Socio-Economic Characteristics and Knowledge Level of Farmers about Black Gram Production Technology by the Farmers of Prayagraj District of Uttar Pradesh, India

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A B S T R A C T

The present study is an attempt to assess the knowledge level of farmers of prayagraj district about the recommended production technology of black gram cultivation. Primary data from 120 farmers were collected through face to face interviews. Farmers had a highest knowledge of land preparation followed by the harvesting of crop. Where, highest knowledge gap recoded about the seed treatment and recommended dose of farm yard manure (57.50%) followed by critical stages of black gram for irrigation. Overall knowledge level recorded 65.51 % whereas knowledge gap was obtained 34.49%. Further statistical correlation interpreted that education negative non-significant correlated with knowledge, where rest variables shows positive significant correlated with knowledge i.e. Family size, family type, age, land holding and annual income.

Introduction

India is the largest producer (25% of global production), consumer (27% of world consumption) and importer (14%) of pulses in the world (Ahlawat *et al.,* 2016). Pulses account for around 20 per cent of the area under food grains and contribute around 7-10 per cent of the total food grains production in the country. In India, pulses were cultivated more than 29 million ha (Mha) of area and

recorded the highest ever production of 25.23 million tonnes (Mt) at a productivity level of 841 kg/ha during 2017-18. Twelve states were the major producers contributing more than 90 per cent pulses. These were Madhya Pradesh (more than 8 Mt), Rajasthan (more than 3 Mt), Maharashtra (more than 3 Mt), Uttar Pradesh (more than 2 Mt), Karnataka (2 Mt) and Andhra Pradesh (greater than 1 Mt) followed by Gujarat, Jharkhand, Tamil Nadu, and Chhattisgarh producing less than 1 Mt each

(GOI, 2018). Black gram is a member of the Asiatic Vigna crop group. Black gram is scientifically known as *Phasiolus mungo* and it is commonly known as *Urad* in India. India is its primary origin and is mainly cultivated in Asian countries including Pakistan, Myanmar and parts of southern Asia. About 70%t of world's black gram production comes from India. It's contains protein (24%), Calcium (154 mg/100 g), Fat (1.4%), Phosphorus (385 mg/100 g), Minerals (3.2%), Iron (9.1 mg / 100 g), Fiber (0.9%), Calorific value (347), Carbohydrate (59.6%), Moisture (10.9%) & it is also richest in phosphoric acid among the pulses (Tiwari and Shivhare, 2016). During 2017-18, Urad (Black gram), the third important crop group, was cultivated over an area of 5.44 Mha (*kharif + rabi*) and recorded a production of 3.56 Mt at a productivity level of 655 kg/ha [2]. This was the highest ever area, production and productivity in this crop. Major contributing states have been Madhaya Pradesh, Rajasthan, Andhra Pradesh, Uttar Pradesh, Tamil Nadu, Maharashtra, Jharkhand and Gujarat. Black gram is a warm weather crop and comes up in areas receiving an annual rainfall ranging from 600 to 1000 mm.

The low productivity of black gram is attributed to (i) low yield potential plant architecture, (ii) excessive vegetative growth, (m) high rate of flower and fruit drop, (iv) non-synchronous maturity, (v) pod shattering in some cultivars and above all, (vi) susceptibility to deceases and pests. Lack of good quality seeds and crop management, extremely limited use of rhizobial cultures, phosphatic fertilizers, fungicides and pesticides also contribute to its low productivity. Keeping this view, black gram cultivation is one of the main crop and high contribution in the country's economy. The objective of present study is the socio economic characteristics of the black gram growers and find out their knowledge level about the recommended cultivation practices.

Materials and Methods

The present study has been carried out during 2020-21 in Prayagraj district, which is situated at Eastern part of Uttar Pradesh (Geographical location 25.45°N 81.84°E). Out 20 blocks in Prayagraj, Uruwa block has been selected purposive sampling due to black gram is dominated crop and covered higher cultivable area. In preparing the list, the help of revenue personnel and agricultural supervisor of the concerned area were taken for authenticity and counter check of information. Twelve villages were randomly selected from Uruwa block under black gram crop cultivable areas. Thereafter, the 10 farmers were selected from each village on random basis. So, the samples for the present investigation were comprised of 120 respondents. The interview schedule was developed for collection of data from the selected respondents. The general information of socio-economic attributes of selected respondents i.e., family type, size of family, age, education, size of land holding and annual income were consisted as a first part of schedule. The classification and scoring of socio-economic attributes of respondents were done as per the scale developed by Trivedi and Pareek, 1964.

In second part of schedule, the information related to knowledge level of respondents about the recommended production technology of black gram was assessed by formulating multiple choice, alternative and dichotomous type of questions about the thirteen major practices of black gram production i.e. viz., land preparation, sowing method, sowing time, seed rate, varieties, spacing, seed treatment, recommended FYM dose, recommended fertilizer application, irrigation application at critical stages, weed management, plant protection and harvesting as recommended by the research center. The knowledge level of selected respondents was measured by using line of knowledge test and

calculated overall knowledge score for each respondent (Sharma, 2014).

The scored data of respondents were used for calculate the frequency of socio-economical characters and knowledge level of each respondent. Further, mean and standard deviation were also used to categorize the knowledge level into different categories (low, medium and high). The relationship between selected characteristics of the respondents with their knowledge was calculated by using of correlation coefficient.

Results and Discussion

Distribution of socio-economic attributes of the selected respondents

The socio-economic attributes of the selected black gram growers were given in table 1. Majority of respondents i.e. 69.17 per cent was belonged to large size families i.e. greater than 5 members, while 30.83 per cent respondents belonged to small size families i.e. upto 5 members in a family. The maximum black gram growers belonged to joint family (69.17 %). Out of total 120 respondents, 30.83 per cent belonged to nuclear families. The majority of black gram growers were belonged to the age group of 35 to 55 years while 25 per cent farmers belonged to above 55 years' age group. The lowest farmers obtained under below 35 years' age group (10.00%). The highest respondents (25.00 %) had qualification middle and high school followed by 20.83 % farmers upto intermediate level. The 16.67 per cent farmers had qualified upto graduate and post graduate. While, 12.50 per cent farmers were belonged to below the middle school, out of these 4.17% were illiterate. Out of the total 120

respondents, the small size of land holding farmers had accounted 37.50 per cent followed by respondents having marginal size of land holding (31.67 %). The minimum respondent had large size of land holding.

It indicates that out of total 120 respondents, 54.17 per cent farmers had annual income above Rs. 80,000 i.e. high categories whereas 29.16 per cent farmers were belonged under medium annual income category (40,000-80,000), whereas 16.67 per cent farmers were belonged under low annual income category (up to 40,000).

Knowledge level about production technology of black gram

All respondents had complete knowledge about the land preparation technology of black gram followed by great proportion of respondents possess knowledge about harvesting (94.17%) and sowing method (85.83%). It was found that, higher percentage of respondents (80.83 %) had knowledge about sowing time for black gram cultivation (Table 2). It is interesting to note that, overwhelming majority of respondents (79.17 %) had knowledge about seed rate for black gram cultivation. 63.33 per cent of the respondents had knowledge about plant protection and improved varieties of black gram and 52.50 per cent of the respondents had knowledge about the crop spacing to be maintained for black gram cultivation. Near about half of the respondents (49.17 %) had awareness knowledge about recommended fertilizer application. A few respondents (46.67%) had the knowledge about critical growth stages of irrigation and 42.50 per cent of them had knowledge about seed treatment and farm yard manure application dose.

Table.1 Distribution of respondents according to socio-economical attributes

(n=120)

Sr. No.	Category	Frequency
1.	**Family size**	
a.	Small size (≤5 members)	37
b.	Large size (> 5 members)	83
2.	Family types	
a.	Nuclear family	37
b.	Joint family	83
3.	**Age**	
a.	< 35 years	12
b.	35 to55 years	78
c.	> 55 years	30
4.	**Education**	
a.	Illiterate	5
b.	Primary school	10
c.	Middle school	30
d.	High school	30
e.	Intermediate	25
f.	Graduate	15
g.	Post Graduate	5
5.	**Size of landholding**	
a.	Marginal (< 1 ha)	38
b.	Small (1 to2 ha)	45
c.	Large (> 2 ha)	37
6.	**Annual income levels**	
a.	Low (up to 40,000)	20
b.	Medium (40,001-80,000)	35
c.	**High (above 80,001)**	65

Table.2 Extent of knowledge of farmers about recommended production technology of Black gram.

(n=120)

S. No.	Black gram production Practices	Knowledge level (%)	Knowledge gap (%)
1.	Land preparation	100.00	**0.00**
2.	Sowing method	85.83	**14.17**
3.	Sowing time	80.83	**19.17**
4.	Seed rate	79.17	**20.83**
5.	Varieties	63.33	**36.67**
6	Spacing	52.50	**47.50**
7	Seed treatment	42.50	**57.50**
8.	Recommended FYM dose	42.50	**57.50**
9.	Recommended fertilizer application	49.17	**50.83**
10.	Irrigation application at critical stages	46.67	**53.33**
11.	Weed management	51.67	**48.33**
12.	Plant protection	63.33	**36.67**
13.	**Harvesting**	**94.17**	**5.83**

Table.3 Relationship between selected variables of black gram production and their level of
Knowledge of recommended package of practices

Sl. No.	Variable	Correlation coefficient (r)
1	Age	0.298706*
2	Income	0.160797*
3	Education	-0.18871[NS]
4	Size of land holding	0.386915*
5	Family size	0.28495*
6	Family type	0.114179*
*=significant (*p*= 0.05) and NS= Non-significant		

Fig.1 Distribution of respondents on the basis of their level of knowledge about recommended
production technology of black gram.
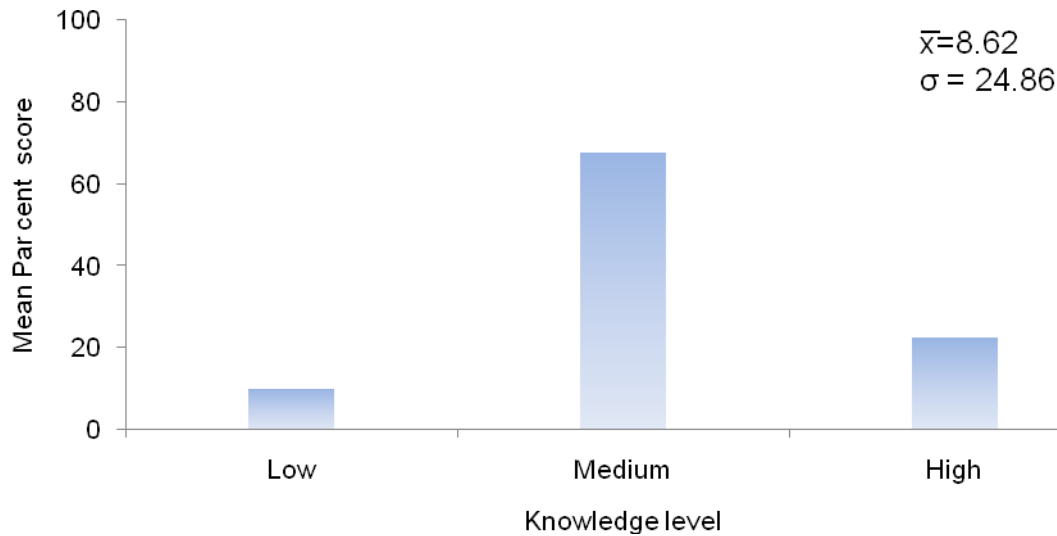
The overall knowledge levels of respondents about the recommended production technology of black gram were given in figure 1. Out of 120 respondents, majority of respondents 67.50 per cent fell in medium level knowledge group whereas 10.00 per cent black gram growers were observed in low level knowledge group and remaining 22.50 per cent respondents possessed high level of knowledge. Singh *et al.,* (2017) observed that the majority of farmers in Prayagraj District had medium level of knowledge about the production technology of black gram. similarly, Patel (2008) revealed that out of total respondents 74.00 % respondents had medium level of knowledge regarding recommended soybean production technology followed by low (16 .00%) and high level of knowledge (10.00%).

Relationship between socio-economic characteristics of respondents based on their knowledge level

Among the selected variables, sources of information were positively and highly significantly correlated with the knowledge of black gram growers about recommended cultivation practices. The selected variables namely age, income, land holding, annual income, family size and type were positively and significantly correlated with the

knowledge of recommended cultivation practices of black gram (Table 3). Whereas, the variable education availed was negatively and non-significantly correlated with the knowledge of black gram growers about recommended cultivation practices. A positive correlation indicates that if one variable is increase or decrease, the related variable also shows similar trend, where a negative correction indicated that if the degree of one variable is increases as the other variable decreases. Kumar *et al.,* (2016) shown that out of fifteen variables, six variables i.e. extension participation, land holding, annual income, credit acquisition, source of information and contact with extension personnel shown positive effect on knowledge regarding recommended production technology of back gram.

Based on the finding of the study, it was concluded that majority of the respondent were middle age group had high level of annual income, small size of land holding. Majority of the respondent had medium level of knowledge of recommended cultivation practices. The variables namely age, income, land holding etc. were positively and significantly correlated with the knowledge of recommended cultivation practices of black gram.

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