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Impact Analysis of Trainings and Front Line Demonstrations in Black Gram (*Vigna mungo*) Cultivation

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ABSTRACT

The impact assessment with reference to increase in knowledge levels of farmers regarding scientific package of practices, extent of adoption of selected technology and percent adoption of production technology was carried out in four adopted villages. The data about knowledge level of scientific package of practices of blackgram indicated that low, medium, and high level of knowledge after intervention of Krishi Vigyan Kendra was found to be 7, 51 and 42 per cent, respectively. Highest knowledge regarding selected scientific innovations was found for irrigation management (63 %), weed management (57 %), integrated nutrient management (54 %) integrated pest management (35 %) and pest, disease control (30 %), respectively. The technology index indicated there was feasibility of evolving technologies at the farmer's field.

Keywords: Adoption, Integrated nutrient management, Integrated pest management, Technology index.

INTRODUCTION

Pulses on account of their vital role in nutritional security and soil ameliorative properties have been integral part of sustainable agricultural since ages. Black gram (*Vigna mungo*) is a widely grown legume, belongs to the family fabaceae and assumes considerable importance from the point of food and nutritional security in the world. It is a short duration crop and thrives better in all seasons either as sole or as intercrop. India is the world's largest producer as well as consumer of black gram. It produces about 1.5–1.9 MT of black gram annually from about 3.5 m ha .of area, with an average productivity of 600 kg/ha. Black gram output accounts for about 10 per cent of India's total pulse production. It is therefore, necessary to assess the technological gap in production and also to know the problems and constraints in adopting modern black gram production technologies Islam *et al* (2011). Keeping this in view, the present investigation was undertaken to study the level of knowledge of farmers regarding black gram cultivation, extent of adoption of improved practices, to find out the yield gap in black gram production technology.

MATERIALS AND METHODS

The present study was conducted in Guntur district of Andhra Pradesh . One hundred farmers from 4 villages *viz.*, Karlapudi, Kuragallu, Kantheru and Morampudi of Guntur district were selected. The data were collected through personnel interview, tabulated and analyzed to find out the findings and draw the conclusion. The statistical tool like percentage was employed to analyze the data. The constraints as perceived by respondents were scored on the basis of magnitude of the problem as per Meena and Sisodiya (2004). The responses were recorded and converted in to mean per cent score and ranked accordingly as per Warde *et al* (1991).The extension gap, technology gap and the technology index were work out with the help of formulas given by Samui *et al* (2000) as mentioned below:

Extension gap = Demonstration yield- farmers' yield (control)

Technology gap = Potential yield- demonstration yield

$$\text{Technology index} = \frac{\text{Technology gap}}{\text{Potential Yield}} \times 100$$

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Table 1. Overall knowledge of scientific package of practices of blackgram.

Category	Before intervention of KVK	After intervention of KVK
Low level of knowledge	47	07
Medium level of knowledge	40	51
High level of knowledge	13	42

Table 2. Knowledge regarding different technologies for black gram cultivation.

Sr. No	Technology	Low	Medium	High
1	Integrated nutrient management	8	38	54
2	Pest and disease control	23	47	30
3	Integrated pest management	20	44	35
4	Irrigation management	17	20	63
5	Weed management	10	33	57

Table 3. Overall adoption of scientific package of practices of blackgram (percentage)

Category	Before intervention of KVK	After intervention of KVK
Low level of adoption	24	4
Medium level of adoption	58	20
High level of adoption	18	76

RESULTS AND DISCUSSION

The result of overall knowledge of integrated nutrient management (INM) indicated that the low, medium and high level of knowledge before intervention by the KVK was 47, 40, 13 per cent, respectively which increased up to 07, 51 and 42 per cent, after intervention of KVK through training programmes and front line demonstrations (FLDs) (Table 1). Javat *et al* (2011) and Das *et al* (2010) reported the similar results.

With respect to selected scientific innovations for blackgram production, sixty three per cent of farmers were possessing high level of knowledge regarding irrigation management followed by weed management (57.0 %), integrated nutrient management (54.0 %), IPM (35.0 %) and pest, disease control (30.0 %) (Table 2).

Majority of the farmers had medium level of knowledge (58.0%) before intervention of KVK and after intervention of KVK, 76 per cent of the farmers had high level of knowledge regarding scientific cultivation of black gram (Table 3). Integrated nutrient management scored highest adoption percentage (88.0 %) in black gram production technology followed by weed management (82.0 %), pest and disease control (73.0 %), IPM (70.0 %) and irrigation management (62.0 %), respectively (Table 4).

Yield gap analysis of blackgram cultivation:

The data (Table 5) indicated that the highest yield (15.6 q/ha) was found in FLD plots and lower yield (13.3 q/ha) under farmers' plots. The cost benefit ratio was higher in FLD plot (1 :2.52) than

Table 4. Adoption of technologies

Sr. No.	Name of technology	Adoption (%)
1	Integrated nutrient management	88
2	Pest and disease control	73
3	Integrated pest management	70
5	Irrigation management	62
6	Weed management	82

Table 5. Exploitable productivity, extension gap, technology gap and technology index of black gram as grown under FLDS and existing package of practices.

Year	Area (ha)	No of demon	Yield q/ha		Per cent increase in yield	Cost : Benefit Ratio		Extension Gap q/ha	Technology Gap q/ha	Technology index
			Demon	Control		Demon	Control			
2013	10	25	15.6	13.2	13.49	3.0	2.4	2.06	6.9	22
2014	10	26	12.7	10.5	17.11	2.47	1.8	2.26	7.3	36.5
2015	10	25	18.7	16.2	13.36	2.1	1.5	2.25	1.3	16.5
			15.6	13.3	14.85	2.52	1.9	2.12	5.16	25

control (1: 1.9). The results clearly showed that due to knowledge and adoption of scientific practices, the yield of black gram could be increased by 13.49 per cent, 17.71 per cent and 13.36 per cent over the yield obtained under farmers' practices. The above finding were in line with the findings of Dubey *et al* (2010). Yield of the front line demonstration trials and potential yield of the crop was compared to estimate the yield gaps which were further categorized into technology and extension gaps (Hiremath and Nagaraju, 2009). Average extension gap was 2.12 q/ha, which emphasized the need to educate the farmers through various extension means like FLD. The technology gap ranged between 1.3 q/ha to 7.3 q/ha. The average technology gap from three year of FLDs programme was 25 q/ ha. The average technology gap observed may be attributed to dissimilarity in soil fertility status, agricultural practices and local climate conditions. The technology index indicated the feasibility of evolved technology at the farmer field. Lower the value of technology index, more is the feasibility of technology demonstrated, (Sagar and Chandra, 2004; Arunachalam, 2011 and Kumar *et al*, 2014). As such reduction of technology index from 22.0 per cent (2013) to 16.5 per cent (2015) exhibited the feasibility of technology demonstrated. Similar yield enhancement in different crops in front line demonstration has amply been documented by Haque (2000), Mishra *et al* (2009) and Kumar *et al* (2010). The FLD obtained a significant positive results and also provided researcher an opportunity to demonstrate the productivity potential and profitability of INM under real farm situation which they have advocating for a long time. Similar finding were reported by Kirar *et al* (2005) and Chauhan and Pandya (2012) in gram.

CONCLUSION

Knowledge level and adoption level of farmers in four adopted villages were amplified after imparting training and conducting FLD by KVK scientists in Guntur district of Andhra Pradesh. The productivity achieved under FLD over farmers practices created awareness and motivated the other farmers to adopt critical innovations for blackgram cultivation viz., integrated nutrient management, integrated pest management and other technology of black gram in the district.

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