International Journal of Chemical Studies

P-ISSN: 2349–8528
E-ISSN: 2321–4902
IJCS 2018; 6(5): 2294-2296

Received: 11-07-2018
Accepted: 15-08-2018

Dr. C Padma Veni
Principal Scientist (Agril. Extension) & Programme Coordinator, Krishi Vigyan Kendra, Rudrur, Nizamabad, PJTSAU, Telangana, India

Dr. Bandaru Venkata Rajkumar
Subject Matter Specialist (Horticulture), Krishi Vigyan Kendra, Rudrur, Nizamabad, PJTSAU, Telangana, India

Dr. D Vijaya Lakshmi
Subject Matter Specialist (Crop Production), Krishi Vigyan Kendra, Rudrur, Nizamabad, PJTSAU, Telangana, India

Dr. M Swetha
Subject Matter Specialist (Agril. Extension), Krishi Vigyan Kendra, Rudrur, Nizamabad, PJTSAU, Telangana, India

P Vijay Kumar
Subject Matter Specialist (Plant Protection), Krishi Vigyan Kendra, Rudrur, Nizamabad, PJTSAU, Telangana, India

Dr. M Bhavya Manjari
Research Associate (Home Science), KVK, Rudrur Krishi Vigyan Kendra, Rudrur, Nizamabad, PJTSAU, Telangana, India

Correspondence
Dr. C Padma Veni
Principal Scientist (Agril. Extension) & Programme Coordinator, Krishi Vigyan Kendra, Rudrur, Nizamabad, PJTSAU, Telangana, India

Impact of cluster frontline demonstrations on yield enhancement of green gram and bengalgram

Dr. C Padma Veni, Dr. Bandaru Venkata Rajkumar, Dr. D Vijaya Lakshmi, Dr. M Swetha, P Vijay Kumar and Dr. M Bhavya Manjari

Abstract
Front line demonstration is an appropriate means for demonstration of improved technology and innovations in agriculture for large scale popularization among the farming community. National Food Security Mission, a centrally sponsored scheme on Pulses, enabled KVK, Rudrur to conduct Cluster Front Line Demonstrations on Green gram and Bengal gram crops during 2012 to 2017 in 310 demonstration plots in 124 ha, not only to demonstrate improved technology for the yield enhancement with quality but to expand the area under crops (Pulse production) as Nizamabad district is dominated by Paddy crop.

The findings in respect of Green gram (kharif seasons) revealed, during five years, the overall yield trend from 145 demonstration plots in 58 ha varied from 6.10 to 13.62 q/ha with an average of 8.82 q/ha. Yield increase in demo plots over check (Farmer practices) also varied in different years from 10.45 per cent (2014-15) to 21.14 per cent (2016-17) with an average of 16.67 per cent. In Bengal gram (rabi seasons), the overall yield trend of 165 demonstrations in 66 ha varied from 8.13 to 21.18 q/ha with an average of 15.05 q/ha and yield increase varied from 7.10 per cent (2012-13) to 47.28 percent (2014-15) with an average of 21.37 per cent in demo plots over check (Farmer practice). The yields were considerably low in local practices with old variety. Adoption of improved technology including new variety, timely supply of critical inputs with proper guidance by the scientist, frequent monitoring visits to diagnose the problems and take appropriate corrective measures, field days etc., might be the contributing factors for high yield with good quality in all demonstration plots.

Keywords: cluster frontline, demonstrations, enhancement, green gram, bengalgram

Introduction
The Government of India established a "Technology Mission on Pulses" during 1991- 92 with an objective to enhance the pulse production and productivity. The concept of Front line demonstrations was put forth under this mission by scientists of Krishi Vigyan Kendras, State Agricultural Universities, Indian Council of Agricultural Research Institutes and NGOs.

Over the last few years, the area and production of pulses in Telangana State increased tremendously due to inception of Cluster Front Line Demonstration concept at farmers' field. Front Line demonstration is a long term educational activity conducted in a systematic manner at farmers' fields to show worth of a new technology on "Seeing is Believing" principle. Traditional or farmers' practices are no longer sustainable towards pulse production as it shows huge gap in yields in comparison to scientific production technologies. Constant efforts are needed to bridge this gap through demonstration of improved production technologies.

Over a period of time, a number of improved pulse varieties and production technologies have been developed, but full potential of these varieties and technologies could not be exploited due to lack of awareness on varieties, low rate of adoption by the farmers leading to low yields. Pulses are the major source of protein compared to cereals, oilseeds and other crops. Pulse production is mostly from the crop raised under rain-fed conditions. Cultivation of pulses in marginal lands, limited area of pulses under irrigated conditions, limited high yielding varieties, pests and diseases and processing loss up to 6-8 per cent are some of the problems for the stagnation of pulse production over decades. Thus, factors limiting the productivity cannot be overlooked. Research and extension programmes need to be diverted to produce value additive pulses.

Materials and Methods

The technologies to be demonstrated in Green gram and Bengal gram were identified in consultation with Principal Scientist (Pulses) and thoroughly reviewing the literature. A group of interested farmers based on their active participation and feedback during interactive meetings were selected on cluster mode approach.

310 demonstrations in 124 ha (2012-13 to 2016-17) were conducted with active participation of farmers to demonstrate the improved technologies of Green gram and Bengalgram in different villages so as to establish production potentials and expand the area under the crops in the district.

Every year 20 hectares were taken for the demonstration of technologies in Green gram and Bengal gram along with farmers practice as check plot. Pre-sowing trainings were organized involving the selected farmers on the crops. Critical inputs along with technologies to be demonstrated at every stage of the crop were delivered with appropriate training. Field days were conducted involving demonstration holding farmers, neighboring farmers, Scientists from University and Agricultural Technology Application Research Institute, Officials from Department of Agriculture and local extension functionaries to demonstrate the superiority of the technology of each crop. Crop yields were recorded from the demonstration and check plots at the time of harvest to identify the yield gaps between demo and check plots.

Table 1: Technologies demonstrated and farmers practices under CFLD on Green gram

Particulars	Technological intervention in CFLD	Farmers practices	Gap
Variety	LGG-460, WGG-37, WGG–42 and MGG-347	Local/own seed	Full gap
Seed rate	15-20 kg/ha	20-25 kg/ha	High seed rate
Seed treatment	Carbendazim @ 2g, Imidacloprid @ 5 ml/kg seed & Rhizobium @ 500 g/ha seed	No seed treatment	Full gap
Fertilizer dose	25 kg Urea & 300 kg SSP	No use of fertilizer	Full gap
Weed management	Pendimithalin @ 2.5 L/ha and one hand weeding @ 30-45 DAS,	Pendimithalin @ 2.5 L/ha	Partial gap
Plant protection	Need based timely spraying	Improper measures & bios spraying	Full gap

Table 2: Technologies demonstrated and farmers practices under CFLD on Bengal gram

Particulars	Technological intervention in CFLD	Farmers practices	Gap
Variety	JG-11 & NBeG-3	Local/own seed	Full gap
Seed rate	62.5 kg/ha	75 kg/ha	High seed rate
Seed treatment	Trichoderma viridae @ 5g/kg seed	No seed treatment	Full gap
Fertilizer dose/ha	25 kg Urea & 300 kg SSP	No use of fertilizer	Full gap
Weed management	Pendimithalin @ 2.5 L/ha and one hand weeding @ 30-45 DAS	Pendimithalin @ 2.5 L/ha	Partial gap
Plant protection	Need based timely spraying	Improper measures & bios spraying	Full gap

The yield data was collected from both the demonstration and check plots by random crop cutting method and analyzed by using simple statistical tools. The technology gap and technological index (Samui *et. al*., 2000) were calculated by using formula as given below.

1. Technology gap = Potential yield – Demonstration yield

2. $$\text{Technology Index} = \frac{\text{Potential Yield-Demonstration Yield}}{\text{Potential Yield}} \text{ X } 100$$

3. $$\text{Percent increase yield} = \frac{\text{Demonstration yield - farmers yield}}{\text{Farmers yield}} \text{ X } 100$$

Results and Discussion

Yield recorded in Green gram under rain fed situation ranged from 6.10 to 13.62 q/ha with an average of 8.82 q/ha in CFLD plots which was more than check plot wherein, the yield varied from 5.34 to 12.32 q per ha with an average of 7.61 q per ha. The results indicated that the frontline demonstrations shown good impact on the farming community of Nizamabad district as they got motivated by the new agricultural technologies applied in the CFLD plots. The variations in overall yield of Green gram from 2012-13 to 2016-17 was due to fluctuations in ground water table and weather conditions in Nizamabad district. The increment in yield over check ranged from 10.45 per cent (in 2014-15) to 21.14 percent (in 2016-17) with an average of 16.67 per cent (Table 3).

Table 3: Performance of green gram under cluster frontline demonstration and farmers practice (check) during *Kharif* season from2012-13 to 2016-17 (Pooled data)

Year	Demo Variety	No. of Demos	Area (ha)	Yield (q/ha)		% increase over check	B:C ratio		Potential yield (q/ha)	Technology gap (q/ha)	Technology index (%)
				Demo	Check		Demo	Check			
2012-13	LGG-460	30	12	6.95	5.82	19.42	2.19:1	1.99:1	13.75	6.80	49.45
2013-14	WGG-37	30	12	6.10	5.34	14.23	2.17:1	1.88:1	13.75	7.65	55.64
2014-15	WGG-37	30	12	13.62	12.32	10.45	2.14 :1	1.88:1	13.75	0.13	0.95
2015-16	WGG - 42	5	2	6.85	5.80	18.10	2.39 :1	2.03 :1	12.5	5.65	45.20
2016-17	MGG-347	21	8.4	10.60	8.75	21.14	2.24:1	1.75:1	12.5	1.90	15.20
Average		-	-	8.82	7.61	16.67	-	-	-	-	-
Total		145	58	-	-	-	-	-	-	-	-

Yield recorded in Bengal gram under rain-fed situation during *rabi* seasons varied from 8.13 to 21.18 q/ha with an average of 15.05 q/ha in CFLD plots which was more than check plot wherein, the yield varied from 6.25 to 18.75 q per ha with an average of 12.15 q per ha. The increment in yield over check varied from 7.10 per cent (in 2012-13) to 47.28 percent (in 2014-15) with an average of 21.37 per cent (Table 4). The variations in overall yield of Bengal gram from 2012-13 to 2016-17 was due to weather conditions and cultivating as rain-fed crop.

Table 4: Performance of Bengal gram under Cluster Frontline Demonstration and farmers practice (check) during *Rabi* season from 2012-13 to 2016-17 (Pooled data)

Year	Demo Variety	No. of Demos	Area (ha)	Yield (q/ha)		% increase over check	B:C ratio		Potential yield (q/ha)	Technology gap	Technology index (%)
				Demo	Check		Demo	Check			
2012-13	JG-11	30	12	13.87	12.95	7.10	2.35 :1	2.32 :1	22.5	8.63	38.30
2013-14	JG-11	30	12	21.18	18.75	12.9	2.42 :1	2.32 :1	22.5	1.32	5.86
2014-15	JG-11	30	12	13.30	9.03	47.28	2.36:1	2.01:1	22.5	9.20	40.80
2015-16	JG-11	25	10	8.13	6.25	30.08	2.22 :1	1.47 :1	22.5	14.37	63.87
2016-17	NBeG-3	50	20	18.78	13.75	36.58	2.45:1	1.20:1	25.00	6.22	24.88
Average	-	-	-	15.05	12.15	21.37	-	-	-	-	-
Total	-	165	66	-	-	-	-	-	-	-	-

Conclusion

It is concluded that the CFLD programme is an effective tool for increasing area, production and productivity of pulses and changing the knowledge, attitude and skill of farmers on the adoption of improved technologies. The per cent increment in yield of pulses to the extent of 10.45 to 21.14 in Green gram and 7.1 to 47.28 in Bengal gram CFLDs over the check plots created greater awareness and motivated the other farmers to adopt the improved package of practices of pulses. These demonstrations also built the relationship and confidence between farmers and scientists. The beneficiary farmers of CFLDs also played an important role as source of information on the quality of seeds for wider dissemination of high yielding varieties of pulses for other nearby farmers. B:C ratio in both the Green gram and Bengal gram crops was higher over farmer practices.

References

1. Samui SK, Maitra S, Roy DK, Mondal AK, Saha D. Evaluation on front line demonstration on groundnut (*Arachis hypogea* L.). Journal of Indian Society Coastal Agricultural Research. 2000; 18:180-183.