J. Farm Sci., 35(3): (355-358) 2022

RESEARCH PAPER

Perception of farmers on varietal traits and constraints in adoption of improved variety (JG-11) and existing varieties of chickpea

MANOJKUMAR, B. R. JAMAKHANDI, M. Y. TEGGI AND H. B. BABALAD

Department of Agricultural Economics
University of Agricultural Sciences, Dharwad - 580 005, Karnataka, India
E-mail: manojsubedar000@gmail.com

(Received: February,2022 ; Accepted: August, 2022)

Abstract: Chickpea is a major pulse crop in north Karnataka region. The study was confined to Vijayapura and Gadag districts of Northern Dry Zone of Karnataka in 2020. The study aimed to assess the constraints faced by chickpea growers in adoption of improved varieties of chickpea. A multistage random sampling procedure was used for the selection of samples and data collected through a personal interview method using a pre-tested schedule. Collected data were analyzed by using suitable statistical tools like Garrett's ranking technique and descriptive statistics. The study revealed that the major constraints faced by the chickpea growers were non-availability of labour, less remunerative price, lack of knowledge of seed treatment, lack of supply of improved seed and so on. All the adopted farmers opined that improved variety (JG-11) gave more grain yield than the existing varieties of chickpea.

Key words: Chickpea, Constraints, Gadag, Perceptions, Vijayapura

Introduction

Chickpea (*Cicer arietinum* L) is one of the major pulse crops grown in India. It belongs to the family Fabaceae and subfamily Faboideae. Chickpea is otherwise called as bengal gram, chana, garbanzo bean or Egyptian pea and in Kannada language it is called as "Kadali". Chickpea domestication dates back to 8500 - 7500 BC, found in sites of Turkey in the Eastern Mediterranean region in Western Asia.In India, major pulses grown are chickpea, pigeon pea, mung bean, black gram, lentil and peas. Pulses are grown in 27.98 million hectare with a production of 23.02 million tonnes and productivity of 823 kg/ha. ndia is a major chickpea producing and consuming country in the world and its contribution is about 70 per cent of world's total production. India stands first in both area and production but lags behind in case of productivity due to poor adoption of improved varieties and production technologies by farmers. Chickpea is grown in an area of 9.69 million hectare, with a production of 11.07 million tonnes and productivity of 1142 kg/ ha. In spite of this production, India imports three to four million tonnes of pulses to meet domestic demand every year from other countries.

In India, Madhya Pradesh stands first in chickpea production accounting for 25 per cent of total chickpea production in the country, followed by Rajasthan (22 per cent), Maharashtra (20 per cent), Uttar Pradesh (7.6 per cent) and Karnataka (6.01 per cent.) The area under chickpea is growing over the years with increasing production to meet the consumers' demand.. Madhya Pradesh recorded the highest production of 3.9 million tonnes in an area of 3.3 million hectare with a productivity of 1288 kg/ha of chickpea in 2018-2019, (Anonymous, 2020)

Karnataka ranks fifth in chickpea production with an area of 8.64 lakh ha, production of 6.75 lakh tones with the productivity of 782 kg/ha (Anonymous, 2020). In Karnataka, Kalaburagi district occupies the first position in chickpea production followed by Vijayapura, Bidar, Gadag, Dharwad, Raichur and Yadgir districts.

Chickpea is a major pulse crop in North Karnataka (NEK) region. More technologies relevant to production of chickpea have been developed by the University of Agricultural Sciences, Dharwad (UASD). It has released many improved varieties that are suitable to the Northern Dry Zone of Karnataka. With these background, the study on "Perception of farmers on varietal traits and constraints in adoption of improved variety (JG-11) and existing varieties of chickpea" was purposively selected.

Material and methods

Study area

The study was conducted in Karnataka state with a focus on the Northern Dry Zone of Karnataka. In First stage Vijayapura and Gadag districts were selected for the study based on the highest area under chickpea production and in second stage two taluks were selected from the each selected district based on the highest area under chickpea and in third stage from each selected taluks two villages were selected for the study.

Sampling procedure and source of data

A multistage random sampling procedure was used for the selection of sample farmers. For the study 144 farmers were chosen, out of which 80 farmers cultivating chickpea variety (JG-11) and 64 farmers cultivating corresponding local existing varieties of chickpea crop were chosen in the same areas as counterfactual. The primary data needed for the study was collected from the farmers by a personal interview method using a pre-tested schedule.

Analytical tools and techniques used:

1. Descriptive Statistics

Descriptive statistics such as frequency and percentage were used to analyze the perception of farmers on varietal traits.

2. Garrett's Ranking Technique

The constraints faced by the sample farmers during adoption of chickpea varieties were ranked by using Garrett's ranking technique. As per this method, respondents were asked constraints that they were faced with in the adoption of chickpea varieties. Depending upon the extent of constraints faced by them, the rankings were assigned separately to each constraint. Likewise, ranks were assigned to different frequency of various factors/parameters. The results of such rankings were converted into score value by using the following formula.

Per cent position = 100* (Rij-0.5) /Nj

Where,

Rij = Rank given for the ith factor by jth respondent.

Nj = Number of factors ranked by the jth respondent.

The per cent position of each rank was converted to scores by referring to tables given by Garret and Woodworth (1969). Then for each factor, the scores of individual respondents were summed up and divided by the total number of respondents for whom scores were gathered. The mean scores for all the factors were ranked.

Results and discussion

Constraints in adoption of improved variety and existing varieties of chickpea

The Garrett's ranking techniques was used to find out the constraints faced by the farmers in adopting improved and existing varieties of chickpea and are presented in Table 1. The ranks are given for the constraints based on the opinion survey conducted by using a pre tested schedule in the study area. Further constraints are divided into three sub-headings like Production, Marketing and Managerial constraints.

In Production constraints, the respondents expressed that non-availability of labour was a major problem faced by them with the Garrett score of 67.15 (I) and the mainly due to migration of rural population to urban areas in search of permanent e jobs rather than seasonal agriculture works. The lack of supply of improved seed was the second important constraint with a score of 64.38 (II), followed by high wage rate of labour and hired machines (III), lack of knowledge about improved technologies (IV), non availability of required quantity of fertilizers/ FYM (V). The other constraints faced by respondents were high cost of plant protection chemicals (VI), less knowledge about bio pesticides and bio fertilizers (VII), harvesting cost is high/

Table 1. Constraints in adoption of improved and existing varieties of chickpea in the study area

Constraints	Garret Score	Rank
Production constraints		
Non availability of labour	67.15	I
Lack of supply of improved seed	64.38	II
High wage rate of labour and hired machines	58.59	III
Lack of knowledge about improved technologies	56.09	IV
Non -availability of required quantity of fertilizer/FYM	55.73	V
High cost of plant protection chemicals	47.14	VI
Less knowledge about bio pesticides and bio fertilizers	43.65	VII
Harvesting cost is high	38.52	VIII
Insect are resistant to chemical spray	36.06	IX
High cost of improved seeds	34.90	X
Marketing constraints		
Less remunerative price for produce	66.52	I
High price volatility/fluctuation	64.90	II
Lack of marketing information	57.69	III
Lack of storage facility/warehouses	56.60	IV
High rate of interest for non-institutional credit	55.95	V
Lack of cooperative marketing organization	47.20	VI
Regulated market is far off	42.04	VII
Lack of processing facility	39.19	VIII
High transportation cost	37.94	IX
Non acceptance of chickpea varieties by the traders during initial period	36.20	X
Managerial constraints		
Lack of knowledge about seed treatment	55.33	I
Lack of awareness about demonstrations and training programmes	54.53	II
Lack of knowledge on location specific improved varieties of chickpea	50.58	III
unable plan in advance about the incidence and application of inputs	49.34	IV
Unable to contact extension agencies at the time of necessity	49.10	V
Lack of knowledge about control of insect pests and disease control	48.24	VI
Lack of knowledge regarding improved agrochemical practices of chickpea	47.25	VII
Mislead regarding plant protection chemicals by input dealers	42.21	VIII

more (VIII), resistance of pod borer insect against insecticides (IX) and high cost of improved seeds (X).These results were in parallel with the study conducted by Jat *et al.* (2017) and Hadimani *et al.* (2019).

With respect to marketing constraints, less remunerative price and high price fluctuation were major problems faced by sample respondents with a Garrett score of 66.52 and 64.90 respectively. Respondents felt that less price is due to selling of produce in the local market and exploitation by middleman. Reason for price volatility was due to non regulation of price at local markets and seasonality of the product. Other constraints reported were lack of marketing information (III), lack of cooperative marketing organization (IV), high rate of interest for non-institutional credit (V) and lack of storage facility (VI), etc.These results were in line with the study conducted by Shriwas *et al.* (2019) and Shasani *et al.* (2020).

In case of managerial constraints, the top 4 major constraints experienced by chickpea growers were lack of knowledge of seed treatment (55.33) due to lack of extension activity and no knowledge regarding benefits of doing seed treatment; the second most important constraint was lack of awareness about demonstration and training programmes (54.53) because farmers do not maintain contact with extension agents; and the third and fourth most important constraints were lack of knowledge regarding improved agrochemical practices of chickpea (50.58) and could not plan in advance about the incidence and application of inputs (49.34). Beside these some other challenges like not able to contact extension agencies at the time of necessity (49.10), lack of knowledge about control of insect pests and disease control (48.24), lack of knowledge about improved varieties of Chickpea (47.25) , mislead by input dealers regarding chemicals (42.21) were found to be limiting factors for sample farmers. These results gain support by the findings obtained by the study of Parmar *et al*. (2019), study found that major constraints perceived by respondents were non availability of labour, lack of supply of improved seed, lack of knowledge about bio fertilizers and bio-pesticides, *etc.*

Determined constraints faced by farmers in adopting JG 11 variety of chickpea

The results of the determined constraints faced by the farmers are presented in Table 2. In case of adoption of improved variety, lack of supply of improved seed was the major constraint faced by farmers with the Garrett score 64.38 (I) because there was less production and supply of improved seeds and the second most important constraint was lack of marketing information (57.69). Other constraints like, lack of knowledge on location specific improved varieties of chickpea (III), non-acceptance of chickpea varieties by the traders during initial period (IV), and high cost of improved seed (V) had the minimal limiting effect.

The perception of farmers on varietal traits

The results of the farmer's perception on varietal traits are presented in Table 3. All the respondent farmers opined that the improved variety (JG-11) gives more grain yield than the existing varieties of chickpea. Among the selected farmers, most of the improved varieties adopted by farmers opined that the JG-11 variety is a short duration and attains early maturity than other varieties. Reduction in the duration of the crop helps in avoiding pests as well as saving the crop from drought and associated stress conditions. Other varietal traits regarding JG 11 were bold grains, resistant to disease and pest and high grain weight also opined by the adopted farmers. Similar results are quoted by Kanfany *et al*. (2020), study found that among traits for varietal preference, grain yield was the most important trait followed by drought tolerant, adaptable to lack of fertility and short duration varieties preferred by the farmers.

Conclusion

Non-availability of labour, lack of supply of improved seed and high wage rate of labour & hired machines were the major production constraints faced by the chickpea growers. less remunerative price, high price fluctuation and lack of marketing information were the major marketing constraints. Lack of knowledge of seed treatment and lack of awareness about

Table 2. Determined constraints faced by farmers in adopting JG 11 variety of chickpea in the study area

Constraints	Garret score	Rank
Lack of supply of improved seed	64.38	I
Lack of marketing information	57.69	II
Lack of knowledge on location specific improved varieties of chickpea	50.58	III
Non acceptance of chickpea varieties by the traders during initial period	36.20	IV
High cost of improved seed	34.90	V

Table 3. Farmers perception towards varietal traits of JG-11 variety of chickpea in the study area

Particular	Frequency	Percentage
High grain yield	80	100.00
Short duration /Early maturity	65	81.25
Bold grain size	74	92.25
High grain weight	70	87.50
Tolerant to disease (Wilt, Root rot)	58	72.50
Tolerant to insects (Pod borers)	61	76.25

demonstrations & training programmes were the major managerial constraints. Farmers opined that improved variety (JG-11) had given higher grain yield with a short period than the existing varieties of chickpea. There is a urgency to develop the varieties suitable for mechanized harvesting as well as for other cultivation practices without compromising in yield and its quality. There is a need for strengthening of seed distribution centre and also extension activities through result demonstrations and method demonstrations effectively to reach the farming community.

References

Annonymous, 2020.Growth in area, producation and productivity of Chickpea in India. www.indiastat.com

Garret E, Henry and Woodworth R S, 1969, Statistics in Psychology and Education.Vaklis, Feffer and Simons Pvt. Ltd., Mumbai.

Hadimani D K, Manjunath I M and Ashok J, 2019, Constraints faced and suggestion by farmers to overcome constraints in adoption of improved sericulture production technologies of Bidar district of North Karnataka. *Journal of pharmacognosy and phytochemistry,* 8 (2): 784-786.

Jat S, Dangi K L and Kumhar B L, 2017, Constraints in Adoption of Improved Cultivation Practices of Black Gram. *International Journal of Current Microbiology and Applied Sciences,* 6 (5): 1820-1824.

Kanfany G, Diack O, Kane N A, Gangashetty P I, Sy O, Fofana A and Cisse N, 2020, Implications of farmer perceived production constraints and varietal preferences to pearl millet breeding in Senegal. *African Crop Science Journal,* 28 (3): 411-420.

Parmar V S, Joshi N S, Prajapati P J and Hadiya N J, 2019, Constraints Faced by the Farmers in Adoption of Improved Cultivation Practices of Gram. *International Journal of Current Microbiology and Applied Sciences*, 8 (11): 2071-2075.

Shasani S, Banerjee P K, De H K and Panda S, 2020, Constraints in Adoption of Groundnut Cultivation Technology by the Farmers of Odisha. *Indian Journal of Extension Education,* 56 (2): 39-44.

Shriwas Y, Awasthi H K, Shrivastava K K and Kumar A, 2019, Constraints faced by the rice growers and their suggestions to overcome the constraints in adoption of farm machineries in Chhattisgarh plains. *Journal of Pharmacognosy and Phytochemistry,* 8 (1): 1139-1142.

Teja B R C, Baba M A, Kumari R V and Meena A, 2021, Constraints in adoption of mechanization in rice cultivation in Khammam district of Telangana state. *Journal of Pharmacognosy and Phytochemistry,* 10 (2): 38-40.