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IMPACT OF FRONT LINE DEMONSTRATION ON YIELD AND ECONOMICS OF GRAM IN BURHANPUR DISTRICT OF MADHYA PRADESH

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ABSTRACT

Gram is an important pulse crop widely consumed in India. It also enriches the soil through biological nitrogen fixation. Madhya Pradesh is the largest gram producing state with production of 3.30 million tones from 3.09 million ha and country's 44.20 of total gram production is produced in Madhya Pradesh anole. However, the productivity of gram is low as compared to many other states. Burhanpur district has considerable area under gram (2.7 thousand ha) and produces 2.6 thousand tones. However, the average yield is further low in the district. Therefore, the present study was conducted to assess the impact of Front Line Demonstration conducted by Krishi Vigyan Kendra, Burhanpur on yield and economics of gram production. The data were collected from 70 farmers during 2006-07 to 2010-11 and analysed using simple tabular analysis. The results of study showed that the yield under demonstrations was 32.40 per cent higher as compared to farmers' practices the differences were ranged from 24.53 to 38.80 per cent. The net returns and B:C Ratio on demonstration plot were 40.44 per cent 12.12 per cent higher respective as compared to farmers' practices. The technological interventions are expected to increase the production to 3.89 thousand tones and addition net District Domestic Product by Rs. 21.85 million per annum. Study suggests for strengthening linkages with line department and converging the demonstration with Government schemes for large scale adoption on farmers' fields.

INTRODUCTION

Pulses are the important source of proteins and essential component of diet. The area, production and productivity of the pulses in the country is 23.28 million hectare, 14.66 million tones and 6.30 q/ha, respectively (GOI, 2011). Madhya Pradesh is the highest pulses producing state of country and nearly 30 per cent of country's total pulse are produced here. Gram is an important pulse crop widely consumed in India. It also enriches the soil through biological nitrogen fixation. Madhya Pradesh is the largest gram producing state with production of 3.30 million tones from 3.09 million ha and country's 44.20 of total gram production is produced in Madhya Pradesh anole (GOI, 2011). However, the productivity of gram is low as compared to many other states. Burhanpur district has considerable area under gram (2.7 thousand ha) and produces 2.6 thousand tones. However, the average yield is further low in the district. Therefore, the present study was conducted to assess the impact of Front Line Demonstration on yield and economics of gram production.

RESEARCH METHODOLOGY

The study is based on both primary and secondary data. Primary data were collected from the Front Line Demonstration on Gram conducted at farmers fields by Krishi Vigyan Kendra, Burhanpur, M.P. during the period from 2006-07 to 2010-11 in six villages *viz.* Biroda, Dhulkot, Sandas Kala, Basad & Ichhapur of Khaknar and Burhanpur block of district Burhanpur. Total 70 farmers were associated under this programme. The component demonstration of front line technology in Gram were improved variety JG-130, balanced dose of fertilizer (20 kg Nitrogen+40 kg P2O5/ha) and use of *Trichoderma* @ 5 gm/kg of seed as seed treatment were taken in an area of 0.40 ha of each farmers. The total area covered in 5 years was 25 hectares for demonstration of recommended improved practices of Gram. In the demonstration, one control plot was also kept where farmers practices was carried out. All the production and protection technologies other than interventions were applied in similar manner in demonstrated as well as in farmer's practices. The yield data was collected from

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the selected FLD farmers by random crop cutting method. The secondary data were collected from various published sources to estimate the ex-ante impact of technology in district. The collected data were analyzed using simple tabular analysis like percentage etc.

Table 1: Productivity of gram crop under demonstration and farmers practices

Year	Under FLD programme		Average yield (q/ha)		Per cent increase in the yield over farmers practices
	Total farmers	Total area (ha)	Demonstrated plot (FLD)	Farmers practice	
2006-07	10	05	9.95	7.99	24.53
2007-08	10	05	10.1	8.0	26.25
2008-09	12	05	16.75	12.50	34.00
2009-10	13	05	17.35	12.50	38.80
2010-11	25	10	17.73	13.30	33.30
Total/Average	70	30	14.38	10.86	31.40

RESULTS AND DISCUSSION

The results of productivity of improved practices demonstrated vis-à-vis farmers practice are given in Table. The perusal of table reveals that the overall productivity of demonstration plots was 31.40 per cent higher (14.38q/ha) as compared to the local farmers practices (10.86q/ha). The productivity was ranged from 9.95q/ha during 2006-07 to 17.73q/ha during 2010-11. It indicates that due to knowledge and adoption of appropriate varieties i.e. JG-130, use of balanced dose of fertilizer (20 kg N and 40 kg P2 O5/ha) and seed treatment with Trichoderma @ 5 g/kg. of seed, the yield of gram increased from 24.53 per cent to 38.80 percent over the yield obtained under farmers practices (i.e. use of the non-descriptive local variety, no use of the balanced dose of fertilizer). The similar results were also observed by Singh (2002). As we know that HYV proved the vital role in production and productivity of crops, till variety is one of the important intervention for disease management also.

Wilt is one of the disease causing, drastic yield loss in gram. In this disease *Fusarium oxyporum fungus* causes the damage of mid ribs of plant roots and finally check the water and nutrient supply to the plants. JG-130 variety of gram released by JNKVV, Jabalpur specially for enhancing production potential and wilt resistant .This variety is resistant against wilt up to the some extent. In all the pulse crops, wilt is one of the major causes for lower plant population resulting poor production and productivity. This disease occurs several infestation due to moisture accumulation in root zone. Bio-fungicides i.e. Trichoderma recommended as a soil treatment @ 5 gm/kg of seed to control/management of wilt disease. Trichoderma is one of fungus which kill the another fungus *Fusarium oxysporum* which is the major cause of the wilt under biological management . In case we could not use this bio-fungicides (*Trichoderma sps.*) as a seed treatment, we can able to apply this bio-fungicide by using mixture of well decomposed F.Y.M., compost in standing crop as broad casting. But the dose of *Trichoderma* (bio-fungicides) is to be 5.00 kg per ha with 80-100 kg F.Y.M./compost. It is generalized that farmers are treating the pulse crop as secondary. They are selecting the neglected/marginal fields for pulse cultivation. Nutrient requirements for each pulse crop are established under NARS on the basis of the soil testing results. In gram crop, 20 kg N and 40 kg P_2O_5/ha has been recommended as basad dressing (entire dose of the fertilizer should be applied at the time of sowing/last

ploughing). As pulses are protein rich, these require more nitrogen for the protein synthesis. Naturally, biological nitrogen fixation occurs in the pulse crop. Root nodules of gram having symbiotic bacteria *Rhizobium leguminesoum. L*ike this, six other species of *Rhizobium* have been found in the root nodules of other group of the pulses. These bacteria are able to convert the atmospheric nitrogen into the soil through fixation processes. About 78.8 percent gaseous nitrogen found in the atmosphere. About 20 kg N/ha is to be required as a stater dose for the growth and development of the crop during early stages of crop establishment. Phosphorus is one of major nutrient requires for the root establishment, nodulation and root development of pulse crop for the better nodulation and root development, 40kg P_2O_5/ha has been advised as a basal application.

ECONOMIC ANALYSIS

The economic analysis of demonstration and farmers' practices are presented in table 2. Table reveals that the overall net return on frontline demonstration and farmers practices were Rs. 28099/- and Rs. 20008, respectively, i.e. more than 40 per cent higher on demonstration as compared to farmers practice. However, the cost of cultivation was also increased on the demonstration and as a result B:C Ratio on demonstration plots was only 12 per cent higher than farmer's plots.

Table 2: Economic analysis of gram on demonstration plot and farmers practice

Year	Demonstration plot (Rs./ha)				Farmers plot (Rs./ha)			
	Gross Cost	Gross Returns	Net Return	B:C Ratio	Cost	Returns	Net Return	B:C Ratio
2006-07	10000	25000	15000	2.50	9000	20000	11000	2.22
2007-08	10500	26000	15500	2.48	9000	20200	11200	2.24
2008-09	11500	45225	33725	3.93	9500	33750	24250	3.55
2009-10	12000	48580	36580	4.05	9800	35000	25200	3.57
2010-11	13500	53190	39690	3.94	11000	39390	28390	3.58
Average	11500	39599	28099	3.44	9660	29668	20008	3.07

The FLD produces significant positive results and provided the researcher an opportunity to demonstrate the productivity potential and profitability of the latest technology (Intervention) under real farming situation, which they have been advocating for long time.

CONCLUSION

The FLD programme was effective in changing attitude skill and knowledge of recent technology for high yielding varieties, balanced dose of the fertilizer and biological disease management of gram including their adoption. This also improved the relationship between farmers and scientist and built confidence between them. The selected farmers of the demonstration acted as a source of information and pure seeds of wider dissemination of HYV of gram for the other farmers. The productivity gain under FLD over conventional practices of gram cultivation created greater awareness and motivated the other farmers to adopt appropriate recent production and protection technologies of gram in the district. The selection of critical input and participatory approach in planning and conducting the demonstration definitely help in the transfer of technology to the farmers. Study suggests for strengthening linkages with line department and converging the demonstration with Government schemes for large scale adoption on farmer's fields.

REFERENCES

Masood Ali, Sanjeev, G. and Basu, P.S.(2007-08). Higher levels of warming in north India will affect productivity. *The Hindu Survey of Indian Agriculture,* 2009: 44-48 .

Singh, P.K. (2002). Impact of participation in Planning on adoption of new technology through FLD. *MANAGE Extension Research Review*. July-Dec. 45-48.

GOI (2011), *Agriculture Statistics-2011*, Department of Agriculture and Cooperation, Ministry of Agriculture, Government of India, New Delhi.

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