived by 58.8 per cent farmers followed by technological constraints (52.3 %), educational constraints (45.5 %) and infrastructural constraint (39.5 %). According to farmers categories-

Table 5 : Relative positions of the different categories of constraints as perceived by different categories of mustard growers

Sr. No.	Categories of constraints	No. of constraints	Big farmers (n=46)		Small farmers (n=109)		Marginal farmers (n=145)		Farmers of all three categories (n=300)	
			Percentage	Rank	Percentage	Rank	Percentage	Rank	Percentage	Rank
1.	Technological constraints	4	51.5	II	52.3	II	53.0	III	52.3	II
2.	Economic constraints	6	53.2	I	54.8	I	68.5	I	58.8	I
3.	Educational constraints	5	27.4	IV	46.0	III	53.6	II	45.5	III
4.	Infrastructural constraints	12	36.2	III	40.8	IV	41.5	IV	39.5	IV

wise analysis more or less similar results have also been reported by different categories of farmers.

Constraints responsible for technological gap in recommended mustard production technology.

The most important constraints responsible for non-adoption, partial adoption and low adoption of improved technology of mustard cultivation as perceived by the big, small and marginal farmers in the different categories were as follows :

Technological constraints :

Majority of the respondent (about 70 %) reported "crop failure due to aberrant weather" and "crop susceptible to pests and diseases and hence risky" reported as the major technological constraints responsible for technological gap in recommended mustard production technology whereas, "less reliable recommendations" was perceived as the least important technological constraint. Big, small and marginal farmers have also reported same results individually.

This may be due to the fact that in comparison to other *Rabi* crops the mustard crop suffers seriously due to the frost and attack of insects pests and diseases. At the same time the resistant varieties were not available.

Economic constraints :

On an average majority of the farmers reported "high cost of fertilizer" perceived as most important economic constraint responsible for technological gap in recommended mustard production technology. While "increasing cost of field preparation" was perceived as the least important economic constraint. More or less similar results have also been reported by all the categories of farmers separately. This might be due the fact that on the one hand majority of farmers had low capacity to purchase production inputs and on the other hand, there is a continuous increase in the cost of fertilizers and other inputs.

Educational constraint :

On an average "lack of knowledge about plant protection measures" and "lack of knowledge and skill about proper methods of sowing" were perceived as he most important educational constraints responsible for technological gap in recommended mustard production technology. While "lack of confidence in HYVs" was perceived as the least important educational constraint by the respondents. More or less same constraints were also reported as the important educational constraints by all the categories of farmers, respectively.

The educational constraints like lack of knowledge about plant protection measures, proper methods and techniques of sowing, chemical fertilizer and their proper application methods and operating implements and equipments might be due to the less contact with extension workers, lack of training and less exposure to sources of farm information.

Infrastructural constraints :

"Technical staff working in the field is not available when needed", "insufficient supply of electricity for irrigation" and "lack of proper guidance by the personnel of agriculture department as and when required" were reported as the major infrastructural constraints responsible for technological gap in improved mustard cultivation by big, small and marginal farmers individually and calmingly.

Besides technological advancements proper communication of these technologies timely and other supplement services were inescapably needed to augment the adoption of improved technologies. The above constraints arrived may be due to the fact that the ratio between extension workers and farm families was not in workable position. The farmers due to frequent electricity failure, which needed proper attention, have faced the problem of insufficient electricity. The other constraints like delay in credit disbursement unavailability of inputs, difficulty in purchasing agricultural the farmers also encountered inputs from market responsible for technological gap.

This may be due to the fact that the input supply system of the Government might have not been systematic, timely and sufficient as per the requirement in the locality and hence, it resulted in technological gap. Similar work related to the present investivation was carried out by Devi and Sabharwal (2014); Kakad and Pawar (1999); Kumar *et al*. (2014); Singh and Singh (2014) and Singh and Sharma (1999).

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