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Constraints in Adoption of Improved Cultivation Practices of Black Gram

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A B S T R A C T

The present investigation was carried out in Bhilwara district of Rajasthan. A sample of 100 respondents spread over four villages of two panchayat samities was selected for the study purpose. The present study revealed that majority of respondents was found to have medium level adoption of improved cultivation practices of black gram. The study indicates that farmers had high adoption level of practices *viz.*, the irrigation management and harvesting and low adoption practices, manure and fertilizer application, sowing, weed management, intercropping and improved varieties. So there is need to adopt full improved recommended package of practices for the increasing of productivity. The black gram growers perceived constraints like lack of training institutions for training of the farmers, non-availability of improved seed, lack of technical advice for crop cultivation, absence of regulated market and non-availability of fertilizers, *etc.* The constraints expressed for non-adoption of recommended package of practices should be taken care by the researchers, state agricultural departments, extension agencies and commercial firms to orient their infrastructure for higher adoption of recommended practices by black gram growers for maximum production.

Introduction

India grows a variety of pulse crop under a wide range of agro-climatic conditions and has a pride of being the world's largest producer of pulses. It is important source of protein especially for vegetarian and is also referred as poor man's meat. The major pulse crops grown in India are black gram, green gram, chickpea, pigeonpea, lentil and fieldpea, in which India produces 70 per cent of worlds' black gram production and accounts for 10 per cent of country's total pulse production (Gowda *et al.*, 2013).

Black gram is also known as *Urd* or Black lentil. It is one of the most important pulse crops grown throughout the country in very diverse agro-climatic conditions. According to annual report of Ministry of Agriculture, 2014 black gram produces 22.10 Kg of Nitrogen/ha, which is equivalent to 59 thousand tons of urea annually. Furthermore, it helps in fixing atmospheric nitrogen in symbiotic association with the rhizobium bacteria that is present on the root nodules and hence maintains the soil fertility. Black gram supplements the cereal-based diet and contains about 26 per cent vegetable protein, which is three times that of cereals. It is well known that a diet deficient in protein intake can cause Protein Energy Malnutrition.

The leading states producing black gram in India are Maharashtra, Uttar Pradesh, Andhra Pradesh, Rajasthan, Madhya Pradesh and Karnataka. These states contribute 80 per cent of total pulse production as reported by the Directorate of Economics and Statistics, Department of Agriculture and Cooperation, 2010.

In Rajasthan State black gram is grown in 1, 96 lakh/ ha. area with a production of 70,561 tonnes, with average yield of 360 kg/ha. Bhilwara occupies first position with respect to area 50,089 ha with annual production of 17,111 tonnes and an average yield of 342 kg/ha. Agriculture is main occupation of majority of the population in the rural area of Bhilwara district. According to the Commissionerate of Agriculture, Govt. of Rajasthan, Jaipur (2013-14) the average yield of black gram is only 360 kg/ha. as against the recommended average yield of the crop is 15-20 quintals/ha (Panda, 2012). The low production of black gram may be due to the non-adoption or poor adoption of improved cultivation practices of black gram by the farm women and they may be facing some constraints in its adoption at their own farm which may affect adoption of improved cultivation practices of black gram. Hence this is a challenging task for the scientist and farmers. Under such condition it is quite imperative that reasons for the technological gap in black gram should be identified and studied critically in order to face the existing challenge of low productivity. In this context the present study was undertaken to study the adoption of improved cultivation practices of black gram and identify the constraints as perceived by black gram growers.

Materials and Methods

The study was carried out in Bhilwara district of Rajasthan to know the Adoption of Improved Black Gram Cultivation Practices by Farm Women and to identify the constraint perceived by them in its adoption at their own farm. A sample of 100 black gram growers was selected randomly from 4 villages of two panchayat samities having highest area under black gram cultivation and from each village 25 growers as respondents. The data were calculated with the help of well-structured interview schedule. Respondents were categorized as high, medium and low adoption.

The practice wise adoption of improved cultivation practices of black gram was ranked based on men percent score (MPS) values. The constraints perceived by black gram growers in adoption of improved black gram practices were tabulated based on frequencies and percentage. The mean percent scores were calculated with the help of following formula.

$$MPS = \frac{\text{Sum of scores obtained by respondents in an item}}{\text{Maximum obtainable scores}} \text{ X } 100$$

Results and Discussion

Adoption of improved black gram cultivation practices

It is clear from table 1 that the majority of respondents possessed medium level adoption of improved black gram cultivation practices as indicated by the overall mean percent adoption scores (38.41). Data in table 1 reveal that respondents used improved practices of black gram cultivation with respect to suitable soil and land preparation and irrigation management in black gram cultivation was placed at first and second position in the adoption continuum as reflected from (77.12% and 67%). Whereas adoption of harvesting practices and manure and fertilizer application was found at third and fourth rank with (55.62% and 41.35%) respectively.

This clearly indicates the need to put more efforts by all the concerned convince the

farmers about improved cultivation practices of black gram. The results are in conformity with finding of Meena (2010).

Overall mean per cent adoption score – 38.41

The other practices viz. sowing (31.81%), weed management (27.11%), inter cropping (21.75%), improved seed variety (12.5%) and plant protection measures (11.44%) were ranked at fifth, sixth, seventh, eight and nine respectively.

The overall adoption was concerned, it is evident from table 2 that majority (53%) of the respondents were having medium level of adoption of improved cultivation practices of black gram and 42 per cent as well as 5 per cent were found in low and high category, respectively.

Constraints perceived by respondents in black gram cultivation practices

The constraints perceived by black gram growers were categorized into five parts and data regarding these constraints are presented in table 3. The major constraints perceived by black gram growers were lack of training institutions for training of the farmers about improved cultivation practices, non-availability of improved seeds and chemical fertilizers, lack of knowledge about rhizobium culture, plant protection measures and technical advice for crop cultivation, absence of regulated market and lower prices at harvesting time.

Table.1 Distribution of respondents according to their adoption of various black gram cultivation practices

S. No.	Aspects	MPS	RANK
1.	Soil and land preparation	77.12	I
2.	Irrigation management	67.00	II
3.	Harvesting	55.62	III
4.	Manure and fertilizer application	41.35	IV
5.	Sowing	31.81	V
6.	Weed management	27.11	VI
7.	Intercropping	21.75	VII
8.	Improved seed variety	12.5	VIII
9.	Plant protection measures	11.44	IX

Table.2 Distribution of respondents according to their overall adoption of improved black gram cultivation practices

n= 100

S. No.	Categories	f /%
1.	Low (>33.33)	42
2.	Medium (33.34 to 66.67)	53
3.	High (<66.67)	5

Table.3 Constraints perceived by respondents in adoption of improve black gram cultivation practices

n= 100

S. No.	Constraints faced by respondents	f/%
A	**Economic constraints**	
	High cost of seeds	22
	High cost of fertilizers	60
	Lack of credit facility	28
	Labor intensive affairs	57
	High cost of machinery	15
	High post-harvest losses	54
	High cost of insecticide and pesticides	64
B	**Technical constraints**	
	Poor knowledge about high yielding varieties	52
	Lack of technical advice for crop cultivation	82
	Lack of knowledge about rhizobium culture	34
	Lack of about plant protection measures	76
C	**Production constraints**	
	Non-availability of improved seed	90
	Non availability of fertilizers	78
	Lack of irrigation facility	8
	Non availability of labor	80
D	**Marketing constraints**	
	High cost of transportation facilities	48
	Absence of adequate storage facilities	43
	Absence of regulated market	81
	Lower prices at harvesting time	78
	No processing industry	75
	Lack of co-operative marketing system	76
E	**General constraints**	
	Threat from wild and stray animal	43
	Lack of training institutions for training of the farmers	100
	Supply of inferior quality inputs by the input dealers	47
	Problem of grazing animal	56

The other problems as expressed by a majority of farmers were high cost of fertilizers, seeds, insecticide and pesticides, poor knowledge about high yielding varieties and adequate storage facilities and supply of inferior quality inputs by the input dealers, etc. These finding clearly indicates the need to develop strong research based centers to tackle day to day problems and offer solution to black gram growers. To overcome the marketing constraints, there is need to develop networks of marketing co-operative basis.

The findings are in line with the result of Mane (2012) in their study on "Knowledge and adoption of recommended production technology of green gram." reported that the major constraints faced by the respondents were supply of inferior quality inputs by input dealers and lack of training institutions for training of the farmers.

It may be concluded that a majority of farmers had medium adoption of improved black gram cultivation practices. The adoption was higher in the soil and land

preparation, irrigation management and harvesting than the other adopted practices of black gram cultivation. On the other hand less adoption was found in intercropping, improved seed variety, plant protection measures, *etc.* Hence it may be pointed out that it is no use to adopt some of the improved practices only and neglecting some others one. It is necessary to use the complete package of the improved practices of black gram cultivation for reaching maximization in crop yields.

The major constraints perceived by black gram growers were lack of training institutions for training of the farmers about improved cultivation practices, non-availability of improved seeds and chemical fertilizers, lack of knowledge about rhizobium culture, plant protection measures and technical advice for crop cultivation, absence of regulated market and lower prices at harvesting time, *etc.* The constraints are appropriately addressed and overcome by providing technical knowledge about improved black gram cultivation practices.

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