

## ADOPTION PATTERN OF RECOMMENDED MUSTARD PRODUCTION TECHNOLOGY IN BHARATPUR DISTRICT OF RAJASTHAN

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### ABSTRACT

*To study the adoption pattern for production technology of mustard, this research was undertaken in 2001-2002 in Bharatpur district of Rajasthan. It was found that the majority of farmers adopted scientific recommendations about time of sowing, manual weeding & irrigation, while seed treatment & plant protection measures were not adopted by majority of the farmers due to lack of knowledge & high cost involved in purchasing fungicides / insecticides.*

**Key words :** Adoption Pattern, Fungicides/Insecticides.

### INTRODUCTION

India is the third largest rapeseed-mustard growing country in the world contributing 25.6 and 14.7 per cent, respectively, to world's hectareage and production. The oilseed production in the country can be sustained through productivity growth. All the research efforts to develop a technology are useless unless the farmers adopt the technology. The productivity can be increased with the increase of the level of adoption of recommended technology. The technology evolved for mustard crop is intended to get spread among mustard cultivators to accelerate production process. An important task in the development programme for agriculture is to create awareness among the farmers about the improved agricultural practices. Building up a sound agricultural information and extension education programme does this.

In order to ascertain the extent of adoption of recommended technology in mustard cultivation, the present study was done in Bharatpur district of Rajasthan. Mustard crop in the district covers 12.91 per cent of mustard area of the state.

### METHODOLOGY

The present investigation was based on an intensive study of sample holding (mustard growers) in Bharatpur district of Rajasthan. District Bharatpur has been purposively selected for this study, looking to its typical and apt representation of the state with respect to mustard production. Bharatpur comes at first place on the basis of area and production of mustard crops in Rajasthan. The multistage stratified sampling was adopted with tehsil as primary unit, village as secondary unit and farm holdings the ultimate sampling unit. Out of 10 tehsils of

Bharatpur district, three tehsils namely, Bharatpur, Roopwas and Kumher were selected randomly. Then from each selected tehsil, 3 villages were chosen randomly. The final selection of farmers was done from each selected village of each selected tehsil based on proportion to its size (No. of Mustard growers). The number of cases selected in tehsil Bharatpur came to 27, 13 and 10 in small, medium and large groups, 24, 14 and 12 in small, medium and large groups in Roopwas and 25, 14 and 11 in small, medium and large groups in Kumher tehsil & in all 150 cases were selected for the present study.

The field data along with other required information pertaining to the selected holdings were collected through pre-structured schedules by personal interview method, where farmers were asked to give the account of package of practices they followed in mustard cultivation in the study area.

### RESULTS & DISCUSSION

The collected information were analyzed for ascertaining the level of adoption of recommended technology in mustard cultivation

#### *Adoption Level of respondents about recommended technology in mustard cultivation*

The data presented in table 1 reveal that overall 50 percent of the total respondents were found to be in the medium adoption group, where as 28 percent respondents were reported from the low adoption group and only 22 percent respondents could be placed in the high adoption group.

#### *Extent of adoption of recommended technology in mustard cultivation*

**1. Adoption of field preparation**—Five or six ploughing for mustard is recommended. The information

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presented in the table 1 reveals that only 14 per cent farmers ploughed their field as recommended while rest of majority (86%) of farmers over ploughed their land. The reason for this over ploughing is the common practice by almost all the farmers, to grow mustard after keeping fellow land in kharif as the farmers plough the

land to conserve soil moisture for good germination of mustard. This practice is facilitated by the slag period in rainy season. Hence, though it is the exceeded number of ploughing according to the recommended number of ploughing, yet under the circumstances it is quite desirable practice.

**Table 1. The level of adoption of respondents about recommended technology in mustard cultivation**

S. N.	Adoption level	Small farmers (76)		Medium farmers (41)		Large farmers (33)		Overall (150)	
		Farmers	percent	Farmers	percent	Farmers	percent	Farmers	percent
1.	Low (11-33 MPS)	20	26.31	11	26.82	11	33.33	42	28
2.	Medium (>33- 55 MPS)	42	55.26	19	46.34	14	42.42	75	50
3.	High (>55 MPS)	14	18.42	11	26.82	8	24.24	33	22

**2. Adoption of recommended Varieties**—The recommended improved varieties of mustard are Varuna (T-59), Rohini, PCR-7, BIO-902, and RH-30, Pusa bold. A perusal of the data in table 2 on this particular aspect reveal that almost (98%) all the farmers on three types of farms viz. larger, medium and small adopted recommended varieties of mustard Varuna (T-59), Rohini and RH-30. Low adoption of other varieties was due to non-availability of seeds of other new varieties, in time. It can be said that there was good adoption of improved varieties as almost all the farmers were found using the recommended varieties.

**3. Adoption of F.Y.M. and Fertilizer Use**—As per recommendations, 80 kg nitrogen and 40 kg phosphorus per hectare should be applied in irrigated crop and half of recommended dose in unirrigated situation. Only 30% farmers followed the recommendation while 57.33% farmers were using fertilizer below recommended dose. On the overall basis irrigated farmers used 29 kg nitrogen and 15 kg phosphorous per hectare and unirrigated farmers used 13 kg nitrogen and 10 kg phosphorus per hectare. The reasons of using less quantity of fertilizer were mostly attributed by the farmers to the high cost of fertilizer and high risk involved in mustard production.

**4. Adoption of time of sowing**—The recommended time of sowing is 20th September to 20th October for mustard crop. Analysis of table 2 data expresses that 22 per cent of the farmers sowed their crop before time, 66 per cent in time, while rest 12 per cent have sown after time. The main factor influence the decision of sowing as observed was the various expectations about the rainfall by the farmers. The decision of sowing before time was observed to be based on the farmers' expectation that there would be no rainfall at the

appropriate time of sowing. Thus the farmers who considered the rainfall as the last rainfall of the season took the decision of sowing before time in order to avail the opportunity of needed soil moisture sowing. A few farmers sowed their land after sowing time were those who did not have their own resources and thus could not manage hired resource needed for sowing in time. Some farmers sowed their land after sowing time as they took mustard after taking bajra in kharif. Thus, this delayed sowing was due to the time taken by the land preparation for mustard sowing.

**5. Adoption of Seed Rate**—The recommended seed rate for mustard is 5 kg per ha. The data in table 2 indicated that majority (85.33) of farmers in three conditions (small, medium and large) used seed rate more than recommended. It may be due to germination problem in the area, because mostly crop is sown without pre-irrigation.

**6. Adoption of seed treatment**—Seed is to be treated with thiram or captan, Dithane M-45 @ 2.5-3 gm per kg of seed. The analysis reveals that 11.33 per cent farmers used seed treatment, while 88.66 per cent farmers might not have done so because of lack of knowledge about advantage of seed treatment.

**7. Adoption of weeding**—One to two hand weeding in the crop are recommended or use of Isoproturan 1 kg or Basallin 1 litre per hectare in 800-1000 liter of water pre-emergence spray. The table 2 exhibited here indicate that 61.33 per cent followed recommended inter-cultivation, while 20 per cent farmers used this practice below the recommended number and other 15.33 per cent did not weeding. It was observed that majority of small and medium farmers followed recommended weeding as compared to large farmers. This might be due to ample availability of family labour at small and to some extent on medium farm size.

Table 2. Extent of adoption of recommended technology in mustard cultivation

S. N.	Extent of adoption	Small (76)		Medium (41)		Large (33)		Overall (150)	
		No of Farmers	%	No of Farmers	%	No of Farmers	%	No of Farmers	%
1.	<b>Preparatory tillage</b>								
	(i) As recommended	10	13.5	7	17.07	4	12.12	21	14
	(ii) Above recommended	66	86.85	34	82.93	29	87.88	129	86
2.	<b>Varieties</b>								
	As recommended	75	98.68	39	95.12	33	100	147	98
3.	<b>FYM and Chemical Fertilizer</b>								
	(i) As recommended	15	19.74	16	39.02	14	42.42	45	30
	(ii) Below recommended	57	75	18	43.90	11	33.33	86	57.33
	(iii) Above recommended	4	5.26	7	17.07	8	24.24	19	12.67
4.	<b>Time of Sowing</b>								
	(i) Before recommended	19	25.00	8	19.51	6	18.18	33	22.0
	(ii) In recommended time	47	61.84	28	68.29	24	72.72	99	66.00
	(iii) After recommended	10	13.15	5	12.19	3	9.09	18	12.00
5.	<b>Seed rate</b>								
	(i) As recommended	9	11.84	6	14.63	7	21.21	22	14.66
	(ii) More than recommended	67	88.16	35	85.37	26	78.79	128	85.34
6.	<b>Seed treatment</b>								
	(i) Treated	6	7.89	5	12.19	6	18.18	17	11.33
	(ii) Un-treated	70	92.10	36	87.80	27	81.81	133	88.66
7.	<b>Weeding</b>								
	(a) Manual								
	(i) Nil	6	7.89	27	17.07	10	30.30	23	15.33
	(ii) Below recommended	12	15.78	2	4.87	16	48.48	30	20.00
	(iii) As recommended	58	76.31	32	78.04	02	6.06	82	61.33
	(b) Chemical	Nil	-	Nil		5	15.15	5	3.33
8.	<b>Irrigation</b>								
	(i) Below recommended	27	35.5	12	29.3	8	24.2	47	31.33
	(ii) As recommended	49	64.5	29	70.7	25	75.8	103	68.66
9.	<b>Plant protection measures</b>								
	(i) As recommended	Nil	0	7	17.07	11	33.33	18	12.00
	(ii) Below recommended	11	14.5	13	31.70	19	57.60	43	28.66
	(iii) Nil	65	85.5	21	51.20	3	9.09	89	59.33

It was worth noting that none of the mustard grower in case of small and medium farmers applied chemical weeding in the study area mainly due to ignorance about chemicals for weeding. Only 15.15 per cent of large farmers used chemical weeding.

**8. Adoption of Irrigation**—On irrigated conditions, two irrigation is recommended. The data on irrigation reveal that 68.66 per cent followed recommended irrigation while only 31.33 per cent do not follow; it might be so due to non-availability of water.

**9. Adoption of plant protection measures**—Mustard aphid, painted bug and mustard sawfly are main insects and pests while Alternaria blight, white rust and powdery mildew, Scelerotinia stem rot are the main pathogenic diseases of mustard crop. Apart from these insect and disease frost also proves a great havoc for this crop. Mustard aphid can be controlled by Metasystox 25 EC or Rogor 30 EC one liter or Dimacron 100 EC @ 250 ml per ha in 1000 liter water quite effectively. The suggested control for mustard sawfly and Painted bug is Malathion 50 EC or endosulphan 35 EC @ 500 ml in 500 liter of water per ha. Powdery mildew can be

controlled by spraying of Dinocap 0.05% and Alternaria blight and white rust can be controlled by spray with mancozeb @ 2 kg/ha. The crop can be safe spray with 0.1 per cent H<sub>2</sub>SO<sub>4</sub> when cold day comes.

As regards plant protection measures the data revealed that only 28.66 per cent farmers followed plant protection measures below recommended, some medium and larger farmers followed recommended plant protection measures. Data further reveals that majority of farmers i.e. 59.33 per cent did not follow plant protection measures. The high cost and non-availability of effective fungicides, sprayer and duster might have important reason. The none of the farmers used spray with H<sub>2</sub>SO<sub>4</sub> in the study area. The lack of knowledge was the important reason behind this.

## CONCLUSION

In terms of adoption of various component technologies of the package of practices, three categories (small, medium and large) of farmers were studied and it can be concluded that the adoption of improved variety has been almost uniform across the categories and is

highest (98%) amongst all the component technology. However, in terms of overall adoption of the technology package, medium categories farmers had a distinctive edge over the small categories. More than 60 percent farmers of the study area adopted the scientific recommendations about time of sowing, manual weeding and irrigation while majority of farmers adopted preparatory tillage and seed rate more than

recommendations. Most of the farmers were not using seed treatment due to lack of knowledge about advantage of treatment and plant protection measures due to high cost and non-availability of effective fungicides, sprayer and duster. Therefore, for enhancing the production and productivity of rapeseed mustard crop, strategy should be made for getting the more and more recommended technologies adopted by the farmers.

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