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Assessing the Performance of CFLD on Greengram in West Godavari District, India

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

The study aimed at assessing the performance of cluster frontline demonstrations (CFLDs) on Greengram in terms of yield, extension gap, technological gap and economic gains during Kharif, 2022 with variety WGG-42 in 10 ha area and *Rabi*, 2022- 2023 with IPM 2-14 in 30 ha. The data revealed that demo plot varieties recorded higher yield i.e., 8.32 q/ha and 11.73 q/ha, which was 32.20 and 18.70% more compared to farmers practice 6.29 q/ha and 9.88 q/ha during *kharif* and

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rabi, respectively. Besides, higher net returns (Rs. 19,102, Rs. 41,906 per ha) and B:C ratio (1.62, 1.98) were also registered with demonstration plot compared to farmers practice (Rs.7,735, Rs. 29,680 per ha and 1.26,1.71) during *Kharif* and *Rabi*, respectively.

Keywords: Greengram; productivity; extension gap; technology gap; technology index.

1. INTRODUCTION

"Green gram is one of the important pulse crop grown in India after chickpea and pigeonpea. Green gram is an excellent source of high-quality protein and is consumed as whole grains, sprouted form as well as dhal in a variety of ways in homes. In India, it occupies an area of 5.5 million ha with a production of 3.1 MT and productivity of 570 kg/ha. Whereas in Andhra Pradesh, it grows in an area of 97 thousand ha with a production of 83 thousand T and productivity of 861 kg/ha" [1].

"Pulses are important climate-resilient crops as they promote sustainable agriculture, decrease greenhouse gases, fix atmospheric nitrogen, improve soil fertility and use less water compared to other crops" [2]. "The growth rate of pulse production in the country has increased but at a slower rate compared to other food grains like rice, wheat and nutri-cereals. Addressing this concern of significance, the Ministry of Agriculture and Farmers Welfare, Govt. of India had initiated a nation-wide cluster frontline demonstration (CFLD) programme on pulses under National Food Security Mission-Pulses (NFSM-Pulses) since 2015-16 The basic strategies of NFSM-Pulses programmes were implementation of interventions in a mission mode through active engagement of all the stakeholders at various levels including KVKs. These interventions include the promotion and extension of improved technologies i.e., seed, Integrated Nutrient Management (micro-nutrient, soil amendments), Integrated Pest Management and Resource Conservation Technologies (RCTs) along with capacity building of farmers" [3-6].

In West Godavari district, greengram is one of the important pulse crop grown in the uplands, but the full potential of the crop was not realized by farmers due to the low adoption of new technologies. So, there is a need to improve the production potential of greengram.

Farmers awareness of improved technology through different innovative extension approaches including field days etc. as well as quality seed availability of improved varieties are the key factors in increasing productivity of pulses. The Krishi Vigyan Kendra (KVK), Undi has conducted 100 cluster frontline demonstrations on greengram during seasons *Kharif* and *Rabi*, 2022-2023 in participatory mode to harness production potentialities of the newly released varieties along with full package of practices. Keeping this in view, the present investigation aimed to look at the yield of greengram throughout seasons and harvests, the yield advantages gained due to CFLD.

2. MATERIALS AND METHODS

Krishi Vigyan Kendra (KVK), Undi has successfully conducted 100 Cluster Frontline Demonstrations (CFLD) on greengram with variety WGG-42 in 10 ha area during Kharif season and IPM 2-14 in 30 ha during Rabi, 2022-23 in farmers fields of Buttayagudem, Gurrapugudem and Pedapadu villages of West Godavari district, Andhra Pradesh. A total of 100 farmers have been selected combined in Kharif and Rabi seasons based on their innovativeness, progress and activeness in the adoption of the latest technologies with the help of department officials and direct observation during field visits and interactive meetings. The WGG 42 and IPM 2-14 (high yielding, shiny seeded, resistant to Yellow Mosaic Virus) varieties with integrated crop management practices like seed treatment, application of bio-fertilizers, pre-emergence application of pendimethalin, post-emergence application of Imazethapyr, erection of yellow sticky traps and blue sticky traps, the recommended dose of fertilizer application and spraying of micro nutrients were displayed in demonstration plots, while control plot/local check was maintained by the farmers according to their own traditional cultivation practices with old varieties. was treated as farmer's practice. Trainings to farmers, Field days and group meetings were also organized to provide the opportunities for other farmers to witness the benefits of demonstrated technologies. The KVK Scientists used to visit to the cluster frontline demonstrations fields and farmer's field (control) on regular basis for close supervision and data

collection during the entire process of demonstration programme. At the time of harvest, yield data were collected from both the demonstrated plots as well as from the farmers' practice. The cost of cultivation and profit details of both systems were collected from the farmers for working out the benefit cost ratio. The economic parameters were calculated based on the prevailing market prices of inputs and minimum support prices of outputs.

Extension Gap = Demonstrated yield-Farmers' practice yield

Technology Gap= Potential yield- Demonstration yield

Technology index

$$=\frac{Potential\ yield-Demonstration\ yield}{Potential\ yield}\times 100$$

3. RESULTS AND DISCUSSION

Yield: The data indicated that higher greengram yield i.e., 8.32 q/ha and 11.73 q/ha was obtained with CFLD demo plot which was 32.20 and 18.70% more compared to farmers practice i.e., 6.29 q/ha and 9.88 q/ha during *kharif* and *rabi*, respectively (Table 1). The higher yield in the demo plot might be due to improved YMV resistant variety with integrated crop management practices. The present findings were in collaboration with earlier results [7,8,9,10]. The beneficiary farmers of CFLDs also played an important role as a source of information and quality seeds for wider dissemination of the high yielding varieties of pulses for other nearby farmers.

Net returns and B:C ratio: The CFLD demo plot registered higher net returns of Rs. 19,102, Rs. 41,906 per ha and B:C ratio of 1.62, 1.98 compared to farmers practice plot i.e., Rs. 7,735, Rs. 29,680 per ha and 1.26,1.71 during *Kharif* and *Rabi*, respectively. The similar results were also reported by earlier scientists [11,12]. The increase in yield and price of the produce due to the shiny nature of the seed owing to higher net returns and B:C ratio in CFLD.

Technology Gap: Throughout the demonstration period, an average technology gap of 4.97 q/ha (Table 2) was determined. According to the statistics, there is still potential for improvement in yield through the application of improved technological interventions that will reduce the technological gap and technology index. The differences in soil fertility status and weather patterns may be the cause for technology gap [13,8].

Extension Gap: In both the seasons Kharif and Rabi, 2022–2023 an extension gap of 2.03 and 1.85 q/ha was noted (Table 2). The extension gap was 1.94 q/ha on average throughout both seasons, which is a large disparity. This highlighted the necessity of educating farmers via a variety of channels to encourage the adoption of better agricultural production methods and stop the current trend of a large extension gap. This galloping extension gap will subsequently change with the use of latest production technologies with high yielding variety. These results were supported by earlier findings [7,9].

Technology index: Technology index is important tool for assessing the adoption and impact of different technologies. A lower technology index value indicates better technological intervention performance.

The technology index in the current study ranged from 44.53 to 21.80 percent (Table 2). The study indicates that compared to the Kharif season, the technologies displayed in the demo plot performed better during the Rabi season. Previous investigations also yielded similar results [14,8,9,15].

Table 1. Yield and Economics of Greengram as influenced by Cluster Frontline Demonstrations during 2022-23

S. No.	Particulars	Kharif, 2022		Rabi, 2022-23	
		Demo plot	Farmers practice	Demo plot	Farmers practice
1	Average yield (q/ha)	8.32	6.29	11.73	9.88
2	Increased yield (%)	32.2 %	-	18.7%	
5	Net returns (Rs./ha)	19,102	7,735	41,906	29,680
6	B: C ratio	1.62	1.26	1.98	1.71

Table 2. Effect of technological interventions on gap analysis in Greengram during 2022-23

Season	Yield (q/ha)			Technology gap (%)	Extension gap (%)	Technology Index (%)
	Potential	CFLD	Farmers practice			
Kharif	15	8.32	6.29	6.68	2.03	44.53
Rabi	15	11.73	9.88	3.27	1.85	21.80
Average	15	10.03	8.08	4.97	1.94	33.16

4. CONCLUSION

The study revealed that cluster frontline demonstrations are an efficient tool for upscaling productivity and profitability in greengram by changing the knowledge, attitude and skill of farmers. In addition to that Economic analysis on different parameters also revealed that net returns and additional gains were recorded higher in CFLD demo plots might be due to KVK has playing significant role in effective transfer of improved pulse cultivation practices to farmers through their mandated activities including skill-oriented training and other extension programmes with proper technical support.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc) and text-to-image generators have been used during writing or editing of manuscripts.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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