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Cluster Demonstration- An Approach to Augment Productivity in Blackgram

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A B S T R A C T

Krishi Vigyan Kendra, Cuddalore District intervened with demonstrations on pulses with cluster approach to increase the production of pulses in Cuddalore district under NFSM-pulse production scheme. The KVK has conducted 50 front line demonstrations in farmer's fields during the year 2015-16 in black gram in an area of 20ha. Front line demonstration is an appropriate means for demonstration as well as transfer of improved agricultural innovations to the farming community. Two cluster villages *viz.*, Melpuliankudi and Agrahram of Kattumanarkoil block were selected for the purpose and the blackgram variety VBN 5 was selected for demonstration. From the demonstrations, an average yield of 5.20 q ha^{-1} was recorded as against 4.21 q ha^{-1} from farmers practice and the maximum yield of 5.91 q ha^{-1} was noticed and a quantity of 1120 kg of produce was sold as seed to other farmers in the region. Obviously, this can be attributed to improved technology as well as improved variety. The yield levels were considerably low under local practices because of considerable variations in the extent of adoption of recommended package of practices depending upon the amount of risk involved in terms of cost, convenience, skill and knowledge about the concerned practice. The productivity was better over local practice under demonstrations. Hence, cluster approach in disseminating pulses production technologies had an efficient impact on productivity of the crop and this may be considered to be applicable for other crops too.

Introduction

Blackgram is one of the major crops cultivated in Cuddalore district in an area of 45000 ha every year. To enhance the blackgram production and productivity in Cuddalore district, Front line demonstrations were carried out as cluster approach by the scientists of Krishi Vigyan Kendra, KVK, Vridhachalam, Cuddalore District. Existing Farmers' practices show less contribution towards pulses production and develops a divide between traditional and scientific production technologies. Constant efforts are needed to bridge this technological divide through various methods of transfer of technology. Over a period of time, a number of improved pulses varieties and production technologies have been developed, but full potential of these varieties as well as technologies could

not be attained due to lack of awareness of the varieties, low rate of adoption and low yields of obsoletes varieties, pulses production is mostly from the crop raised under rainfed conditions, cultivation of pulses in marginal lands, limited area of pulses under irrigated conditions, pests and diseases and processing loss These factors limiting the productivity cannot be overlooked. To raise production an effective way of transfer of technology is needed. The efforts should be taken with planning, execution and follow up action of the pulses production technology through front line demonstrations, the present investigation was therefore undertaken to ascertain the importance of demonstrations in pulses production technology for increased yield.

Materials and Methods

The technologies to be demonstrated for blackgram was identified based on Participatory Rural Appraisal (PRA) technique. A group of farmers were identified based on their participation and feedback received during the preliminary survey and interactive meeting. Frontline demonstrations were conducted by Krishi Vigyan Kendra, Vridhachalam, Cuddalore District in Rabi season in the farmer's fields of cluster villages *viz.*, Melpuliankudi and Agrahram from Kattumanarkoil block during 2015-16. All 50 demonstrations in 20 ha area were conducted by the active participation of farmers with the objective to demonstrate the improved technologies of pulses in selected villages along with farmers practice as control plot. Pre-sowing trainings were organized involving the selected farmers in their village for the crop. Critical inputs were distributed to the farmers. Supply of necessary literature and regular visits for monitoring pest and diseases were made and advisory services were provided to the demo farmers. Finally, field day was conducted involving demonstration holding farmers, other farmers in the village, officials from Department of Agriculture and extension functionaries to demonstrate the success of the technology. Crop yield was recorded from the demonstration and control plots.

The yield data were collected from both the plots of demonstration and farmers practice by random crop cutting method and analyzed. The technology gap and technological index (Samui *et al.*, 2000) were calculated by using following formula.

Technology gap

= Potential yield – Demonstration yield

Technology Index

$$= \frac{\text{Potential Yield-Demonstration Yield X 100}}{\text{Potential Yield}}$$

Percent increase yield

$$= \frac{\text{Demonstration yield - farmers yield X 100}}{\text{Farmers yield}}$$

Percent increase yield

$$= \frac{\text{Demonstration yield - farmers yield X 100}}{\text{Farmers yield}}$$

Results and Discussion

The data collected with reference to farmers practice was tabulated against the technology gap (Table 1)

The demonstration plot was intervened with the black gram variety VBN 5, seed treatment with Rhizobium @ 200g per ha of seed and Pseudomonas fluorescens at 10g kg-1 of seed, spraying of pulse wonder 5 kg per acre at the time of flowering and Setting up of yellow sticky traps @ 5 per acre, setting of

pheromone traps@ 5 per acre. The farmers were also imparted with trainings on production technologies of black gram. Periodical visits were made by the subject matter specialists of Krishi Vigyan Kendra and field advisory services on crop management and crop protection were given.

The demo and check plots were observed and monitored periodically and the data were recorded. Field day was organized by inviting participation of the demo farmers, fellow farmers and extension officials form the district. The farmers were encouraged through the visualizing the results of the demo plot.

Table.1 Differences between technological interventions and farmers practices under FLD on blackgram

Particulars	Technological intervention in FLD	Farmers practices	Gap
Variety	VBN 5	Local/own seed	Full gap
Seed rate	20 kg/ha	25 kg/ha	High seed rate
Seed treatment	Rhizobium @ 200g per ha of seed Pseudomonas fluorescens at 10g kg-1 of seed	No seed treatment	Full gap
Fertilizer dose	55 Kg of urea, 312 kg of Super phosphate, 42 kg of potash + TNAU micronutrient mixture (MN) at 12.5 kg per ha	No use of fertilizer	Full gap
Growth Regulators	spraying of pulse wonder 5 kg per acre at the time of flowering	No use of growth regulators	Full gap
Weed management	Pendimithalin @ 2.5 L/ha and one hand weeding @ 20 DAS	Pendimithalin @ 2.5 L/ha	Partial gap
Plant protection	Setting up of yellow sticky traps @ 5 per acre, setting of pheromone traps@ 5 per acre	Improper measures	Full gap

Table.2 Technical Parameters of blackgram under Frontline Demonstration and farmers practice (check) during *Rabi* season (Pooled data)

Demo variety	No. of Demos	Area (ha)	Yield (q/ha)		% increase over check	Potential yield (q/ha)	Technology gap (q/ha)	Technology index (%)
			Demo	Check				
VBN 5	50	20	5.20	4.21	23.51	9.00	3.8	42.22

Table.3 Economic Parameters of blackgram under Frontline Demonstration and farmers practice (check) during *Rabi* season (Pooled data)

Variety demonstrated	Farmer's Existing plot (Check)				Demonstration plot				Farmers feedback
	Gross Cost (Rs/ha)	Gross return (Rs/ha)	Net Return (Rs/ha)	B:C Ratio	Gross Cost (Rs/ha)	Gross return (Rs/ha)	Net Return (Rs/ha)	B:C ratio	
VBN 5 for 50 demonstration	26150	38678	12528	1.48	29145	48944	19798	1.67	No of pods per plant is more than the farmer practice

Table.4 Socio-economic impact parameters of blackgram under Frontline Demonstration and farmers practice (check) during *Rabi* season

Sl. No.	Crop and variety Demonstrated	Total Produce Obtained (kg)	Produce sold (kg/household)	Selling Rate (Rs/kg)	Produce used for own sowing (kg)	Produce distributed to other farmers (kg)	Purpose for which income gained was utilized	Employment Generated (Mandays/ house hold)
1	Blackgram VBN 5	15464	910	96.00	3750	4500	Livelihood, Education purpose	22

Average yield recorded in blackgram under rainfed situation was ranged 4.50 to 5.91 q/ha with an average of 5.20 q/ha in FLD plots which was more than check plot wherein, the average of 4.21 q per ha (Table 2). The results indicated that the frontline demonstrations gave good impact over the farming community of Cuddalore district as they were motivated by the new agricultural technologies applied in the FLD plots. The economics of the Front Line Demonstration showed that the highest net return (Rs. 19798) with the B:C ratio of 1.67 when compared with farmers practice (Rs. 12528) with the B:C ratio of 1.48 (Table 3).

It is concluded that the FLD programme is an effective tool for increasing the production and productivity of pulses and changing the knowledge, attitude and skill of farmers. Use of improved method of blackgram cultivation can reduce the technology gap to a considerable extent thus leading to increase productivity of blackgram in the district. Through FLD an average yield of 5.20 q ha^{-1} was recorded as against 4.21 q ha^{-1} from farmers practice and the maximum yield of 5.91 q ha^{-1} was noticed. These demonstrations also built the relationship and confidence between farmers and scientists.

The beneficiary farmers of FLDs also play an important role as source of information and quality seeds for wider dissemination and horizontal spread of the high yielding varieties of pulses to other farmers. Technology index which shows the feasibility of the technology demonstrated has depicted good performance of the intervention.

References

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