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ROLE OF CLUSTER FRONTLINE DEMONSTRATION IN ENHANCEMENT OF BLACKGRAM (*VIGNA MUNGO*) PRODUCTION

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Abstract

The cluster front line demonstrations were conducted on farmer's field at Damoh district of Madhya Pradesh during *kharif* season of 2015-16 and 2016-17 at Jortala and Bamori village under real farm situations prevailing farmers practices were treated as control for the comparison with recommended practice. The result of cluster front line demonstration showed a greater impact on farmers due to significant increase in crop yield, higher than FP. The results revealed that improved seed of Azad-3+ Seed treatment (Tebuconazole 2% DS @ 2g/kg seed + *Rhizobium* 5g/kg+ PSB 5g/kg seed) + plant protection; recorded average yield of 13.3 q/ha as compared to 7.5q/ha in farmers practice (control plot). The economics and benefit cost ratio of both FP and RP plots were worked out. An average of Rs 45315/ha net returns was recorded under RP while it was Rs. 19861/ha under FP. Benefit cost ratio was 2.84 under RP, while it was 2.00 under FP. By incorporating proven technologies of black gram, yield potential and net income from black gram cultivation can be enhanced to a great extent with increase in the income level of the farming community of the district.

Key words : Cluster Front Line Demonstration, black gram, yield, BC ratio.

Introduction

Blackgram (*Vigna mungo*) is one of the most important pulse crop and occupied a major position among pulse in Madhya Pradesh State. India is the world's largest producer as well as consumer of blackgram. It produces about 1.5 – 1.9 mt of blackgram annually from about 3.5 mha of area, with an average productivity of 600 kg/ha. Blackgram is a widely grown legume, assumes considerable importance from the point of food and nutritional security in the world. It is a short duration (65-75 days) crop and thrives better in all season either as scale or as intercrop. It is necessary to assess the technological gap in production and also to know the problem and constraints in adopting modern blackgram production technologies as suggested by Islam *et al.* (2011). Keeping this in view, the present investigation was undertaken to study the level of knowledge of farmers regarding blackgram cultivation, extent of adoption of improved practices, to find out the yield gap in blackgram Production Technology.

Materials and Methods

Cluster field demonstrations were conducted under close supervision of Krishi Vigyan Kendra, Damoh. Total 50 front line demonstrations under real farming situations were conducted during *kharif* season of 2015-16 and 2016-17 at two different villages namely; Jortala and Bomori, respectively under krishi vigyan kendra operational area. The area under each demonstration was 0.4 ha. The treatment comprised of recommended practice (Improved variety Azad-3, integrated nutrient management-@ 20:60:20:20 kg NPKS/ha + *Rhizobium* + PSB @ 5 g/kg seed, integrated pest management- deep ploughing + seed treatment with *Trichoderma viridae* @ 5 g/kg seed + imidacloprid @ 125 ml/ha etc. *vs.* farmers practice. Deep ploughing was done during the April month. Crop was sown between 25 June to 10 July with a spacing of 30 cm and seed rate was 20 kg/ha. An entire dose of N and P through diammonium phosphate, K through muriate of potash and sulphur through $ZnSO_4$ was applied as basal before sowing. The seeds were treated with *Trichoderma viridae* @5 g/kg seeds then inoculated by *Rhizobium* and phospho-solubilizing bacteria biofertilizers

Table 1 : Details of need based input material given on CFLDs of blackgram.

Cluster	No. of demonstrations	Variety	Technology demonstration	Need based inputs
Jortala Bamori	25 25	Azad-3	Improved variety with improved package and practices	Soil testing, improved seed, 20:40:20kg/ha NPK+25Kg ZnSO4 + Seed treatment +Insecticide (Propenofos 40EC 1.5 lit/ha)

Table 2 : Details of yield and economics (pooled of two years 2015-16 and 2016-17) of cluster frontline demonstration in blackgram.

Treatment	Yield (q/ha)	Gross cost (Rs/ha)	Gross monetary return (GMR Rs/ha)	Net Monetary Return (NMR Rs/ha)	B:C Ratio
Farmers Practices (FP)	7.5	19715	39576	19861	2.00
Recommended Practices (RP)	13.3	24510	69825	45315	2.84

each 5g/kg of seeds. Application of Imazethapyr @100g a.i./ha at 25-30 DAS followed by slight hand weeding at 45 DAS for effective weed management was done; used flat fan nozzle. One spray of imidacloprid @125 ml/ha with 500 liters of water was given at the time of incidence of white fly. Fields were irrigated at seed development stage and the crop was harvested between15th October to 20th October during both years of demonstration.

Farmer's practice constituted there were no deep ploughing was done during summer, old seed of variety T-9 was used, crop was sown on the same time of demonstration, broadcasting method of sowing, higher seed rate (30 kg/ha) sown, imbalance dose of fertilizers applied (15:40:0 kg NPK/ha), no seed treatment, no biofertilizers, no plant protection measures and one hand weeding at 30-35 DAS were adopted. Crop was harvested on the same time of harvesting of demonstration plots. Harvesting and threshing operations done manually; 5m × 3m plot harvested in 3 locations in each demonstration and average grain weight taken at 14% moisture. Similar procedure adopted on FP plots under each demonstration then grain weight converted into quintal per hectare (q/ha).

Before conduct the demonstration training to farmers of respective villages was imparted with respect to envisaged technological interventions. All other steps like site selection, farmers selection, layout of demonstration, farmers participation etc. were followed as suggested by Choudhary (1999). Visits of farmers and extension functionaries were organized at demonstration plots to disseminate the technology at large scale. Yield data was collected from farmers practice and demonstration plots. The grass returns, cost of cultivation, net returns and benefit cost ratio (B:C ratio) were calculated by using prevailing prices of inputs and outputs.

Results and Discussion

Cluster frontline demonstrations on blackgram were conducted by using variety Azad-3 in an area of 20 ha at 50 farmer's field in jortala and Bamori villages of Damoh district. The need based inputs provided to farmers per hectare were varitety azed-3 seed 20 kg, Tebuconazole 2% DS @ 2g/kg seed, *Rhizobium* 5g/kg seed, PSB 5g/kg seed, 20:40:20 kg NPK + 25 kg ZnSo4 per hacter and Insecticide propenofos 40 Ec 1.5 lit/ha results concluded that average (two year) highest yield 13.3q/ha found in demonstration plot as compared to 7.5 q/ha in farmers plot. The same trend found in case of CFLDs gross and net monetary returns was Rs 69825/- and Rs 45315/- ha for control Rs39576/- and Rs 19861/- ha, respectively. Benefit cost ratio for demonstration and control was 2.84 and 2.00, respectively. This improvement in yield might be due to recommended package and practices which is used in CFLDs.

Constraints observed during CFLDs

The farmers yields were affected by various environmental and socio-economic factors like non-availability of quality seed, unawareness of latest technology, causes severe yield loss, unawareness in seed treatment, use of recommended dosage of fertilizer etc. High losses in yield observed due to heavy infestation of white fly and pod borer due to improper method and time of application of pesticide.

Conclusion

Cluster frontline demonstration on pulses (black gram) conducted in two village in Damoh district and result concluded that average yield 13.3q/ha found in demonstration plot as compared to 7.5q/ha in control plot. There was 77.33 percent increase in yield observed in demonstration plot over farmers practice. It was observed that potential yield can be achieved by imparting scientific

knowledge to the farmers, providing the quality need based inputs and proper application of inputs. Horizontal spread of improved technologies may be achieved by the successful implementation of frontline demonstration and various extensions activities like training programme, field day, exposure visit organized in CFLDs programmes in the farmer's fields. For wide dissemination of technologies recommended by SAUs and other research institute, more number of FLDs should be conducted.

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