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RESEARCH ARTICLE :

A study of gap in technology adoption in rapeseed-mustard cultivation

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SUMMARY : The present study titled 'a study of gap in technology of adoption in rapeseed-mustard cultivation' was aimed to measure and analyze the extent of adoption and locating the technology adoption gap in specific components of mustard cultivation in Manjhanpur block, Kaushambi district (U.P.). The study was carried out during 2011-12. By following the simple random sampling, 120 respondents were selected from 4 villages Manjhanpur block, Kaushambi district (U.P.). The study reported that there was higher gap in *i.e.* 53.23 per cent, majority of the respondents *i.e.* 49.16 per cent were having medium level of mean technology adoption gap, and maximum technology adoption gap among the respondents was in amount of FYM given. It was concluded that the study demands for gearing of appropriate machineries to provide the technological requisites to the mustard growers, if possible at the concessional rates in order to minimize the technology adoption gap.

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KEY WORDS :
Technology adoption gap, Knowledge, Attitude, Innovativeness, Risk orientation

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BACKGROUND AND OBJECTIVES

Among the seven edible oilseed cultivated in India, rapeseed-mustard (*Brassica* spp.) contributes 28.6 per cent in the total production of oilseeds. In India, it is the second most important edible oilseed after groundnut sharing 27.8 per cent in the India's oilseed economy. The share of oilseeds is 14.1 per cent out of the total cropped area in India, rapeseed-mustard accounts for 3 per cent of it. India contributes 28.3 per cent and 19.8 per cent in world acreage and production. India produces around 6.7 mt of rapeseed-mustard next to China (11-12 mt) and EU (10–13 mt) with significant contribution in world rapeseed-mustard industry.

The rapeseed-mustard group broadly includes Indian mustard, yellow sarson, brown sarson, raya, and toria crops. Indian mustard [*Brassica juncea* (L.) Czernj. & Cosson] is predominantly cultivated in Rajasthan, U.P., Haryana, Madhya Pradesh, and Gujarat. It is also grown under some non traditional areas of South India including Karnataka, Tamil Nadu, and Andhra Pradesh. The crop can be raised well under both irrigated and rain fed conditions. Increase in the per capita consumption of edible oil and hence, the self sufficiency of edible oil revolves around 60 per cent. A mustard seedbed should be firm, moist, and uniform which allows good seed-

to-soil contact, even planting depth and quick moisture absorption leading to a uniform germination. Adequate nutrient supply increases the seed and oil yields by improving the setting pattern of siliquae on branches, number of siliquae/plant, and other yield attributes (Chitale and Bhambri, 2001). Recommended dose of fertilizers (RDF) for different zones changes with climate, soil type, time, and type of cropping system followed.

Inspite of these achievements, there exists a gap between production potential and actual realization. The gap is to be bridged or narrowed down to feed the ever growing human and livestock population with minimal nutritional requirements, to meet the requirements of industries and to earn valuable foreign exchange through export or seed meal, oil and value added products. Large scale adoption of innovation is essential feature of agricultural development. However, some farmers adopt all the recommended improved practices while some others don't. The personal, social and economic aspects of the fanners play a major role in their adoption process. It was felt that information about the adoption level and technology adoption gap in cultivation of mustard crop in relation to personal characteristics of the farmers and reasons for the same would form an important aspect today.

The purpose of the study was to measure the extent of adoption and locating the technology adoption gap in specific components of rapeseed-mustard cultivation. In a study by Meena *et al*. (2012) found that by conducting front line demonstration of proven technologies, yield potential of rapeseed –mustard crop could be enhanced to a great extent with increase in the income level of the farming community.

The objectives of the study were:

– To ascertain the extent of technological adoption gap in rapeseed-mustard production

– To analyze the extent of influence of socio-economic factors on the adoption of improved rapeseed-mustard production practices.

RESOURCES AND METHODS

The sample size was 120 farmers who were selected purposively from villages of Manjhanpur block, Kaushambi district (U.P.). Uttar Pradesh is the third highest producer of rapeseed-mustard crop. The villages having maximum area under rapeseed-mustard cultivation were listed in descending order in consultation with the department of agriculture. From the list of six blocks Manjhanpur was selected and four villages having maximum area under the crop were selected from the selected block. From each selected village, 30 farmers were selected by simple random sampling method. Thus, the sample for study constituted 120 respondents from the selected villages of the block.

OBSERVATIONS AND ANALYSIS

There were fifteen recommended practices of rapeseed-mustard cultivation about which scores were obtained from the cultivators relating their adoption level, knowledge and attitude towards improved rapeseed-mustard production practices, Table 1 explains about the technology adoption gap among the respondents along with mean technology adoption gap, rank and overall gap.

The Table 1 shows that maximum technology adoption gap among the respondents was in amount of FYM given *i.e*. 66.12 per cent, followed by 53.23 per cent in irrigation, 45.44 per cent in weedicides application, 43.05 per cent in fertilizer dose, 42.12 per cent in control measures of insects/pests, 39.65 per cent in duration of fertilizer applied, 38.29 per cent in inter-cultural operations, 25.67 per cent in seed treatment, 23.37 per cent in control of diseases and 16.34 per cent in seed depth in sowing. Present result is in line with the findings of Dubolia and Jaiswal (2000); Gupta and Srivastava (2002) and Jaiswal and Rathore (1985).

The Table 2 indicates that majority of the respondents *i.e*. 49.16 per cent were having medium level of mean technology adoption gap, 25.83 per cent were having low and 25 per cent were having high mean technology adoption gap in improved mustard cultivation practices. Results of previous studies have also supported that the improved technologies of mustard crop have significant effect in higher productivity of mustard Singh *et al*. (2008). The findings revealed that a gap exists between the actual farmer's yield and realizable yield potential of the variety.

The Table 3 shows that there was higher gap in fertilizer management *i.e*. 53.23 per cent, followed by 50.74 per cent in crop management technique, 46.98 per cent in irrigation management, 36.97 per cent in plant protection technique, 16.01 per cent in seed and seed treatment and only 12.33 per cent in varieties for planting.

Given that the oilseeds production of 30 million tonnes

Table 1: Technology adoption gap among the respondents regarding rapeseed-mustard

Sr. No.	Recommended practices	Mean technology	Rank
1.	Varieties for cultivation	12.33	XIV
2.	Sowing time	14.46	XI
3.	Seed spacing	13.49	XII
4.	Seed in sowing	16.34	X
5.	Seed rate	10.11	XV
6.	Seed treatment	25.67	VIII
7.	Amount of FYM given	66.12	I
8.	Fertilizer dose: Nitrogen, phosphorus, potash	43.05	IV
9.	Duration of fertilizer applied	39.65	VI
10.	Irrigation	53.23	II
11.	Inter-cultural operation	38.29	VII
12.	Mixed cropping	12.45	XIII
13.	Weedicides application	45.44	III
14.	Major insect/pests and their control measures followed	42.12	V
15.	Major diseases and their control measures followed	23.37	IX

Table 2 : Distribution of respondents on the basis of mean technology adoption gap

Sr. No.	Categories	Number of respondents	Percentage
1.	Low (Mean-SD)	31	25.83
2.	Medium (Mean+ SD)	59	49.16
3.	High (Mean+ SD)	30	25.00
	Total	120	100

Table 3 : Extent of technology adoption gap in important components of rapeseed-mustard cultivation

Sr. No.	Practices	Technology adopted (%)	Technology adoption	Rank
1.	Varieties for planting	87.67	12.33	VI
2.	Seed and seed treatment	83.99	16.01	V
3.	Fertilizer management	53.02	53.23	I
4.	Crop management technique	49.26	50.74	II
5.	Irrigation management	46.77	46.98	III
6.	Plant protection technique	63.03	36.97	IV
	Mean	63.86	36.14	

Table 4 : Values of co-efficient of correlation

Sr. No.	Independent variables	Value of co-efficient correlation (r-value)
1.	Age	0.4577*
2.	Education	-0.7576
3.	Size of land holding	0.3813*
4.	Annual income	0.2082*
5.	Social participation	-0.6037
6.	Utilization of information sources	-0.5451
7.	Knowledge	-0.9831
8.	Attitude	-0.6028
9.	Innovativeness	-0.4677
10.	Risk orientation	-0.61

* indicates significant of value at P= 0.01 level of probability

in 2007-08, the country needs to almost double the oilseeds production in the next 12 years requiring an annual growth rate of about 6.00 per cent (Hegde, 2009) therefore it is necessary to study the effect of socioeconomic status on the adoption of technology in mustard farming. In was to find out the extent of influence of socio-economic factors on the adoption gap in improved rapeseed-mustard production practices. For this correlation analysis of dependent variables *i.e*. adoption gap with age, education, size of land holding, annual income, social participation, and utilization of information sources, knowledge, attitude, innovativeness and risk orientation were done. The correlation values (r) are presented in Table 4.

The co-efficient of correlation between age, size of land holding of the respondents and their technology adoption gap in relation to improved production practices was positive and highly significant. Hence, it was concluded that higher the age of the respondent and larger size of land holding, higher was the technology adoption gap in the improved rapeseed-mustard production practices.

The co-efficient of correlation of education, social participation, utilization of information sources, knowledge, attitude and risk orientation with technology adoption gap in improved mustard production practices was negative and highly significant. This indicates that with the increase in the level of education, social participation, utilization of information sources, knowledge, attitude and risk orientation there was corresponding decrease in the level of technology adoption gap in improved mustard production practices.

The co-efficient of correlation of annual income with the technology adoption gap in improved rapeseed-mustard production practices was positive but non-significant. This indicates that the annual income had number of significant influence on the technology adoption gap in improved mustard production practices (Mondal and Maji, 2012; Torane *et al*., 2015 and Phuge *et al*., 2011).

Conclusion and Recommendations :

The major conclusions drawn from the present study were:

– In the case of rapeseed-mustard, the maximum technology adoption gap was found in the area of fertilizer management followed by seed and seed treatment, irrigation management, plant protection technique and crop management technique.

– The study demands for gearing of appropriate machineries to provide the technological requisites to the rapeseed-mustard growers, if possible at the concessional rates in order to minimize the technology adoption gap.

– The findings further display the role of set of various independent variables influencing technology adoption gap in terms of magnitude.

– It suggests, therefore, while preparing strategy for reducing this technology adoption gap, the influence of these variables are to be considered separately when we wish to minimize the gap in specific categories *viz.*, age, education, size of land holding etc.

The study demands the effective extension efforts to be made to transfer the technology among the mustard growers. This will not only help the rapeseed-mustard growers to earn more profit by way of optimally utilizing the rapeseed-mustard production technology, but will also help in bringing more and more area under the rapeseed-mustard cultivation.

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