Journal of Pharmacognosy and Phytochemistry

Available online at www.phytojournal.com

E-ISSN: 2278-4136
P-ISSN: 2349-8234
JPP 2019; 8(4): 1403-1405
Received: 22-05-2019
Accepted: 24-06-2019

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Evaluation of cluster front line demonstration trials on greengram (*Vigna radiata*) in Dindigul district of Tamil Nadu

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Abstract
Cluster front line demonstrations (CFLDs) is a novel approach to provide a direct interface between researcher and farmer for the transfer of technologies developed by them and to get direct feedback from farming community. Thus, FLDs provide an opportunity to researchers and extension personnel for understanding the farmer's resources and requirement to fine tune and/or modify the technologies for easy adaptability at farmers' fields. The CFLDs on Greengram were conducted by Krishi Vigyan Kendra, Dindigul during kharif season in village of Ottupatti in Attur Block. All 50 demonstrations on greengram crops were carried out in area of 20 ha by the active participation of farmers with the objective to demonstrate the improved technologies of pulses production potential. The improved technologies consisting use of improved variety, seed treatment with *Pseudomonas flurocensence,* integrated weed management and insects and diseases. FLD recorded higher yield as compared to farmer's local practice. The improved technology recorded average yield of 742 kg/ha in demonstration plot of variety CO 8 at village Ottupatti in Attur block of Dindigul district.

Keywords: Greengram, co 8, seed treatment, demonstration, technology

Introduction
In India food grains occupy 65 per cent of total gross cropped area comprising cereals in 50% and pulses in about 15%. Within pulses, gram occupies 5% area followed by urad 3%, arhar 2% and mung 2%. Other pulses cover about 3% of gross cropped area.

Pulses have great importance in Indian agriculture as they are rich source of protein (17 to 25%) as compared to that of cereals (6 to 10%), their ability to fix atmospheric nitrogen and improve the soil fertility. Among pulses, green gram is one of the most important crop. Protein malnutrition is prevalent among men, women and children in India. Pulses contribute 11 per cent of the total intake of proteins in India (Reddy, 2010) [4]. Green gram is favourable short duration pulse crop as it thrives better in all seasons either as sole or as intercrop or fallow crop. India is the world's largest producer as well as consumer of green gram. In India during 2017-18, about 28.89 lakh ha area was covered under greengram. In Tamil Nadu, blackgram, greengram, and chickpea are the major pulse crops grown in an area of 8.15 lakh ha with an annual production of 6.13 lakh tonnes. The average productivity of pulses in Tamil Nadu is about (432 kg ha^{-1}) which is very low when compared to Indian average of 610 kg ha^{-1}. Till date the productivity level of greengram in the district is not sufficient on account of several causes like unavailability of quality seeds of improved varieties in time and poor crop management practices due to unawareness and non-adoption of recommended production & plant protection technologies.

Over a period of time, a number of improved pulses varieties and production technologies have been developed, but full potential of these varieties as well as technologies could not be exploited due to low rate of adoption and low yields. Thus, factors limiting the productivity cannot be overlooked. Research and extension programmes need to be diverted to produce value additive pulses. It may emphasize on quality attributes, adoption and popularization of new agro technology, evolving better varieties for stress conditions and improving present yield potential. The aim of these demonstrations in general is to raise production through transfer of farm technology. The efforts were taken with planning, execution and follow up action of the pulses production technology through front line demonstrations (Sumathi, 2012) [6]. Keeping this in view, Cluster frontline demonstrations on Pulses was undertaken to improve the productivity and profitability of greengram with proven improved production technologies on farmer's fields.

Materials and Methods

To assess the economic feasibility of technology transfer for crop management and better productivity of green gram, the front line demonstrations were conducted on 50 farmers field of adopted village Ottupatti of Dindigul district in Tamil Nadu during *kharif* season of 2018-19 in rainfed condition on medium to heavy soil with medium fertility status. The average rainfall of this area was 148 mm with 11 rainy days. Each demonstration was conducted on an area of 0.40 ha and the same area adjacent to the demonstration plot was kept as farmer's practices. The package of improved production technologies included high yielding variety CO 8, fertilizer12.5:25:12.5 NPK as basal application. Seeds were treated with *Pseudomonas@* 10g kg^{-1} seed and inoculated with Rhizobium @ 10 g kg^{-1}. Seed sowing was done October in every year with a seed rate of 20 kg /ha in line sowing with row to row spacing of 30 cm and 10 cm between plants in the row or broad casting. Optimum plant population was maintained in the demonstrations. Recommended dose of fertilizer was applied through urea, DAP and MOP as basal application. One hand weeding was done at 25 DAS for control of weeds. All Integrated Pest Management techniques are Yellow Sticky traps and Pheromones traps demonstrated in all farmers field. Foliar spray of Imidacloprid 17.6 SL was done at flower initiation stage for management of aphid. Pulse wonder spraying @ 5kg/ha at peak flowering stage and pod formation stage for bold grains. The crop was harvested during January after the leaves turn yellow and start dropping. In the second plot, locally available seed of greengram was sown with basal dose of DAP 50 kg ha^{-1} and maintained as farmers practice. For the study, technology gap and extension gap were calculated as suggested by Samui *et al*. (2000) [5].

- Technology gap = Potential yield – Demonstration yield
- Extension gap = Demonstration yield- Farmers' yield

The data on seed yield, cost of cultivation and gross and net return were collected from technological demonstration plot. In addition to this, data on farmer practices were also collected from the equal area. The benefit cost (B: C) ratio was calculated based on gross return.

Results and Discussion

The major differences were observed between demonstration package and farmer's practices are regarding recommended varieties, seed treatment, time of sowing, fertilizer dose, method of fertilizer application and plant protection measures. Table 1 shows that under the demonstrated plot only recommended varieties and bio-agents were given to farmer by the KVK and all the other package and practices were timely performed by the farmer itself under the supervision of KVK scientist. Under farmers' practice, they generally sow seed of greengram local varieties at higher seed rate without seed treatment. Both these varieties grow by farmers found susceptible to yellow vein mosaic disease. As a result, the farmers selected under FLD programme on greengram were provided with the seed of YVM resistance, stem necrosis resistance, moderately resistant to root rot greengram variety CO 8. It is also observed that under farmer situation, normally sowing of greengram is earlier to escape from water shortage for irrigation, thus leading to reduction in yield. Regarding the method of fertilization, under demonstration, all fertilizers were drilled at the time of sowing, whereas, under farmers' practice, broadcast method of fertilization was adopted. Similar findings have also been observed by Chandra (2010) [1] and Raj *et al*. (2013). Results concluded that average yield 742 kg/ha were found in demonstration plot of variety CO 8 followed by 411 kg/ha in control plot (Table 2) of the same village.

The Gross returns and Net returns of demonstration plot was Rs. 32,850/- and Rs. 23,050/- per ha and for control Rs. 18,225/- and Rs. 9,075/- per ha, respectively. B: C ratio for demonstration and control was 3.35 and 1.99 respectively (Table 2). This improvement in yield might be due to the application of seed treatment, use of bio fertilizers, timely sowing, application of recommended dose of fertilizers, proper and timely weed management and integrated pest management practices. The results indicated that the frontline demonstrations gave good impact over the farming community of Dindigul district as they were motivated by the new agricultural technologies applied in the FLD plots (Table 1). This finding is in corroboration with the findings of Poonia and Pithia (2011) [3].

Technology gap

The technology gap in the potential yield over demonstration yield was 105 kg/ha for green gram. The technological gap may be attributed to the dissimilarity in the soil fertility status and weather conditions (Mukherjee, 2003) [2].

Extension gap

The highest extension gap of 331 kg/ha was recorded. This emphasized the need to educate the farmers through various means for the adoption of improved agricultural production technologies. More and more use of latest production technologies with high yielding variety will subsequently change this alarming trend. The new technologies will eventually lead to discontinue the old technologies and to adopt new technologies by the farmers.

Reasons for low yield of green gram at farmers' fields

Optimum sowing time was not followed due to non-availability of quality seed. More than 90 per cent of the farmers had been sowing seed as broadcast method due to which the plant population was sometimes more 2-3 times more than the recommended one. Lack of popularization of seed cum fertilizer drill for sowing and use of inadequate and imbalance doses of fertilizers especially the nitrogenous and phosphatic fertilizers by farmers could not result into potential yield. Chemical weed control was also quite uncommon in this region grain yield over the local check.

Table 1: Details of need based input material given on CFLDs of Greengram

Crop	Variety	Cluster village	Demo. Area (ha)	No. of Demo.	Technology demonstrated	Need based inputs
Greengram	CO 8 (TNAU, 2013)	Ottupatti	20	50	1. Seed treatment @ 10g/kg *Pseudomonas* 2. Demonstration of HYV CO 8 3. Seed rate @20kg/ha 4. Biofertilizer application @ 2kg/ha 5. Pulse wonder spraying @ 5kg/ha at peak flowering stage 6. PM & IDM Practices 7. IWM Practices	1. Seed CO 8, 2. *Pseudomonas* 3. Yellow sticky Trap 4. Pheromone trap (Spoda lure) 5. Pulse wonder

Table 2: Details of yield and economics of cluster frontline demonstration on Greengram

Yield obtained (q/ha)						Yield increase (%)	Expenditure and returns (Rs./ha)							
Check			Demo				Check				Demo			
Max	Min	Av.	Max.	Min	Av.		Gross Cost (Rs/ ha)	Gross return (Rs/ ha)	Net Return (Rs/ha)	B:C ratio	Gross Cost (Rs/ ha)	Gross return (Rs/ ha)	Net Return (Rs/ha)	B:C ratio
6.2	3.8	4.1	8.3	6.9	7.42	80.9	9150	18225	9075	1.99	9800	32850	23050	3.35

Conclusion

In the frontline demonstrations there was an increase of 80 per cent in grain yield over the local check. Such increase was recorded with net returns increase was 150 per cent. As found in the results the BCR (3.35) was sufficiently high to motivate the farmers for adoption of the technologies. These demonstration trails also enhance the relationship and confidence between farmers and KVK scientists. The recipient farmers of FLDs also play an important role as source of information and quality seeds for wider dissemination of the improved varieties of greengram for other nearby farmers. It is concluded that the FLD programme is a successful tool in enhancing the production and productivity of greengram crop through changing the knowledge, attitude and skill of farmers.

Reference

1. Chandra Ganesh. Evaluation of frontline demonstration of greengram (*Vigna radiata* L.) in Sundarbans, West Bengal J. Indian Soc. Coastal agric. Res. 2010; 28(1):12-15.
2. Mukherjee N. Participatory learning and action. Concept Publishing Company, New Delhi, India, 2003, 63-65.
3. Poonia TC, Pithia MS. Impact of frontline demonstrations of chickpea in Gujarat. Legume Res. 2011; 34(4):304-307.
4. Reddy AA. Regional disparities in food habits and nutritional intake in Andhra Pradesh, India, Regional & Sectoral Econ. Stud. 2010; 10(2):125-134.
5. Samui SK, Maitra S, Roy DK, Mondal AK, Saha D. Evaluation on front line demonstration on groundnut (*Arachis hypogea* L.). J. Indian Soc. Coastal Agric. Res. 2000; 18:180-183.
6. Sumathi P. Role of front line demonstrations on transfer of pulses production Technologies in Vellore district of Tamil Nadu. Agriculture Update. 2012; 7(2):147-150.