

PERFORMANCE OF HYV PIGEON PEA (*CAJANUS CAJAN* L.) RAJEEV LOCHAN IN KORBA DISTRICT OF CHHATTISGARH

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ABSTRACT

Pigeon pea (*Cajanus cajan* (L.) Millspaugh) is one of the main pulse crop and sources of protein for a majority of the Indian diet and cultivated under rainfed condition in Chhattisgarh. The present study was carried out in different village of Katghora, Kartala and Pondi Uproda block of Korba district under FLD programme of Krishi Vigyan Kendra Korba during Kharif 2011 to assess the performance of improved cultivars, (Rajeev Lochan) recorded the significant higher production as well as higher productivity. Present study observed that average yield of pigeon pea under front line demonstration were 12.81, 12.50 and 12.12 qha⁻¹ as compare to 7.68, 7.30 and 7.80 qha⁻¹ recorded in farmer's practice, average yield increased to 40.05, 31.52 and 37.60 percent in Katghora, Kartala and Pondi Uproda block respectively. It was observed that the benefit cost ratio (B:C ratio) of recommended practice (FLD's) were 3.65, 3.44 and 3.49 as compared to 2.47, 2.61 and 2.42 in farmer's practice during study year 2011 in Katghora, Kartala and Pondi Uproda block respectively. The average extension gap, average technology gap and technology index were found to 4.55, 5.52 and 30.68 qha⁻¹ respectively. Therefore, the results clearly indicates that the use of improved varieties and package and practices with scientific intervention under front line demonstration programme contributed to increase the productivity and profitability of pulses in Chhattisgarh.

KEYWORDS: Pigeon Pea, FLDs, Rajeev Lochan Varieties, Compared to Local Varieties

INTRODUCTION

Pigeon pea (*Cajanus cajan* (L.) Millspaugh) is one of the main pulse crop and sources of protein for a majority of the Indian diet. Pigeon pea has significant role in rainfed condition for its ability to tolerate drought (Troedson et al. 1990), poor soil conditions and pests. It is often intercropped with other crops, such as cereals and vegetables, contributing to soil fertility through nitrogen fixation. The plant's deep taproot system helps prevent soil erosion, making it a valuable component of sustainable farming practices. India accounts for about 80% of the total world pigeon pea production Chhattisgarh recorded 6.48 lakh ha acreage with production of 4.09 lakh ton and 631 kg ha⁻¹ productivity in pulse production in year 2013-14 where as Korba District contributed 3650 ha acreage with production of 1650 MT and 452 kg ha⁻¹. Pigeon pea is an important pulse crop mainly sown in Kharif and Rabi season recorded 55340 ha acreage with production of 35050 MT and 633 kg ha⁻¹ productivity in year 2013-14 where as Korba District contributed 1330 ha acreage with production of 850 MT and 639 kg ha⁻¹ Anonymous (2013). The growth and development of any crop depends upon the various genetic and environment factors. The different varieties sowing different performance under the same condition and fertilizer dose having different yield both in terms of biomass and grain production (Khawas and Bhattacharjee, 1996). By the introduction of numerous short duration varieties in pigeon pea it had been feasible to introduce pigeon pea in multiple cropping systems for increasing pulse production. Few study also noted that the date of sowing and varieties are

the most important factors affecting the yield of pigeon pea (Ram and Dixit, 2001). To fulfil the national demand of pulse the government is promoting to enhance the production through appropriate technological interventions. Considering this Krishi Vigyan Kendra, Korba of Zone-VII with main objective to boost the production and productivity of pulses through FLDs with latest and recommended technologies.

MATERIALS AND METHODS

The experiment was conducted in farmer's field in different village of Katghora, Kartala and Pondi Uproda block of Korba district under FLD programme of Krishi Vigyan Kendra Korba during Kharif year 2011 and aimed was to increase crop productivity by the selection of suitable variety high yielding variety Rajeev Lochan. Two treatment were selected T1 farmer practice ((Local varieties) and T2 Recommended practice (HYV, Rajeev Lochan) to analyze the impact of varieties on productivity of pigeon pea crop under rainfed condition. Under FLDs, 12 Farmers were selected from each block in Korba district (C.G.)

Agro-climatic zone : CG plain

Farming situation: Upland (*Bharri*)

Farming condition: Rainfed

Soil type: Slightly acidic (light soil)

All the technological interventions were followed as per the prescribed package and practice for improved variety of pigeon pea crop namely

Farmer's practice: Variety- local , Sowing method- broadcasting, seed rate – 25 kg ha⁻¹, Seed treatment – not applied, Sowing time- June July, Nutrient management – Unknown, Weed management- Manual, Crop protection- Not applied

Recommended practice: Variety- Rajeev Lochan , Sowing method- line sowing, seed rate – 20 kg/ha, Seed treatment – *Trichoderma viride* @ 5g/kg seed, Sowing time- June July, Nutrient management – 20N:40P:20K @kg ha⁻¹, Weed management- Manual, Crop protection- Imidacloprid 17.8% SL @0.5ml/l water.

The crop yield, gap analysis, input cost and return on investment were recorded and same is discussed in result and discussion. Following parameters were calculated to assess the technological gap (Yadav *et al.*, 2004)

Extension gap = Demonstrated yield-Farmer's practices yield.

Technology gap = Potential yield-Demonstration yield.

Additional return = Demonstration return-Farmers practice return.

Technology index = $\frac{\text{Potential yield} - \text{Demonstrated yield}}{\text{Potential yield}} \times 100$

RESULT AND DISCUSSION

The observation recorded in present study revealed that the package and practices had significant important with technological intervention for productivity and profitability of pulses. Package and practices with technological intervention for recommended practice had been presented in Table 1 and Economic analysis of the front line demonstration on pigeon pea in Table 2

Table 1: Grain Yield Frontline Demonstration on Pigeon Pea

S. No.	Block	No. of demonstration	Average Yield (ha ⁻¹)		% increase in Recommended practice (RP)	Extension gap (q/ha)	Technology gap (q/ha)	Technology Index
			Recommended practice (RP)	Farmer practice (FP)				
01	Katghora	12	12.81	7.68	40.05	5.13	5.19	28.83
02	Kartala	12	12.12	8.30	31.52	3.82	5.88	32.67
03	Podi-Uproda	12	12.50	7.80	37.60	4.70	5.50	30.56

Table 2: Economic Analysis of the Front Line Demonstration on Pigeon Pea

S. No.	Block	Total Return (Rs ha ⁻¹)		Input cost (Rs ha ⁻¹)		Net Return (Rs ha ⁻¹)		B:C Ratio	
		RP	FP	RP	FP	RP	FP	RP	FP
01	Katghora	57645	34560	15800	14000	41845	20560	3.65	2.47
02	Kartala	54540	37350	15850	14300	38690	23050	3.44	2.61
03	Podi-Uproda	56250	35100	16100	14500	40150	20600	3.49	2.42

Grain Yield

The grain yield of demonstrated field's and farmer's practice is presented in table 1. Data revealed that average grain yield of demonstrated field's was higher from farmer's practice in all blocks of Korba district. The results revealed that average yield of pigeon pea under frontline demonstrations were 12.81, 12.12 and 12.50 qha⁻¹ as compare to 7.68, 7.68 and 7.30 q ha⁻¹ recorded in farmer's practice, average yield increased 40.05, 31.52 and 37.60 per cent. The average yield of frontline demonstrations (FLD's) field's was highest in Katghora block (12.81 q ha⁻¹) followed by Pondi Uproda (12.50 q ha⁻¹) and Kartala block (12.12 q ha⁻¹). The similar results were reported by other researchers (Singh et al., 2007, Singh *et al.*, 2011). The frontline demonstrations (FLD's) field had significant higher yield may be due to adoption of recommended package and practices whereas yield levels under farmer's practices were always lower due to non compliance of recommended practice. There is a vast gap between the farmer's yield and improved variety yield as per recommended practice through frontline demonstrations on farmer's field reported by Vittal *et al.* (2005). The programme of large scale frontline demonstration could be popularized for other pulses crops also in order to increase farmer's income and attain self sufficiency in pulses production.

Economics Analysis

Economic analysis of frontline demonstration on pigeon pea revealed that the total return from recommended practice (FLD's) were 57645 Rs ha⁻¹ as compared to 34560 Rs ha⁻¹ in farmer's practice of Katghora block. The net returns ranged from 41845 to 38690 Rs ha⁻¹ in recommended practice in comparison to 20560-23050 Rs ha⁻¹ in farmer's practice. Recommended practice proved beneficial in respect of yield and economics of pigeon pea at Katghora blocks of Korba District in Chhattisgarh Plains.

CONCLUSION

The present study revealed that Rajeev Lochan variety of pigeon pea gave higher yield and net return in recommended practice (FLD's) than farmers practice in all blocks of Korba district. The higher grain yield was attributed to higher potential with improved variety, timely sowing, nutrient management, weed management and insect, pest and disease management in accordance of package and practice. Economic analysis of different parameter's revealed that net returns and additional gain were recorded highest with recommended practice (FLD's). The study was concluded that Rajeev Lochan in recommended practice provide beneficial in respect of yield and economic of pigeon pea.

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