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Impact of Cluster Frontline Demonstration on Black gram in Western Zone of Tamilnadu

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ABSTRACT

Black gram (*Vigna mungo* L.) is one of the most important pulse crop cultivated in Erode district of TamilNadu. However, the productivity of black gram in the district is low. Attempts were made to improve the productivity and to increase the area under black gram by adopting high yielding variety along with improved practices. A total of 60 Cluster Frontline Demonstrations (CFLDs) at farmers field were carried out on black gram to demonstrate the production potential and economic benefits of Improved Practices comprising of high yielding variety namely Vamban 6 (VBN 6) in Erode District during Rabi during 2012-13, 2013-14 and 2015-16. The farmers obtained 7.7q/ ha yield which was 7.08 per cent higher over the farmer practice. The average extension gap, technology gap and technology index were 0.49 q/ha, 1.04q/ha, and 12.26 per cent, respectively. The improved practices gave highest benefit cost ratio 2.2 and 43.34 per cent farmers satisfied with highest client satisfaction index score.

Key Words: FLD, Black gram, Yield , Improved practices.

INTRODUCTION

Black gram (*Vigna mungo* L.) is one of the important pulse crops of India. It is cultivated mostly on the marginal lands, under rainfed situations. The problem is compounded by the fact that majority of the farmers in the rainfed regions were unaware about new and high yielding varieties and improved package of practices for cultivation. The productivity of black gram per unit area could be increased by adopting improved practices in a systematic manner along with high yielding varieties (Ranawat *et al*, 2011; Rai *et al,* 2015). Frontline demonstration is an important tool to disseminate new technology at farmers field. The constraints faced by the farmers in obtaining higher productivity is documented and the frontline demonstrations are designed to overcome the problems in a scientific way in order to show the worth of the new evolved variety and improved package of practices for enhancing the black gram productivity.

MATERIALS AND METHODS

The present study was carried out in Erode District of Tamilnadu during 2012-13, 2013-14 and 2015-16 by KVK, Myrada. An extensive survey was conducted to collect information from selection of farmers to give them improved package of practice. Preferential ranking technique was utilized to identify the constraints faced by the farmers in black gram cultivation. The quantification of data was done by first ranking the constraints and then calculating the Rank Based Quotient (RBQ) as given by Sabarathanam (1988), which is as follows:

Where, $$RBQ = \frac{\sum fi\ (n + 1 - ith)}{N \times n} \times 100$$

fi = number of farmers reporting a particular problem under ith tank

N = Number of farmers

n = Number of problems identified

Based on the problems faced by the farmers, the frontline demonstrations were designed and conducted at farmers' field. Each demonstration was conducted in an area of 0.4 ha and adjacent to the farmers' fields in which the crop was cultivated with

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Table 1. Ranks given by farmers for different constraints.

Sr. No.	Constraint	RBQ	Overall rank
1.	Lack of high yielding varieties	84.67	I
2.	Low soil fertility	81.17	II
3.	Sucking pest incidence	74.83	III
4.	Labour shortage	72.50	IV
5.	Lack of technical knowledge	68.00	V
6.	Yellow mosaic virus	64.67	VI
7.	Improper use of manures and fertilizers	55.33	VII
8.	Weed infestation	52.67	VIII
9.	Pod borer infestation	40.00	IX
10.	Drought at critical stages	32.00	X

farmer's practice/variety. Scientific interventions under frontline demonstrations were taken as mentioned in Table 1. The selected farmers were trained about improved technology of crop before starting the frontline demonstrations. To study the impact of frontline demonstrations, data from FLD and farmers practices were analyzed. The extension gap, technology gap and technology index were calculated using the formula as suggested by Samui *et al* (2000).

$$\text{Extension gap } \left(\frac{q}{ha}\right) = \text{DY (q /ha)} - \text{LY (q/ ha)}$$

$$\text{Technology gap } \left(\frac{q}{ha}\right) = \text{PY (q /ha)} - \text{DY (q/ ha)}$$

$$\text{Technology Index (\%)} = \frac{\text{PY (q /ha)} - \text{DY (q/ ha)}}{\text{PY (q /ha)}} \times 100$$

DY = Demonstration Yield

LY = local Check Yield

PY = Potential Yield of variety

The farmers were personally interviewed and client satisfaction index was calculated as developed by Kumaran and Vijayaragavan (2005). The individual obtained scores were calculated by the formula as

RESULTS AND DISCUSSIONS

Constraints in black gram production

Before conducting the FLDs. Preferential ranking techniques were utilized to identify the constraints faced by the respondent farmers in black gram cultivation. The ranks given by the different farmers are presented in Table 2. The findings indicate lack of suitable high yielding varieties (84.67 %), low soil fertility (81.17%) and sucking pest incidence (74.83 %) were three major constraints. Similar findings were reported by Sreelakshmi *et al* (2012) and Arjunkumar *et al* (2016). Based on the constraints, the frontline demonstrations farmers were conducted with high yielding black gram variety (VBN 6) and other major critical inputs for cultivation.

Performance of FLD

The performance of newly introduced variety along with improved practices was found better than the local check under same conditions and reported (Table 2) that demonstration plot gave 7.47q/ha average yield with 7.08 per cent higher yield over existing variety. Similar findings reported by Rai *et al* (2015). Yield of frontline demonstration trials and potential yield of the crop was compared to estimate the yield gap further it was categorized into extension gap, technology gap and technology index. The extension gap and technology gap were 0.49 and 1.04 q/ha, respectively. The extension gap and technology gap observed that it may be attributed due to dissimilarities in soil fertility levels, pest and disease incidence, improper usage of manures and

Table 2. Yield of black gram as influenced by improved production technologies.

Year	Variety	FLD (Nos.)	Yield (q/ha)				Percent increase over farmer practice
			Improved practices				
			Maximum	Minimum	Average	Local check	
2012-13	VBN 6	20	8.76	7.14	7.28	6.96	4.60
2013-14	VBN 6	10	7.67	7.41	7.52	6.77	11.08
2015-16	VBN 6	30	8.4	6.8	7.6	7.2	5.56
Total		60	24.83	21.35	22.40	20.93	21.24
Average		20	8.28	7.12	7.47	6.98	7.08

Table 3. Yield, Extension gap, Technology gap and Technology index of the demonstration.

Variables	Yield (q/ha)	Extension gap (q/ha)	Technology gap (q/ha)	Technology index (%)
Farmer's practice	6.98			
Improved practices	7.47	0.49	1.04	12.26

Table 4. Cost of Cultivation, Gross Return, Net Return and Benefit Cost Ratio.

Year	Cost of cultivation (Rs./ha)		Gross Return (Rs./ha)		Net Return (Rs./ha)		Benefit : Cost ratio (Rs./ha)	
	IP	FP	IP	FP	IP	FP	IP	FP
2012-2013	14675	15200	30726	28536	16051	13336	2.09	1.88
2013-2014	11645	12755	22750	18900	11105	6145	1.78	1.48
2015-2016	20123	22500	44981	40260	24858	17760	2.2	1.79
Total	46443	50455	98457	87696	52014	37241	6.07	5.15
Average	15481	16818	32819	29232	17338	12413	2.02	1.72

fertilizers in this region. Hence, to narrow down the yield gaps location specific technologies needs to be adopted. Technology index shows the feasibility of the variety at the farmers' field and it was reported 12.26 percent. The findings of the present study were in line with the findings Rai *et al* (2015).

The economic feasibility of improved practices over farmer practices was calculated depending upon the prevailing prices of inputs and output cost and 2.02 benefit cost ratio was reported from FLDs plots. Hence, improved production technologies in black gram have the broader scope for increasing the productivity per unit area.

Farmers' Satisfaction:

The extent of satisfaction level of the respondent

farmers over extension services and performance of demonstrated variety was measured by Client Satisfaction Index (CSI) and the results revealed that majority of the farmers expressed high (43.34 %) to medium (38.33%) level of satisfaction for performance of technology and extension services where as very few (18.33%) farmers expressed the lower level of satisfactions. The similar type of findings reported by Meena et al (2014) on maize crops and Rai et al (2015) on vegetable pigeon pea crops.

CONCLUSION

It can be concluded that newly introduced variety of black gram along with improved package of practices performed well in the Erode district of Tamilnadu and adoption is also appreciable among the framers.

REFERENCES

Arjunkumar V, Jeengar Kishan Lal, Ram Jeeva and Naager Khem Chand (2016). Popularization of high yielding varieties of wheat (*Triticum aestivum* L.) in Jhalwar district of Rajasthan state through frontline demonstrations. *J Wheat Res* **8**(1): 39 – 44.

Kumar A, Kumar R, Yadav V P S and Kumar R(2010). Impact assessment of frontline demonstrations of bajra in Haryana state. *Indian Res J Ext Edu* **10** (1): 105-108.

Kumaran M and Vijayaragavan K (2005).Farmers satisfaction of agricultural extension services in an irrigation command area. *Indian J Ext Edu* **41** (3&4): 8 - 12.

Meena B L, Meena R P and Singh Bhim (2014). Popularization of improved maize (Zea mays L) production technology thorough frontline demonstrations in semi arid zone of Rajasthan. *J Applied Natural Sci* **6** (2): 763 – 769.

Rai A K, Khajuria S, Lata K, Jadhav J K, Rajkumar and Khadda B S (2016). Popularization of vegetable pigeon pea (*Cajanus cajan*) in central Gujarat through demonstration in farmers field. *Indian J Agril Sci* **85** (3): 349-353

Ranawat Y, Ram H, Sisodiya S.S and Punjabi N K (2011). Adoption of improved maize cultivation practices by trained and untrained farmers of KVK, Udaipur. *Rajasthan J Ext Edu* **19**: 144 -147.

Sabarathanam V E (1988). Manuals of field experience training for ARS Scientists. NAARM, Hyderabad

Samui S K, Mmaitra S, Roy D K, Mondal A K and Saha D (2000). Evaluation of frontline demonstration on groundnut (*Arachis hypogaea* L,) in sundarbans. *Indian Soc Coastal Agril Res* **18** (2): 180-183.

Sreelakshmi C H, Sameer CV Kumar and Shivani D (2012). Productivity enhancement of Pigeon pea (*Cajanus canjan* L.) through improved production technology. *Madras Agril J* **99** (4-6): 185-189

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