

## Evaluation of Front Line Demonstration on chickpea in Dewas District

K S Bhargav<sup>1</sup>, Ankita Pandey<sup>2</sup>, R P Sharma<sup>3</sup>, Awdesh Singh<sup>4</sup> and Manish Kumar<sup>5</sup>

### ABSTRACT

Chickpea (*Cicer arietinum L.*) is the premier pulse, which fixes atmospheric nitrogen through symbiotic action. Low productivity of traditional varieties of gram is a cause of concern for farmers' at large. To overcome the problem of low yield, Krishi Vigyan Kendra, Dewas has conducted front line demonstrations in the different localities of Dewas district. Cultivation of high yielding varieties of gram viz. JG-412, JG-130, JG-11 and JG-16 had given yield increases of 25.9, 16.2, 20.7 and 25 per cent respectively over local check. The highest extension gap 302 kg/ha was recorded during the year 2012-13 (JG-16), The technology index was lowest for the variety JG-130 (14.30%), indicated that variety JG-130 has performed better in Malwa platue and may accelerate the adoption of short duration variety to increase the productivity of gram in this area.

**Key words:-** Front line demonstration, technology gap, extension gap, technology index, chickpea.

### INTRODUCTION

Chickpea (*Cicer arietinum L.*) is of the important and premier pulse crop cultivated and widely consumed in Inida. It is occupying 8.56 million hectares area and contributing 39 per cent (7.35 million tonnes) to the total production of pulse in the country (Meena *et al.*, 2012 and Singh *et al.*, 2013). The major chickpea producing states are Madhya Pradesh, Uttar Pradesh, Haryana, Gujarat, Rajasthan, Maharastra, Andhra Pradesh, Karnataka, Bihar, Chattishgarh, and West Bangal. In Madhya Pradesh its productivity is 1083 kg/ha and in Dewas distrcet is 1102 kg/ha. Chickpea is cultivated in the entire Dewas district and most of the area comes under semi arid condition. Its productivity is far below the potential yield due to lack of knowledge and adoption about the new technologies.

Hence Krishi Vigyan Kendra, RVSKVV, Dewas conducted front line demonstrations (FLDs) on the improved package of practices on chickpea cultivation

### METHODOLOGY

The present study was carried out by Krishi Vigyan Kndea, RVSKVV, Dewas during rabi season from 2008-09 to 2012-13 (5 years) in the farmer's fields of six villages of three blocks in Dewas district. In total 87 FLDs in 37 ha area in different locations were conducted. The

soil type of demonstrated field was vertisol with pH ranging 7.2 to 7.8 and average rainfall 1067 mm of which about 90 per cent is distributed during June to September. The component of demonstration under front line demonstrations comprised high yielding vanities viz. JG-412, JG-130, JG-11 and JG-16 and farmer's practices are given in table no.1.

In case of farmer's practices, existing practices being used by farmers were followed. Before conducting the demonstration, training to the farmers' of respective villages was imparted with respect to envisaged technology interventions, site selection, farmers' selection, layout of demonstration and farmers' participation *etc.* as suggested by Choudhary (1999). The farmers' were selected on the criteria that they were involved in chickpea cultivation since last 5 years. In the present study the data on output of chickpea crop were collected from FLD plots, besides the data on local practices commonly adopted by the farmers of this region were also collected.

The collected data were tabulated and analyzed by using statistical tools like frequency and percentage. To estimate the technology index, extension gap, technology gap and harvest index, the formulae were considered as suggested by Samui *et al.*, (2000), Kadian *et al.*, (2004), Sagar and Chandra, (2004).

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<sup>1</sup>SMS & <sup>2</sup> PA and <sup>3</sup> PC, Krishi Vigyan Kendra, RVSKVV, Dewas

**Table 1: Description of technological intervention under FLD on chick pea**

Particulars	Technological intervention (T)	Farmers Practices (T)	Gap
Variety	JG-412, JG-130, JG-11 & JG-16	Local & old	Full gap
Seed Rate	75-80 kg/ha	100-125 kg/ha	Partial Gap
Integrated Nutrient Management	N:P:K (20:60: 20 Kg/ha + rhizobium @ 5g/kg seed + PSB @ 5g/kg of seed + Ammonium Molebdate @ 1g/kg of seed	No use of fertilizer	Full Gap
Integrated Pest Management	Bird purchase @ 100-125 /ha + seed treatment with <i>Trichoderma viridae</i> @ 5g/kg seed + one spray of prop onophosh @ 1.5 lit/ha at the ETL	Two or three spray of Insecticide insufficient amount of water	Partial Gap
Irrigation	Ist irrigation at the time of branching and IInd irrigation during the pod formation	No irrigation	Full Gap
Weed Management	Two Hand Weeding	No weeding	Full Gap

## RESULT AND DISCUSSION

Result of front line demonstrations indicated that the cultivation practices comprised under FLD *viz.*, use of improved varieties, proper seed rate, seed inoculation by rhizobium and PSB culture, balance application of fertilizer, integrated pest management, irrigation and two hand weeding produced on an average of 25.9 per cent of JG-412, 16.2 per cent of JG-130, 20.7 per cent of JG-11 and 25 per cent of JG-16 more yield of chickpea as compared to farmers' practices. The result of FLD led to motivation to adopt the improved agricultural technologies applied in the FLD plots. Yield of chickpea however varied in different years which might be due to the other factors like soil moisture availability, climate conditions, disease and pest attack as well as the change in the location of trials. The high yielding varieties yielded higher as compared to local check.

The technology gap, the gap in the demonstration yield over potential yield were found 591 kg/ha for JG-142, 286 kg/ha for JG-130, 520kg/ha during for in 2010-11 and 478 kg/ha in 2011-12 for JG-11 and 488 kg/ha for JG-16. Hence location specific recommendation appears to be necessary to bridge the gap between the yields of different varieties. The highest extension gap of 302 kg/ha was recorded in variety JG-16, followed by 290 kg/ha by JG-142, 257 kg/ha by JG-11 and lowest 239 kg/ha for JG-130. This emphasized the need to educate the farmers through various means for adoption of improved varieties and recommended practices. The technology index shows the feasibility of the evolved technology at the farmer's field. The lower the value of technology more is the feasibility of the technology. The technology index for

JG-130 was found lowest (14.30%), indicating the performance of this variety in Malwa region was satisfactory.

**Table 2: Grain Yield, Harvest index, Technology gap, Extension Gap and Technology index of different chickpea variety**

Year	Crop	Variety	Grain Yield (q/ha)			% increase over FP	Straw yield (q/ha)			Harvest Index (%)	Technol ogy Gap (q/ha)	Extensi on Gap (q/ha)	Technol ogy Index (%)
			Poten tial	FLD	FP		FLD	FP	RP				
2008-09	Gram	JG-412	20	14.1	11.2	25.9	22.52	19.63	38.49	36.31	5.91	2.90	29.55
2009-10	Gram	JG-130	20	17.1	14.8	16.2	23.63	21.08	42.04	41.17	2.86	2.39	14.30
2010-11	Gram	JG-11	20	14.8	12.6	17.6	21.89	18.63	40.34	40.31	5.20	2.22	26.00
2011-12	Gram	JG-11	20	15.2	12.3	23.7	22.04	19.2	40.85	39.05	4.78	2.92	23.90
2012-13	Gram	JG-16	20	15.12	12.10	25.0	21.98	18.63	40.75	39.38	4.88	3.02	24.40
Average			20.00	15.05	12.33	22.12	21.97	18.82	40.65	39.58	4.95	2.72	24.77

The data presented in table no. 3 indicated that adoption of improved technology of chickpea not only gave higher yield, but also provided higher benefit cost ratio *i.e.* 1.89 to 2.33 as compared to 1.43 to 2.04 in the farmers' practices. This may be due to higher yield obtained under recommended practices compared to farmers' practices. Similarly result has earlier being reported on chickpea by Tomar *et. al.* (1999), Tomar (2010), Mokidue *et. al.* (2011), Kumbhare *et. al.* (2014) and Singh *et. al.* (2014).

It was also observed from the data of front line demonstration recorded higher gross return and net return as compared to local check during different years. On an average additional cost of ₹ 2,758 per hectare in FLDs, yielded additional net return ₹ 11,640 per hectare suggesting higher profitability and economic viability of the demonstration.

**Table 3: Gross Expenditure, Gross Return, Net Return and B:C ratio of chickpea production under FLDs.**

Year	Variety	Gross Expenditure (₹/ha)		Gross Return (₹/ha)		Net Returns (₹/ha)		B:C Ratio	
		FLD	FP	FLD	FP	FLD	FP	FLD	FP
2008-09	JG-412	22360	19560	42270	27975	19910	8415	1.89	1.43
2009-10	JG-130	22780	19890	53134	40563	30354	20672.5	2.33	2.04
2010-11	JG-11	23050	20360	47360	35224	24310	14864	2.05	1.73
2011-12	JG-11	23470	20980	53270	36900	29800	15920	2.27	1.76
2012-13	JG-16	24170	21250	52920	36300	28750	15050	2.19	1.71
Average		23166.00	20408.00	49790.80	35392.30	26624.80	14984.30	2.15	1.73

### CONCLUSION

The front line demonstration conducted on chickpea at farmer's field revealed that the farmers may get increased chickpea yield by following the recommended package of practices. The productivity gain under FLD over Farmers' practice created awareness and motivated the other farmers' to adopt scientific crop production and management. This study suggests to strengthen extension approach to educate the farmer's for higher production and to increase net return on sustainable basis.

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