DOI: 10.15740/HAS/AU/14.1/58-61
Agriculture Update
Volume **14** | Issue 1 | February, 2019 | 58-61
Visit us : *www.researchjournal.co.in*
ISSN-0973-1520

RESEARCH ARTICLE :

The knowledge and adoption level of farmers about recommended cultivation practices for chickpea

Parkash Singh Sidhu and Gurmeet Singh Dhillon

ARTICLE CHRONICLE :
Received :
04.11.2018;
Revised :
08.01.2019;
Accepted :
14.01.2019

SUMMARY : The findings of the study revealed that initially 75 per cent farmers were possessing low, 20 per cent medium and 05 per cent high level of knowledge whereas after acquiring training the values were 07 per cent for low, 10 per cent for medium and 83 per cent for high level of knowledge. It was noticed that 85.0 per cent of the farmers adopted new high yielding variety followed by land preparation (78.0 %), integrated nutrient management (82.0 %) and used recommended seed rate (71.0 %) after acquiring trainings from the KVK. It was also evident from the findings that due to enhanced knowledge and adoption of scientific practices, the yield of chickpea increased by 3.5 per cent, 4.2 per cent and 7.1 per cent over the yield obtained under farmer's practices during the year 2015-16, 2016-17 and 2017-18, respectively. Thus, FLD,s obtained a significant positive result and also provided the researchers an opportunity to demonstrate the productivity potential and profitability of the integrated nutrient management under field conditions.

KEY WORDS :
Chickpea, Knowledge level, Adoption level, Package of practices, Extension activities

How to cite this article : Sidhu, Parkash Singh and Dhillon, Gurmeet Singh (2019). The knowledge and adoption level of farmers about recommended cultivation practices for chickpea. *Agric. Update*, **14**(1): 58-61; **DOI : 10.15740/HAS/AU/14.1/58-61.**

Author for correspondence :
Parkash Singh Sidhu
Krishi Vigyan Kendra, Bathinda (Punjab) India
Email: psidhu8813@gmail.com

See end of the article for authors' affiliations

BACKGROUND AND OBJECTIVES

India is the largest producer (25% of global production), consumer (27% of world consumption) and importer (14%) of pulses in the world (Anonymous, 2017). Pulses account for around 20 per cent of the area under foodgrains and contribute around 7-10 per cent of the total food grains production in the country. Though pulses are grown in both *Kharif* and *Rabi* seasons, *Rabi* pulses contribute more than 60 per cent of the total production. Major pulses grown in India include chickpea, pigeonpea, lentil, black gram, mungbean, lablab bean, moth bean, horsegram, pea, grass pea or khesari, cowpea, and broad bean or faba bean. More popular among these are chickpea, pigeonpea, mungbean, urdbean and lentil .

The chickpea (*Cicer arietinum* L.) is the most dominant pulse having a share of around 40 per cent in the total production followed by Tur/Arhar at 15 to 20 per cent and urad/ black and moong at around 8-10 per cent each. The chickpea (*Cicer arietinum* L.) is also known as gram, Bengal gram and *Chana* in Hindi. It belongs to the family Leguminosae. The origin of the chickpeas is thought to have

been Levant and ancient Egypt, which is logical since the plant prefers temperate and semiarid regions. It is the major pulse crop used in diet of vegetarians in India and is a good source of protein. The main proteins found in chickpeas, similar to other legumes, are albumins and globulins. Smaller amounts of glutelins and prolamines are also present. It contains 21 g proteins, 4.5 g fat, 150 mg minerals, 61.5 g of carbohydrates and some malic and oxalic acid per 100 g of seed. *Dal* and besan (flour) are the important forms in which people consume it. Malic and oxalic acids collected from green leaves are prescribed for intestinal disorders.

However, chickpea production in India is slow in post green revolution years due to strong competition from wheat, rice and mustard, as expansion in irrigation and rapid technological change has favoured the latter crops at the cost of chickpea. It is observed that the productivity of chickpea is found to be low in comparison to their potential yield existing in the area. It showed improvement in chickpea production is needed through conservation, diversification of agriculture and to enhance adoption level of improved chickpea production technology. So to increase the productivity, particularly under rainfed chickpea growing regions is one of the major challenges and concern which need to be addressed on priority basis.

A number of agricultural improvement programmes have been introduced in India to increase the agricultural production and income of the farming community, but the outcome of these programmes is not satisfactory in terms of achieving higher agricultural production. The most important factor identified for this poor outcome was lack of understanding by the farmers about various technological recommendations made by the research institutes. As a result, more emphasis on farmers training activities is being given by the Krishi Vigyan Kendra, Bathinda and Punjab Agriculture University, Ludhiana. It is a known fact that training to farmers increases the technical efficiency of an individual. In Bathinda district of Punjab, farmers grow chickpea crop on conserved moisture or after giving a light irrigation, however, get very low yields due to use of low yielding variety and poor knowledge about scientific cultivation of chickpea crop. Krishi Vigyan Kendra, Bathinda made an effort and conducted frontline demonstration on chickpea and organized on-campus as well as off-campus training programmes for the benefit of farmers/farm women. Additionally, a total number of farmers covered in 2015-16, 2016-17 and 2017-18 under front line demonstrations were 200 in different villages of Bathinda district. In order to evaluate the impact of frontline demonstrations and training programmes as well as other extension activities of Krishi Vigyan Kendra, the present study was undertaken with the objectives to assess the knowledge and adoption level of farmers about recommended package of practices and to find out the yield gap analysis in chickpea production.

RESOURCES AND METHODS

For the present study 2 blocks of Bathinda district namely Sangat and Talwandi Sabo were selected purposively due to more area under chickpea crop. From each block 5 villages were selected and from each village 10 farmers were selected randomly who were growing chickpea crop from last three years thus, making a total sample size of 100 farmers. The data were collected from selected farmers by a structured questionnaire. The data were collected and extension gap, technology gap and the technology index were worked out as per formulae given by the Samui *et al.* (2000).

OBSERVATIONS AND ANALYSIS

Under demonstration practices the farmers used the recommended variety of gram *i.e*. PBG-7 and seed was treated with rhizobium culture where of under farmer practices local variety was used and they didn't treat the seed and also not used weedicides for weed management. The practices followed under the front line demonstration (FLD) and farmers' practices are given in Table 1.

The collected data were classified the impact of extension activities to assess the knowledge level of farmers regarding chickpea cultivation practices (Table 2). It was revealed that initially 75 per cent farmers were possessing low, 20 per cent medium and 5 per cent high level of knowledge whereas after acquiring training the values were 7 per cent for low, 10 per cent for medium and 83 per cent for high level of knowledge. Thus, indicating that there was a considerable increase in the knowledge level of farmers who attended the KVK programmes organized both on campus as well as off campus.

The data on knowledge level of farmers about package of practices of chickpea are presented in Table 3. These data were collected from farmers who are conducting the FLDs and participated in extension

activities. It was evident that farmers took keen interest about the performance of different varieties or hybrids as well as all were knowledgeable about seed rate, seed treatment and INM. On perusal of the data (Table 4), it was inferred that demonstration of various production technologies resulted in the increased level of adoption of farmers. Though in the adoption of an enterprise number of factors is responsible but economic factor is the most important. In case of front line demonstrations, it was observed that farmers generally make use of all the required inputs at their plots but the method of application, dose or time of application is not as per recommendations. Most of the time farmers take advice from the fallow farmers. Hence, conductance of FLD programmes proved an important activity of the KVK and resulted in the increased adoption of the technology demonstrated.Front line demonstrations have successfully shown that through adoption of improved production technologies, yield of

Table 1: The practices followed in FLDs and farmers practices

Particulars	Demonstration practices	Farmers practices
Variety	PBG-7	Local
Seed treatment	Rhizobium	Nil
Weed management	Stomp 30 EC (pendimethalin) @ 1.0 litre per acre	No use of pre emergence weedicide

Table 2 : Change in knowledge level of farmers before and after training

Knowledge level	Before training (%)	After training (%)
Low	75	07
Medium	20	10
High	05	83

Table 3: Knowledge level of farmers about package of practices of chickpea

Sr. No.	Particulars	Knowledge level		
		Low	Medium	High
1.	High yielding varieties	09	06	85
2.	Land preparation	07	15	78
3.	Seed rate	18	11	71
4.	Seed treatment	22	05	73
5.	Weed management	16	12	72
6.	Integrated nutrient management	06	12	82

Table 4 : Change in adoption level of scientific cultivation of chickpea

Category	Before training (%)	After traoining (%)
High level of adoption	05	87
Medium level of adoption	22	08
Low level of adoption	73	05

Table 5: Performance of front line demonstrations on chickpea

Year	No. of demo	Area (ha)	Yield (q/ha)				% increase	Extension gap (EG)	Technology gap (TG)	Technology index (TI)
			Highest	Lowest	Average	Farmer practices				
2015-16	75	30	17.7	11.4	14.4	13.9	3.5	0.5	5.6	28.0
2016-17	50	20	18.9	16.2	17.2	16.5	4.2	0.7	2.8	14.2
2017-18	75	30	22.4	17.4	19.4	18.1	7.1	1.3	0.6	3.0
Mean			19.6	15.0	17.0	16.1	4.9	1.3	3.0	15.0

(EG) Extension gap= Demonstration yield- Farmers yield

(TG) Technology gap = Potential yield – Demonstration yield

(TI) $\textbf{Technology index} = \frac{\textbf{(Potential yield - Demonstration yield)}}{\textbf{Potential yield}} \textbf{x 100}$

pulses in general and moong and chickpea in particular can be increased by 46 per cent and 31 per cent, respectively (Gautam *et al.,* 2007). The data showed that 73 per cent of the farmers had low level of adoption which was increased to 87 per cent. Thus, it can be said that overall knowledge level and adoption level of the farmers about package of practices of chickpea had increased upto 83 per cent and 87 per cent, respectively after acquiring training at KVK, Bathinda.

Yield gap analysis of chickpea cultivation:

The results indicated that the highest yield in FLD plots and farmer's plots was 19.4 q and 18.1 q/ha, respectively. The average yield of chickpea under demonstration ranged between 14.4 q to 19.4 q/ha during different years (Table 5). The results clearly showed that due to enhanced knowledge and adoption of scientific practices, the yield of chickpea increased by 3.5 per cent, 4.2 per cent and 7.1 per cent over the yield obtained under farmers practices during the year 2015-16, 2016-17 and 2017-18, respectively. The above findings are in agreement with Dubey *et al.* (2010). Average extension gap was 1.3 q/ha which emphasized the need to educate the farmers through various extension means like FLD whereas the technology gap was 3.0 q/ha. However, it was observed that the average technology gap was narrowing down during last three years. The technology gap observed may be attributed to difference in the soil fertility status, agronomic practices, local climate conditions and timeliness of availability of inputs. However, some of the studies (Bhatia *et al*., 2006) tried to quantify yield gap mostly of chickpea and pigeonpea in the aggregate level in India. Lower the value of technology index, more is the feasibility of the technology demonstrated (Sagar and Chandra, 2004). Therefore, reduction of technology index from 28.0 per cent observed during 2015-16 to 3.0 per cent in 2017-18 exhibited the feasibility of technology demonstrated. Thus, FLD obtained a significant positive result and also provided the researchers an opportunity to demonstrate the productivity potential and profitability of the integrated nutrient management under field conditions.

Conclusion:

It was noticed that knowledge level and adoption level of the farmers were enhanced after imparting extension activities and conducting FLDs by KVK scientists. KVK is working as a knowledge hub for latest agricultural technology in Bathinda district. The frontline demonstration conducted on chickpea at farmer's fields in Bathinda district of Punjab revealed that the farmers can get increased chickpea yield by following the recommended package of practices. It improved the productivity by 42.9 per cent. The productivity gain under FLD over farmer's practice created awareness and aggravated the other farmers to adopt agronomic practices integrated nutrient management and high yielding variety of chickpea in the district. This study suggests for conducting intensive trainings, FLDs and effective use of all means of extension education to educate the chickpea growers for higher production of chickpea and to get higher net return on sustainable basis.

Authors' affiliations :

Gurmeet Singh Dhillon, Krishi Vigyan Kendra, Bathinda (Punjab) India

REFERENCES

Anonymous (2017). *Area, production and productivity of pulses in India*, Vikaspedia.

Bhatia, V. S., Singh, P., Wani, S. P., Rao, A. V. R. Kesava and Srinivas, K. (2006). Yield gap analysis of soybean, groundnut, pigeonpea and chickpea in India using simulation modeling. *Global Theme on Agro-ecosystems*, Report no. **31**. International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Andhra Pradesh, India.

Dubey, S., Tripathy, S., Singh, P. and Sharma, R. K. (2010). Yield gap analysis of black gram production through frontline demonstration. *J. Prog. Agric.*, **1** (1): 42-44.

Gautam, U. S., Paliwal, D. K. and Naberia, S. (2007). Improvement in livelihood security for small and marginal farmers through front line demonstrations on oilseed and pulses crops in central India. *Indian Res. J. Extn. Edu.*, **7** (1):1-5.

Sagar, R. L. and Chandra, G. (2004). Front line demonstration on sesame in West Bengal. *Agric. Extn. Rev.*, **16**(2): 7-10.

Samui, S. K., Maitra, S., Roy, D. K., Mandal, A. K.and Saha, D. (2000). Evaluation of front line demonstration on groundnut. *J. Indian Soc. Costal Agri. Res.*, **18** (2) : 180-183.