Journal of Pharmacognosy and Phytochemistry

Available online at www.phytojournal.com

J P P Journal of Pharmacognosy and Phytochemistry

E-ISSN: 2278-4136
P-ISSN: 2349-8234
www.phytojournal.com
JPP 2020; 9(3): 2209-2212
Received: 15-03-2020
Accepted: 17-04-2020

DK Jain
SMS, Plant Protection,
KVK, Badgaon, Udaipur,
Rajasthan, India

Bahadur Singh
Farm Manager, KVK,
Badgaon, Udaipur,
Rajasthan, India

Hasmukh Kumar
SMS, Agricultural Engineering,
KVK, Badgaon, Udaipur,
Rajasthan, India

Corresponding Author:
DK Jain
SMS, Plant Protection,
KVK, Badgaon, Udaipur,
Rajasthan, India

Evaluation of cluster front line demonstration on black gram in Udaipur district of southern Rajasthan, India

DK Jain, Bahadur Singh and Hasmukh Kumar

Abstract
Vidya Bhawan Krishi Vigyan Kendra, Udaipur conducted Cluster Front Line Demonstration on Black gram variety PU-31 at farmer's field in the three villages of two adopted tribal dominated block i.e. Kotra and Falasiya during Kharif 2018 under National Food Security Mission, Govt. of India. 94 front line demonstrations conducted in 40 hectare area with active involvement of farmers and scientific staff of KVK. According to Analysis of data the highest grain yield was obtained in demonstrated plots with an average of 6.87 q/ha as compared to local check with an average of 5.18q//ha. An average extension gap between demonstrated Practices and farmers practices was recorded 1.69 q/ha. The average net return (11562 Rs/ha) was obtained in the demonstration plots and 5676 Rs/ha was in local check plots also the average Benefit cost ratio was recorded higher in front line demonstrations (1:1.75) as compared to local check (1:1.38) during the evaluation period i.e. Kharif 2018.

Keywords: Front line demonstration, Black gram, technology gap, seed yield, extension gap

Introduction
Blackgram (*Vigna mungo* L.) popularly known as urdbean is the fourth important short-duration and self-pollinating legume crop grown in India, it contains high level of protein (25g/100g), so it assumes considerable importance from the point of food and nutritional security in the world (Gupta and Gopalakrishna,2008) [5]. It holds about 13 percent of the total pulse area and contributing about 10 per cent to the total pulse production. India is the world's largest producer as well as consumer of black gram. It produces about 1.5-1.9 mt of black gram annually from about 3.5 m ha. of area, with an average productivity of 600 kg/ha. In Rajasthan, black gram is cultivated on about 2.01 lakh hectares with 1.12 lakh tonnes production and 556 kg/ha Productivity (Deptt. of Agriculture, Rajasthan, 2014-2015). It is therefore, necessary to assess the technological gap in production and also to know the problems and constraints in adopting modern black gram production technologies Islam *et al.*, (2011) [8]. Krishi Vigyan Kendra an innovative science based institution plays an important role in bringing the research scientist face to face with farmers. The main aim of Krishi Vigyan Kendra is to reduce the time lag between generations of technology at the research institution and its transfer to the farmers for increasing productivity and income from the agriculture and allied sectors on sustained basis. KVKs are grass root level organizations meant for application of technology through assessment, refinement and demonstration of proven produce technologies under different micro farming situations in a district (Das, 2007). The main objective of front line demonstration was to show the worth or value of the technology. The present investigation was undertaken to Evaluation of Cluster Front Line Demonstrations (CFLD's) on Black gram (*Vigna mungo*) in Udaipur district of Rajasthan.

Material and Methods
The present study was carried out by Vidya Bhawan Krishi Vigyan Kendra; Udaipur with 94 farmers from three fully tribal dominated adopted block's villages under Cluster front line demonstration programme. The soil of FLD's field was clay loam and the PH of soil is near about 7.0-7.5. The improved technology such as improved varieties, treatment of seed, plant protection measures was maintained during entire period of research study. Seed treatment done with Carbendazim 50WP @2.0g/kg seed and Rhizobium and PSB culture each 40 gm/kg seed. The seed rate of black gram is kept 15kg/ha in demonstration plots. The sowing was done during last week of June to first week of July. The spacing between Row and Plant was kept 30 x 10 cm for the cluster front line demonstration. The fertilizers doses were also given as basal dose as per STR (Soil Testing Repot). Weeding and plant protection measures

technology were also demonstrated as per recommendations. The data were collected through personal contact with farmers at farmer's field and after that tabulated and analyzed to find out the findings and conclusion. The statistical tool like percentage used in this study for analyzed data. The extension gap, technology gap and the technology index were work out with the help of formulas given by Samui *et al*., (2000) [10] as mentioned below:

Extension gap = Demonstration yield- farmers' yield (control)
Technology gap = Potential yield-demonstration yield
Technology index = Technology gap / Potential Yield x 100

Results and Discussion

The findings of the present research study as well as relevant discussion have been conferred under following points:

Yield Performance

The yield of black gram seed under demonstration of CFLD's plots was higher as compared to local check which was due to following improved recommended package of practices (table-1) like use of improved high yielding variety, seed treatment, weed management, plant protection measures etc. The results shows (table 2) that the average seed yield was 6.87 q/ha which was higher as compared to local plots (5.18 q/ha).The average increased % yield was 32.61 in CFLD's demonstration plot over local check. However, the obtained seed yield in CFLD's was very low as compared to Potential yield of the variety PU-31 due to excess raining situation at the time of flowering and pod formation stage of the crop also due to the soil depth. These finding are well supported and similar results were also observed by Dubey *et al.*, (2010) [4] and Kothyari *et al.*, (2018) [9]. Yield of the front line demonstration trials and potential yield of the crop was compared to estimate the yield gaps which were further categorized into technology and extension gaps (Hiremath and Nagaraju, 2009) [6].

Extension Gap

An average extension gap between demonstrated practices and farmers practices was recorded 1.69 q/ha (Table 2). This Extension gap should be assigned to adoption of improved transfer technology in demonstrations practices which outcome in higher grain yield than the traditional farmer practices. The similarly findings were also found in Black gram crop by Bairwa *et al*., (2013) [1], Hiremath and Nagaraju (2010) [7] and also Kothyari *et al.*, (2018) [9].

Yield Gap and Technology Index

Yield of the demonstration trails and potential yield of the crop was compared to estimate the yield gaps which were further categorized in to technology and extension gaps. The average technology gap in the blackgram demonstration yield over potential yield was maximum 5.63/ha. Observed during kharif 2018. The observed technology gap may be attributed dissimilarity in soil fertility status, rainfall distribution, disease and pest attacks as well as the change in the locations of demonstration plots every year. Further, the maximum extension gap of 1.69 q/ha was recorded in black gram (PU-31) demonstrations during kharif 2018. The table 2 also revealed that the technology index was 45.04 percent. The technology index shows the feasibility of the variety at the farmer's field. The lower value of technology index more is the feasibility of technology. This indicates that a gap existed between technology evolved and technology adoption at farmer's field. The similar results were also observed by Thakral and Bhatnagar (2002) [11], Bairwa *et al*., (2013) [1], Hiremath and Nagaraju, (2010) [7] and Dhaka *et al*., (2010) [3]. Hence, it can be concluded from the table 2 that increased yield was due to adoption of improved varieties and conducting demonstration of proven technologies yield potentials of crop can be increased to greater extent.

Table 1: Technology demonstrated in CFLD's and farmers' practices

S. No	Practice	Demonstrated practice	Farmer's practice
1	Ploughing	2 Ploughing	1 Ploughing
2	Variety	PU-31	T-9, Local variety
3	Seed Treatment	Carbendazim50WP@2.0g/kg seed	No seed treatment
4	Bio fertilizers	Rhizobium and PSB culture (40 g/ kg seed)	No use of biofertilizer in seed treatment
5	Seed Rate and Spacing	15 KG and 30 cm RXR & 10 cm PXP	25-30 kg/ha (about double) and 20-25 cm RXR & 5-7cm PXP or broadcasting
6	Manures and Fertilizers	NPK as basal dose 20:40:00 kg/ha	Use of NP as DAP mixing with seed at sowing(Inadequate nutrient supply)
7	Weed control	Pre-emergence- (Immediately after sowing or the next day)-Pendimethalin 30% EC @3.3lit/ha Post-emergence-Imazethapyr 10% SL@500ml/ha at 15-20 DAS	Inadequate weed management : One hand weeding or over dose of herbicides
8	Plant Protection Measures	Imidachloprid@250ml/ha for sucking pest (35-40 days, flower initiation) and Quinalphos 25EC@ 1500 ml/ha or Spinosad 45% SC for pod borer.	Injudicious use of insecticides

Table 2: Productivity, extension gap, technology gap and technology index of black gram as grown under CFLD's and existing package of practices.

Block (village)	Yield q/ha		Increase yield % over control	Extension gap(q/ha)	Technology gap(q/ha)	Technology Index (%)
	Demons.	Local				
Falasiya (Turgarh and Dhala)	7.01	5.26	33.26	1.75	5.49	43.92
Kotra (Sulav)	6.73	5.10	31.96	1.63	5.77	46.16
Average	6.87	5.18	32.61	1.69	5.63	45.04

Table 3: Economics of Demonstration and Local Check of black gram as grown under CFLD's

Block (village)	Gross cost of cultivation(Rs/ha)		Gross Return (Rs/ha)		Net Return (Rs/ha)		BC Ratio	
	Demons	Local	Demons.	Local	Demons.	Local	Demons.	Local
Falasiya (Turgarh and Dhala)	15400	14840	27339	20514	11939	5674	1:1.77	1:1.38
Kotra (Sulav)	15062	14212	26247	19890	11185	5678	1:1.74	1:1.39
Average	15231	14526	26793	20202	11562	5676	1:1.75	1:1.38

Economic Return

The average cost of cultivation increased in demonstration practice (15231 Rs/ha) as compared to local check (14526 Rs/ha). Use of improved high yielding costly seeds for crop sowing, seed treatment, recommended dose of fertilizers, weedicide spray, proper pest management etc, all of these are the main reasons for high cost of cultivation in demonstration plots than local check. The figures showed in Table 3 clearly explicated the implication of front line demonstration at farmer's field during the period of study in which average higher net returns (11562 Rs/ha) were obtained under demonstration plots as compared to farmer practices (5676 Rs/ha). Benefit cost ratio was recorded under front line demonstrations (1:1.75) as compared to farmer practices (1:1.38) during the period of study. The similarly findings was also obtained by Bairwa *et al*., (2013) [1] and Kothyari *et al*., (2018) [9]. The above results showed that the integration of improved technology along with active participation of farmer has a positive effect on increase the grain yield and Economic return of Black gram crop Production. The suitable technology for enhancing the productivity of Black gram crop and need to conduct such demonstrations may lead to the improvement and empowerment of farmers. High benefit cost ratio also advocated the economic viability of the demonstration and motivated the farmers towards adoption of interventions demonstrated. Hence, by conducting front line demonstrations of proven technologies, yield potential of Black gram crops can be increased to very great extent. This will subsequently increase the income as well as the livelihood and nutritional requirement of the poor farming community of tribal areas.

Fig 1: Cluster front line demonstration and field day in Jhadol and Kotra block of Udaipur district

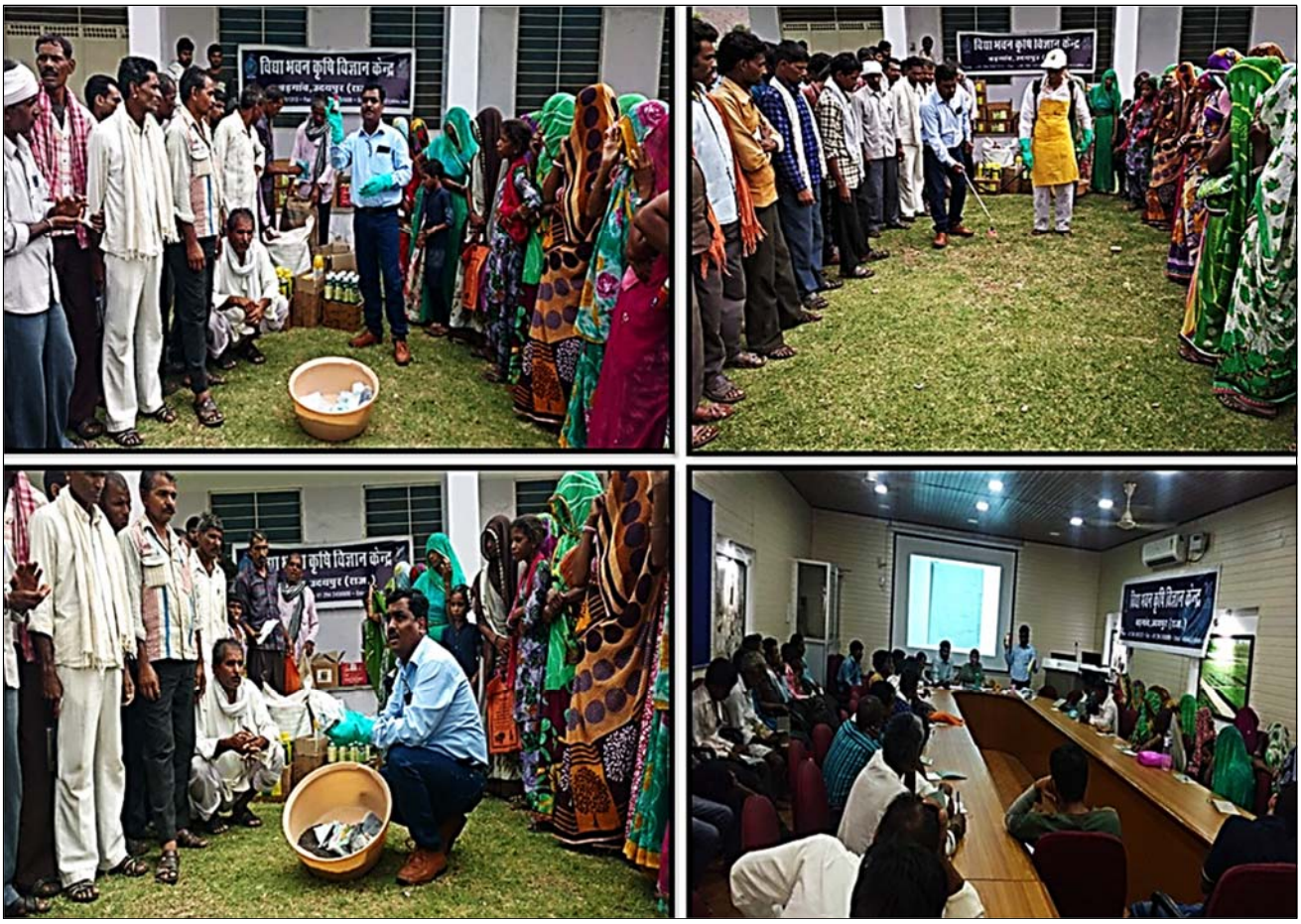

Fig 2: Demonstration of recommended technology under CFLD'S

References

1. Bairwa RK, Verma SR, Chayal K, Meena NL. Popularization of Improved Black gram Production Technology through Front line demonstration in humid southern plain of Rajasthan, Indian Journal of Extension Education and R.D. 2013; 21:97-101.
2. Das Mamoni, Puzari NN, Ray BK. Impact of training of skill and knowledge development of rural women, Agricultural Extension Review. 2010; 1(1):29-30.
3. Dhaka BL, Meena BS, Suwalka RL. Popularization of improved maize technology through Frontline Demonstration in South-eastern Rajasthan, Journal of Agricultural Sciences. 2010; (1):39-42.
4. Dubey S, Tripathi S, Singh P, Sharma RK. Yield gap analysis of black gram production through frontline demonstration, J Prog Agric. 2010; 1(1):42-44.
5. Gupta SK, Gopalakrishna T. Molecular markers and their application in grain legumes breeding. J Food Legumes. 2008; 21:1-14.
6. Hiremath SM, Nagaraju MV. Evaluation of front line demonstration trials on onion in Haveri district of Karnataka, Karnataka J Agric Sci. 2009; 22(5):1092-1093
7. Hiremath SM, Nagaraju MV. Evaluation of on front line demonstrations on the yield of chilli, Karnataka J Agric. Sci. 2010; 23(2):341-342.
8. Islam M, Mohanty AK, Kumar S. Correlation growth yield and adoption of urdbean technologies. Indian Research Journal of Extension Education. 2011; 11(2):20-24.
9. Kothyari, Hukam Singh, Meena KC, Meena BL, Ram Aseray. Evaluation of Cluster Front Line Demonstration on Black gram in Sawai Madhopur District of Rajasthan, India. Int. J Curr. Microbiol. App. Sci. 2018; 7(01):1569-1573.
10. Samui SK, Maitra S, Roy DK, Mondal AK, Saha D. Evaluation of front line demonstration on groundnut (*Arachis hypogea* L.) in Sundarbans, Journal of Indian Society of Coastal Agriculture Resources. 2000; 18(2):180-183.
11. Thakral SK, Bhatnagar P. Evaluation of frontline demonstrations on Chickpea in north-western region of Haryana, Agric. Sci. Digest. 2002; 22(3):217-218.