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Constraints Analysis of Wheat Growers of Intermediate Zone of Jammu Region

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ABSTRACT

The present study was conducted in purposively selected Rajouri district of Jammu and Kashmir to find out the constraints in the adoption of recommended wheat production technology. There are 9 blocks in Rajouri district, out of which one block namely Rajouri was selected on the basis of maximum area under wheat cultivation. From Rajouri block, ten villages were selected on the basis of maximum area under wheat cultivation. From each selected village, 12 tribal and 12 non-tribal wheat growers were selected randomly. Thus in all, 240 farmers (120 tribal and 120 non-tribal farmers) were included in the sample of the study. The analysis of information collected by personal interview method revealed that 50.00 per cent of respondents had medium level of constraints, whereas 26 per cent and 24 per cent of respondents had low and high levels of constraints respectively regarding adoption of recommended wheat production technology. The calculated z-value was greater than its tabulated value at 1 percent level of significance. It means that there was a significant difference between tribal and non-tribal farmers with respect to constraints faced by them in adoption of recommended wheat production technology. Age, education, size of land holding, extension personnel contact, participation in extension programme, mass media exposure and socio-economic status of the respondents were found to be positive and significantly correlated with constraints faced by the wheat growers.

Key words: Analysis, constraints, wheat growers

INTRODUCTION

India has achieved an impressive growth in food production after adoption of green revolution technology which made the country self sufficient in basic foods (Chand, 2009). Wheat in India is second most important cereal crop and occupies about 27 million hectares of total arable land out of 143 million hectare cultivable area thereby contributes about 69.32 million tonnes of food grains which is about 37.96 per cent of total food grain production.

Wheat is the major Rabi-cereal sown in J&K state. In J&K, wheat is cultivated in an area of 292380 hectares with the production of 46160 quintals (Anonymous, 2013 a). In India, the average annual productivity of wheat crop during 2012-13 was 31.18 quintals/ha (Anonymous, 2015), whereas for the same period it was 15.95 quintals/ha in J&K state (Anonymous, 2013 b). The productivity of wheat crop during 2012-13 in Rajouri district was 17.07quintals/ha (Anonymous, 2013 b).

Constraints are nothing but the problems that come in the way of adoption of technology. Here constraints refer to anything hindering adoption of recommended wheat production technology. Keeping all this in background, the present investigation was conducted to identify the constraints faced by the wheat growers of intermediate zone of Jammu region in the adoption of recommended wheat production technology.

METHODOLOGY

The present study was conducted in purposively selected Rajouri district of Jammu and Kashmir. There are 9 blocks in Rajouri district, out of which one block namely Rajouri was selected on the basis of maximum area under wheat cultivation. From Rajouri block ten villages were selected on the basis of maximum area under wheat cultivation. From each selected village 12 tribal and 12 non-tribal wheat growers were selected randomly. Thus in all, 240 farmers (120 tribal and 120 non-tribal farmers) were included in the sample of the study. The data were collected through personally interviewing the respondents with the help of a pre-tested and structured interview schedule. The schedule covered

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all possible constraints that could hinder the adoption of recommended wheat production technology by the respondents. For this, with the help of experts, reviewing literature and pilot study, constraints under four sub-heads viz., input, technical, marketing and miscellaneous were identified and listed. The responses obtained from the respondents were recorded on three point continuum scale *viz.*, 'most severe,' 'severe,' and 'least severe' which were assigned 2, 1, and 0 score respectively. Total score obtained by each respondent as well for each statement was calculated. The respondents were divided into three categories (high level, medium level and low level) on the basis of mean and standard deviation of their constraints scores. Frequency and percentage of respondents in each category were calculated. Further, to determine the intensity of constraints, mean per cent score (MPS) for each item was worked out and ranked accordingly. Mean per cent score (MPS) was calculated by using following formula:

$$\text{Mean per cent score} = \frac{\text{Total score obtained}}{\text{Maximum obtainable score}} \times 100$$

To find out the variation or similarity in constraints faced by the tribal and non-tribal respondents in the adoption of recommended wheat production technology; Z-test was applied. Further, correlation coefficient was worked out to find the relationship between selected independent variables and constraints faced by the wheat growers.

RESULTS AND DISCUSSION

To get an overview of the level of constraints, the respondents were divided into three categories *i.e.* low, medium and high level of constraints. These categories were formed on the basis of calculated mean and standard deviation of the scores given to the constraint statements by the respondents.

Table 1: Distribution of respondents according to the level of constraints faced by them

n=240

Level of constraints	Tribal Farmers		Non-Tribal Farmers		Total	
	f	%	f	%	f	%
Low (Below 55.42)	19	16.00	43	36.00	62	26.00
Medium (55.42 to 68.62)	63	52.00	57	47.00	120	50.00
High (Above 68.62)	38	32.00	20	17.00	58	24.00
Total	120	100.00	120	100.00	240	100.00

F= frequency, %= per cent, n= Sample size

Distribution of respondents according to the level of constraints faced by them

To get an overview of constraints, the respondents were ramified into three strata i.e. low, medium and high level of constraints. These categories were formed on the basis of calculated mean and standard deviation of the score given to the constraint items by the respondents.

The data presented in Table 1 reveal that exactly 50.00 per cent respondents faced medium level of constraints in the adoption of recommended wheat production technology. While 26.00 per cent and 24.00 per cent wheat growers were observed in low and high constraint groups respectively.

A close look at the data presented in Table 1 further shows that 52.00 per cent tribal and 47.00 per cent non-tribal farmers fell under the category of medium level of constraints. Similarly, 16.00 per cent tribal and 36.00 per cent non-tribal wheat growers were found in low level of constraints category. However, 32.00 per cent tribal and 17.00 per cent non-tribal respondents were observed in high level of constraints group. Similar findings were reported by Singh et al. (2012), Jaiswal et al. (1987) and Jaiswal and Duboliya (1994).

Aspect wise constraints faced by wheat growers

All the constraints expressed by wheat growers were categorized into input, technical, marketing and miscellaneous constraints. The results are presented below:

Input constraints (1)

The data incorporated in Table 2 reveal that non-availability of quality seed in time (MPS 86.50) was expressed as the most severe constraint by the respondents which was assigned I rank in the ranking hierarchy of input constraints. Besides, unavailability of fertilizers at peak season (MPS 83.50) and lack of information about the availability of inputs (MPS 81.00) were other most severe constraints faced by the wheat growers and ranked II and III respectively. Inadequate availability of inputs (MPS 69.00), high cost of seed (64.00) and non-availability of inputs at village level (MPS 62.00) were the severe constraints expressed by the respondents and assigned IV, V and VI ranks respectively. It can also be observed that adulteration of inputs (MPS 48.00) and high cost of fertilizers (MPS 46.00) were considered as less severe constraints by the respondents which were placed at VII and VIII positions respectively by them. Whereas, the least felt constraints in the category of input constraints were non availability of plant protection chemicals in time (MPS 11.00) and un-availability of plant protection equipments (MPS 9.00)

and were ranked IX and X respectively by the respondents.

A further glance at the data incorporated in Table 2 reveal that the constraint viz. high cost of seed was assigned VI rank by tribal (MPS 63.00) and V rank by non-tribal farmers (MPS 65.00); non-availability of inputs of inputs at village level was placed at V rank by tribal (MPS 68.00) and VI rank by non-tribal farmers (MPS 56.00). Similarly, adulteration of inputs obtained VIII rank in case of tribal (MPS 42.00) and VII rank in case of non tribal farmers (MPS 54.00). Lastly, constraint viz. high cost of fertilizers was placed at VII position by tribal (MPS 55.00) and VIII position by non-tribal farmers (MPS 37.00). Remaining items were assigned similar ranks by both the categories of respondents.

Technical constraints

Table 2 reveals that high rental charges of tractor (MPS 100.00), non-availability of tractor at proper time (MPS 94.00), lack of technical knowledge regarding proper application of plant protection chemicals (MPS 87.00), high termite attack (MPS 83.00) and spurious plant protection chemicals (MPS 77.00) were expressed as the most severe constraints by the respondents and were placed at I, II, III, IV and V ranks by them in the ranking hierarchy. Lack of soil testing facilities at nearby places (MPS 55.00) and lack of knowledge of recommended package of practices (MPS 53.00) were the severe constraints encountered by the respondents and ranked VI and VII by them. However, inadequate knowledge about intercropping (MPS 3.00) was expressed as the least severe technical constraint by the respondents and accorded VIII rank.

A critical look at data incorporated in Table 2 vividly corroborate that lack of technical knowledge regarding proper application of plant protection chemicals obtained IV rank in case of tribal farmers (MPS 85.00) and III rank in case of non-tribal farmers (MPS 84.00); high termite attack was accorded III rank by tribal farmers (MPS 90.00) and IV rank by non-tribal farmers (MPS 81.00); lack of soil testing facilities at nearby places got VII rank in case of tribal farmers (MPS 54.00), whereas the same constraint obtained VI rank in case non-tribal farmers (MPS 56.00). Lastly, lack of knowledge of recommended package of practices was accorded VI rank by tribal farmers (MPS 60.00) and VII rank by non-tribal farmers (MPS 53.00).

Marketing constraints

A perusal of data presented in Table 2 divulge that poor marketing facilities resulting high risk (MPS 88.00), non-remunerative price of produce (MPS 86.00) and markets are distantly located (MPS 85.00) were the most severe constraints faced by the respondents and were assigned I, II and III ranks respectively in the rank hierarchy of marketing constraints. Lack of knowledge of support procurement price (MPS 56.00) was the severe constraint encountered by the respondents and assigned IV rank by them. However, poor condition of approach roads (MPS 15.50) and inadequate transport facilities (MPS 13.50) were the least severe constraints expressed by the sampled wheat growers.

Table 2 further reveals that poor marketing facilities resulting high risk was assigned II rank by tribal farmers (MPS 88.00) and I rank by non-tribal farmers (MPS 88.00); non remunerative price of produce obtained I rank in case of tribal farmers (MPS 90.00) and III rank in case of non-tribal farmers (MPS 82.00); markets are distantly located was placed at III position by tribal farmers (MPS 85.00) and at II position by non-tribal farmers (MPS 85.00); poor condition of approach roads was assigned V rank by tribal farmers (MPS 21.00) and VI rank by non-tribal farmers (MPS 10.00). Finally, inadequate transport facilities was accorded VI rank by tribal farmers (MPS 15.00) and V rank by non-tribal farmers (MPS 12.00).

Miscellaneous constraints

Table 2 reveals that poor state extension facility (MPS 88.00), inadequate and untimely rainfall (MPS 87.00) and lack of training facilities (MPS 78.50) were expressed as the most severe constraints by the respondents and were placed at I, II and III ranks by them in the ranking hierarchy. Undulated topography and small land holding (MPS 59.00) and unawareness about Kisan Credit Card (KCC) (MPS 57.00) were the severe constraints encountered by the respondents and ranked IV and V by them. However, lack of storage facilities (MPS 13.50) was expressed as the least severe miscellaneous constraint by the respondents and accorded VI rank.

Table 2: Input constraints faced by the maize growers n=240

Constraints	Tribal Farmers		Non Tribal Farmers		Total	
	MPS	Rank	MPS	Rank	MPS	Rank
Input constraints						
Non availability of quality seed in time	88.00	I	85.00	I	86.50	I
High cost of seed	63.00	VI	65.00	V	64.00	V
Unavailability of fertilizers at peak season	85.00	II	82.00	II	83.50	II
High cost of fertilizers	55.00	VII	37.00	VIII	46.00	VIII
Non availability of plant protection chemicals in time	12.00	IX	10.00	IX	11.00	IX
Un-availability of plant protection equipments	10.00	X	8.00	X	9.00	X
Non availability of inputs at village level	68.00	V	56.00	VI	62.00	VI
Adulteration of inputs	42.00	VIII	54.00	VII	48.00	VI
Lack of information about the availability of inputs	82.00	III	80.00	III	81.00	III

Inadequate availability of inputs	70.00	IV	68.00	IV	69.00	IV
Technical constraints						
Lack of knowledge of recommended package of practices	60.00	VI	46.00	VII	53.00	VII
Lack of soil testing facilities at nearby places	54.00	VII	56.00	VI	55.00	VI
Spurious plant protection chemicals	78.00	V	76.00	V	77.00	V
Inadequate knowledge about intercropping	4.00	VIII	2.00	VIII	3.00	VIII
Non-availability of tractor at proper time	95.00	II	93.00	II	94.00	II
High rental charges of tractor	100.00	I	100.00	I	100.00	I
Lack of technical knowledge regarding proper application of plant protection chemicals	85.00	IV	84.00	III	87.00	III
High termite attack	90.00	III	81.00	IV	83.00	IV
Marketing constraints						
Poor marketing facilities resulting high risk	88.00	II	88.00	I	88.00	I
Markets are distantly located	85.00	III	85.00	II	85.00	III
Non-remunerative price of produce	90.00	I	82.00	III	86.00	II
Lack of knowledge of support procurement price	58.00	IV	54.00	IV	56.00	IV
Poor condition of approach roads	21.00	V	10.00	VI	15.50	V
Inadequate transport facilities	15.00	VI	12.00	V	13.50	VI
Miscellaneous constraints						
Inadequate and untimely rainfall	92.00	I	82.00	II	87.00	II
Lack of storage facilities	15.00	VI	12.00	VI	13.50	VI
Undulated topography and small land holding	58.00	V	60.00	IV	59.00	IV
Poor state extension facility	88.00	II	88.00	I	88.00	I
Lack of training facilities	80.00	III	77.00	III	78.50	III
Unawareness about Kisan Credit Card (KCC)	62.00	IV	52.00	V	57.00	V

MPS= Mean per cent Score, n= Sample size

Table 2 further reveals that poor state extension facility was assigned II rank by tribal farmers (MPS 88.00) and I rank by non-tribal farmers (MPS 88.00), inadequate and untimely rainfall obtained I rank in case of tribal farmers (MPS 92.00) and II rank in case of non-tribal farmers (MPS 82.00), undulated topography and small land holding was placed at V position by tribal farmers (MPS 58.00) and at IV position by non-tribal farmers (MPS 60.00), unawareness about Kisan Credit Card (KCC) was assigned IV rank by tribal farmers (MPS 62.00) and V rank by non-tribal farmers (MPS 52.00).

To find out the variation or similarity in the constraints faced by tribal and non-tribal farmers, Z-test was applied. The results were presented in Table 3. Table 3 indicates that z-value was greater than its tabulated value at 1 percent level of significance.

It means that there was significant difference between tribal and non-tribal farmers regarding the constraints faced by them in the adoption of recommended wheat production technology. Further analysis of table shows that mean score value of tribal farmers is more than non-tribal farmers which clearly indicates that tribal farmers had more constraints than the non-tribal farmers regarding adoption of recommended wheat production technology.

It might be due to the fact that tribal farmers possessed less knowledge, lower socio-economic status, less extension contacts and less social participation than non-tribal farmers.

Table 3: Comparison between tribal and non-tribal respondents about recommended wheat production technology

Category of respondents	Mean	S.D.	Z- value
Tribal farmers	65.17	3.57	5.26**
Non-tribal farmers	54.21	6.33	

**Significant at 1 per cent level

Relationship between selected independent variables and constraints faced by the wheat growers: It is evident from Table 4 that age, education, size of land holding, extension personnel contact, participation in extension programme, mass media exposure and socio- economic status of the respondents were found to be positive and significantly related with the constraints faced by them. The contacts with extension personnel who are engaged in agricultural development and participation in extension programme help an individual farmer to overcome the constraints and guide him to achieve the desired goal. The involvement of an individual in mass media programmes has shown a significant relationship. This may be owing to the fact that through radio and television, the agricultural messages can go rapidly and timely to far off and remote places. Variables like social participation, caste, family size and family type did not show any significant relationship with constraints of wheat growers. The non-significant relationship between social participation and constraints may be due to total absence of the social institutions. The occupation of the respondents was found to be negative but significantly associated with the constraints faced by them. Deviation of interest to other subsidiary occupations might be the reason behind it. Similar findings were also reported by Saxena *et al.*, (1990), Kher (1992) and Singh (2013).

Table 4: Correlation between selected independent variables and constraints faced by the wheat growers

Selected independent variables	'r' value
Age	0.235**
Education	0.213**
Size of land holding	0.229**
Social participation	0.013
Extension personnel contact	0.232*
Participation in extension programme	0.265*
Mass media exposure	0.217*
Socio-economic status	0.153**
Caste	0.135
Family size	0.067
Family type	0.047
Occupation	-0.221**

* Significant at 0.05 level of probability; ** Significant at 0.01 level of probability

CONCLUSION

It is, therefore, concluded that 50.00 per cent of respondents had medium level of constraints, whereas 26 per cent and 24 per cent of respondents had low and high levels of constraints respectively regarding recommended wheat production technology. The calculated z-value was greater than its tabulated value at 1 percent level of significance. It means that there was a significant difference between tribal and non-tribal farmers with respect to constraints faced by them in adoption of recommended wheat production technology. Age, education, size of land holding, extension personnel contact, participation in extension programme, mass media exposure and socio-economic status of the respondents were found to be positive and significantly correlated with constraints faced by them. On the basis of results it is, therefore, recommended that location specific information rather than general information for the entire region should be provided to the farmers. Information should be provided to the farmers about complete package of practices through various extension methods for better uptake and utilization. Training and message through mobile phones etc. can help in the present era. Blending of traditional (personal contact, demonstrations *etc.*) and latest methods (expert system, portals, radio and T.V. talk, video films, magazines, newspapers etc.) should be used to communicate the message timely and repeatedly to ensure that the farmers adopt the technology. Progressive farmers should be encouraged to help the extension workers in delivering the latest message to fellow farmers. Farmers' organizations, NGOs operating in the region should also be encouraged to send the messages to other farmers.

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