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IMPACT OF FRONTLINE DEMONSTRATION ON THE YIELD AND ECONOMICS OF PIGEONPEA IN KALABURGI DISTRICT OF KARNATAKA STATE

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ABSTRACT
The 133 Frontline demonstrations were organized on 54 farmer's field to demonstrate the impact of integrated crop management technology on Pigeonpea productivity over four years during *Kharif* 2010-10 to 2013-14. Each frontline demonstration was laid out on 0.4ha area, adjacent 0.4ha was considered as control for comparison (farmer's practice). The integrated crop management technology comprised the improved variety TS3R, proper tillage, proper seed rate, pre emergent weedicide application, seed treatment with bio fertilizers and Trichoderma, proper nutrient and pest management. The productivity gain under FLD over existing practices of pigeonpea cultivation created greater awareness and motivated the other farmers to adopt suitable production technology of Ts-3R pigeon pea in the district. The results revealed that due to front line demonstration on Pigeon pea an average yield was recorded 11.9 q/ ha under demonstrated plots as compared farmers practice 10.1q/ha. The highest yield in the FLD plot was 13.62 q/ha in 2013-14 with net returns of Rs.34, 883 compared to check trial net return of Rs. 26,194.

KEY WORDS: Frontline, Pigeon pea, technology, yield.

INTRODUCTION

Pigeon pea, *Cajanus cajan* (L) Millsp is the second most important pulse crop in India after chickpea. It has multiple uses and occupies an important place in the prevailing farming systems in the country and vegetarian diet. It also plays an important role in sustainable agriculture by enriching the soil through biological nitrogen fixation along with deep root system of this crop which makes it more suitable for its cultivation under rainfed conditions. District Kalaburgi of Karnataka occupies 3.75 lakh hectares of land with average productivity of 560 kg ha-1 of pigeon pea. In order to make the nation self sufficient in pulses productivity levels of pulses need to be increased substantially from 560kg ha-1 to 1,200 kg ha-1 by 2020 (Ali and Kumar, 2005). Faulty sowing practices, improper crop geometry, avoid use of biofertilizers, *Trichoderma*, other intercultural operations and climatic variabilities are predominant reasons for limiting the potential yield of pigeonpea. The Frontline demonstrations (133) were organized on farmer's field to demonstrate the impact of integrated crop management technology on Pigeonpea productivity over four years during *Kharif* 2010-10 to 2013-14. Each frontline demonstration was laid out on 0.4 ha area, adjacent 0.4 ha was considered as control for comparison (farmer's practice). The integrated crop management technology comprised the improved variety TS3R, proper tillage, proper seed rate, pre emergent weedicide application, seed treatment with bio fertilizers and Trichoderma, proper nutrient and pest management. (Table 1) The FLD was conducted to study the technology gap between the potential yield and demonstrated yield, extension gap between demonstrated yield and yield under existing practice and technology index. The yield data were collected from both the demonstration and farmers practice by random crop cutting method. Qualitative data were converted into quantitative form and expressed in terms of per cent increase in yield calculated using following formula

TABLE 1: Improved practices and Farmers practices of Pigeonpea under FLD

Sl.No	Techonology	Improved practices	Farmers practice	GAP (%)
1	Variety	JG-11	A-1	100
2	Land preparation	Ploughing and Harrowing	Ploughing and Harrowing	Nill
3	Preemergent weedicide application	Apply Pendimethalin@ 2.5lit. per Ha		Full gap
4	Seed rate	7.5kg (Ha)	12Kg (Ha)	High seed rate
5	Sowing method	Line sowing	Line sowing	No gap
6	Seed treatment	With Biofertilizers and Trichoderma	No	Full gap
7	Fertilizer dose	5:10	10:20	Partial gap
8	Plant protection	IPM	Indiscriminate application	Full gap
9	Grading the produce	Grading the produce	Not followed	Full gap

RESULTS & DISCUSSION

The gap between the existing and recommended technologies of Pigeonpea in district kalaburgi is presented in table 1. Full gap was observed in case of use of resistant variety, sowing method, seed treatment, plant protection and weed management and partial gap was observed in fertilizer dose, which definitely was the reason of not achieving potential yield. Farmers were not aware about recommended technologies. Farmers in general used local or old-age varieties instead of the recommended high yielding resistant varieties. Unavailability of seed in time and lack of awareness were the main reasons. Farmers followed thick sowing against the recommended line sowing and because of this, they applied higher seed rate than the recommended.

Yield

During four years of frontline demonstrations results obtained are presented in table 2. The results revealed that due to front line demonstration on Pigeon pea an average yield was recorded 11.9 q/ ha under demonstrated plots as compared farmers practice 10.1q/ha. The highest yield in the FLD plot was 13.62q/ha in 2013-14 and in farmers practice 11.53 q/ha in the same year and lowest yield was recorded in 2010-11. This results clearly indicated that the higher average grain yield in demonstration plots over the years compare to local check due to knowledge and adoption of full package of practices *i.e.* appropriate varieties such as TS3R., timely sowing, seed treatment with Bio fertilizers) Rhizobium and PSB) *Trichoderma* @ 4g/ kg of seed, use of balanced dose of fertilizer (10kg N and 20kg P2O5 per ha), method and time of sowing, timely weed management , need based plant protection and grading of the grains. The average yield of pigeonpea increased 16.35%. The yield of pigeonpea could be increased over the yield obtained under farmers practices (old variety, no use of the balanced dose of fertilizer, untimely sowing and no control measure adopted for pest management) of pigeonpea cultivation. The above findings are in similarity with the findings of Singh (2002 and Tomar, 2010).

Technology gap

The technology gap, the differences between potential yield and yield of demonstration plots were 13.26, 13.74, 13.84, and 11.38 q/ha during 2010-11, 2011-12, 2012-13 and 2013-14 respectively. On an average technology gap under four year FLD programme was 13.06q/ha. The technology gap observed may be attributed to dissimilarity in the soil fertility status, agricultural practices and local climatic situation.

Extension gap

Extension gap of 1.62,1.43,1.86 and 2.06 q/ha were observed during 2010-11,2011-12,2012-13 and 2013-14 respectively. On an average extension gap under four year FLD programme was 1.75q/ha. which emphasized the need to educate the farmers through various extension means *i.e.* front line demonstration for adoption of improved production and protection technologies, to revert the trend of wide extension gap. More and more use of latest production technologies with high yielding varieties will subsequently change this alarming trend of galloping extension gap.

Technology Index

The technology index shows the feasibility of the demonstrated technology at the farmer's field. The technology index varied from 45.52 to 55.36% (Table-2). On an average technology index was observed 52.22 per cent during the four years of FLD programme, which shows the efficacy of good performance of technical interventions. This will accelerate the adoption of demonstrated technical intervention to increase the yield performance of pigeonpea.

Economic return

The inputs and outputs prices of commodities prevailed during the study of demonstration were taken for calculating net return and benefit: cost ratio (Table 2). The cultivation of pigeon pea under improved technologies gave higher net return of Rs. 37112, 27914, 2844, and 46066 per ha respectively as compared to farmers practices. Similar findings were reported by Singh *et al*. (2014). The benefit cost ratio of chick pea cultivation under improved cultivation practices were 1.05, 1.03, 1.04 and 1.04 where as 1.03 under farmer's practices in all the years. This may be due to higher yield obtained under improved technologies compared to local check (farmers practice). This finding is in corroboration with the findings of Mokidue *et al.* (2011).

CONCLUSION

The FLD produces a significant positive result 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. This could be circumvent some of the constraints in the existing transfer of technology system in the district, Kalaburgi of Karnataka. The productivity gain under FLD over existing practices of pigeonpae cultivation created greater awareness and motivated the other farmers to adopt suitable production technology of pigeonpea in the district.

REFERENCES

Anon (2012) Area and production of Agriculture & horticulture crops crop. District Statistics book, Gulbarga district at Glance. PP: 52-103

Anon (2013) District statistics Note, Kalburgi at Glance PP: 30-33.

Mokidue, I., Mohanty, A.K. and Sanjay, K. (2011) Corelating growth, yield and adoption of urd bean technologies. *Indian J. Ex. Edu.* **11**(2): 20-24.

Raj, A. D., Yadav, V. & Rathod, J.H. (2013) Impact of front line demonstration (FLD) on the yield of pulses. *International J. Sci. and Res.* **9**(3):1-4.

Samui, S.K., Mitra, S., Roy, D.K., Mandal, A.K. and Saha, D. (2000) Evaluation of front line demonstration on groundnut. *Journal of the Indian Society Costal Agricultural Research* **18**(2): 180-183.

Sharma, A.K., Kumar, V., Jha, S.K. and Sachan, R.C. (2011) Frontline demonstrations on Indian mustard: An impact assessment. *Indian J. Ext. Edu.***11** (3): 25-31.

Singh, A.K., Manibhushan, Bhatt, B.P., Singh, K.M. and Upadhyaya, A. (2013) An Analysis of Oilseeds and Pulses Scenario in Eastern India during 2050-51. *Journal of Agril. Sci.***5** (1): 241- 249.

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

Singh, D., Patel, A.K., Baghel, S.K., Singh, M.S., Singh, A. and Singh, A.K. (2014) Impact of Front Line Demonstration on the Yield and Economics of Chickpea (*Cicer arietinum* L.) in Sidhi District of Madhya Pradesh. *Journal of Agri Search* **1**(1): 22-25.

TABLE 2. Demonstration of Integrated Crop Management in Redgram TS-3R variety

Year	No. of Demo.	Area (ha)	Yield (qtl/ha)		% Increase	Net Return (Rs/ha)		BCR		Potential Yield (qtl./ha)	Technological gap (qtl/ha)	Extension gap (qtl/ha)	Technology index (%)
			Demo	Check		Demo	Check	Demo	Check				
2010-11	35	14	11.74	10.12	16	37112	30156	01:05.9	0	25	13.26	1.62	53.04
2011-12	50	20	11.26	9.83	14.64	27914	22837	01:02.8	0	25	13.74	1.43	54.96
2012-13	24	10	11.16	9.3	16.66	28440	21400	01:02.8	0	25	13.84	1.86	55.36
2013-14	24	10	13.62	11.53	18.12	46066	30385	01:03.2	0	25	11.38	2.09	45.52
Average			11.95	10.195	16.355	34883		26194.5	0	25	13.06	1.75	52.22
Total	133	54											