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RESEARCH ARTICLE :

Impact of front line demonstration on production and productivity of summer moong

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SUMMARY : Cluster Frontline Demonstrationson summer moong were conducted by Krishi Vigyan Kendra, RVSKVV, Dewas in the different village of district with main objective to boost the production and productivity of moong with latest and specific technologies.Moong variety of medium duration HUM-12 was used for demonstrations. The farmers followed the full package of practices like proper seed rate, seed treatment with biofertilizer, Trichoderma viride, fertilizer application on soil test value, weed and water management, IPM practices etc.Result of front line demonstrations indicated thaton an average of 24% more yield of moong was found as compared to farmer's practices.It was also observed from the data of front line demonstration recorded higher gross return and net return as compared to local check. The gross and net returns were found Rs. 38800 and Rs. 23200 in CFLD while in farmer's practices these were found Rs. 31160 and Rs. 16160, respectively.

KEY WORDS :
Front line demonstration, Production, Productivity, Moong

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BACKGROUND AND OBJECTIVES

Historically India isthe largest producer, consumer and importer of pulses (Raj *at al*., 2013). Although it is the world's largestpulses producer, India had been imported 3.04 millionmetric tons (MT) of total pulses out of which 0.62 MTof *moong* commodity during 2013-14 to meet itsdomestic demand. *Moong* bean or green gram (*Vigna radiata*) whichis commonly known as *Moong* is an important pulsecrop grown in our country and accounts 6.44 % to thetotal production of pulses. *Moog* is an annual crop,cultivated mostly in rotation with cereals. It is an erect,highly branched and is about 60 to 76 cm tall plant (Oplinger *et al*., 1990). It is delicious pulse and isconsidered as first choice among pulses particularly innorthern parts of the country because it is generally short duration crop, photo-insetivity and also densecrop canopy compared to other pulses. It is generally recommended by doctors for growing children, old persons, patients due to its easy digestibility. Eating *moong* bean sprouts is indeed a very important part of healthy eating. It is grown in our country during *Kharif*, but it is also grown in spring or summer season inirrigated northern plains and as a *Rabi* crop

Table A: Description of technological intervention and farmers practices under CFLD on summer moong

Particulars	Technological intervention (T_1)	Farmers practices (T_2)	Gap
Variety	HUM-12	Local and old	Full gap
Seed rate	20-25 kg/ha	30-40 kg/ha	Partial gap
Integrated nutrient management	N:P:K (20:60:20 Kg/ha + rhizobium @ 5g/kg seed + PSB @ 5g/kg of seed	No use of fertilizer	Full gap
Integrated pest management	Bird purchure @ 100-125 /ha + seed treatment with Trichoderma virdae @ 5g/kg seed + one spray of proponophosh @ 1.5 lit/ha at the ETL + One spray of Imidachloropid @ 350 ml/ha	Two or three spray of Insecticide insufficient amount of water	Partial gap
Weed management	One hand weeding	No weeding	Full gap

in southern and south-eastern parts, where the winter is quite mild. Being a leguminous crop it has the capacity to fixatmospheric nitrogen. It also helps in preventing soilerosion.

Indian government imports large quantity of pulses to fulfill domestic requirement of pulses. In this regard, to sustain this production and consumption system, the Department of Agriculture, Cooperation and Farmers Welfare had sanctioned the project "Cluster Frontline Demonstrations on Summer Pulses to ICAR-ATARI, Jabalpur through National Food Security Mission. This project was implemented by Krishi Vigyan Kendra, RVSKVV, Dewas of Zone-IX with main objective to boost the production and productivity of moong through CFLDs with latest and specific technologies.

The FLD is an important tool fortransfer of latest package of practices in totality to farmers and the main objective of this programme is to demonstrate newly released crop production and protection technologies and management practices atthe farmers' field under real farming situation. Through this practice, the newly improved innovative technology having higher production potential underthe specific cropping system can be popularized and simultaneously feedback from the farmers may be generated on the demonstrated technology (Singh *et al*., 2012).

RESOURCES AND METHODS

The field experiments of 0.40 ha each were conducted at 25 farmers fields (10 ha) of different villages of Dewas district of Madhya Pradesh *viz.*, Dakachya, Kushmania, Omkara, Kolari, Jia goan, Bhilkhedi, Khudgoan and bhilai during the year 2016-17 to evaluate the productive performance of improved varieties of moong. Before conducting demonstrations farmers were trained regarding different aspects of cultivation (Kumar *et al.,* 2010) to follow the package and practices for moong cultivation as suggested by the scientists of Krishi Vigyan Kendra Dewas and need based input materials provided to the farmers. KVK has collected the soil sample from the demonstrations field and analyzed the sample and applied the fertilizer on the basis of soil test values.

Moong variety of medium duration HUM-12 was used for demonstrations. The farmers followed the full package of practices like proper seed rate, seed treatment with biofertilizer, Trichoderma viride, fertilizer application on soil test value, weed and water management, IPM practices etc. In case of local check, the traditional practices were followed in existing varieties like PM 138, local by the farmers. Seed were sown between 15 feb to 28 febby tractor driven seed cum ferti drill. Seed were treated with rhizobium culture and tricoderma virdae @ 5g per kg of seed. Precise quantity of water was applied at the time to time by sprinkler irrigation system.

The yield data were collected from both CFLD and farmers practice plot (local check)and compiled results. Nodulation and root growth were studied through destructive plant sampling at various growth stages. Data pertaining to crop growth, yield attributes and yield were collected at harvest and analyzed statistically.The B:C ratio was calculated based on the net return and cost of cultivation in each treatment.To estimate the technology index, extension gap, technology gap and harvest index, the formulae were considered as suggested by Samui *et al*. (2000); Kadian *et al*. (1997) and Sagar and Chandra (2004).

OBSERVATIONS AND ANALYSIS

Result of front line demonstrations indicated that

Table 1: Grain yield, harvest index, technology gap, extension gap and technology index of demonstrations

Grain yield (q/ha)			% increase	Straw yield (q/ha)		Harvest index (%)		Technology gap	Extension	Technology
Potential	RP	FP	over FP	RP	FP	RP	FP	(q/ha)	gap (q/ha)	index (%)
1	2	3	4	5	6	7	8	9	10	11
12	8.2	6.6	24	9.5	7.3	46.33	47.48	2.5	1.6	20.83

Table 2: Gross expenditure, gross return, net return and B:C ratio of summer moong production under CFLDs

Yield (q/ha)		% increase	Gross expenditure (Rs./ha)		Gross return (Rs./ha)		Net returns (Rs./ha)		B:C ratio	
RP	FP	over FP	RP	FP	RP	FP	RP	FP	RP	FP
1	2	3	4	5	6	7	8	9	10	11
8.2	6.6	24	15600	15000	38800	31160	23200	16160	2.49	2.08

the cultivation practices comprised under CFLD *viz.*, use of improved varieties, proper seed rate, seed inoculation by rhizobium and PSB culture, soil test based application of fertilizer, integrated pest management, irrigation and hand weeding produced on an average of 24% more yield of moong as compared to farmer's practices. The result indicates that the CFLD has given a good impact over the farming community of Dewas as they were motivated by the improved agricultural technologies applied in the demonstration plots.

The technology gap is the gap in the demonstration yield over potential yield was found 2.5 qt/ha while extension gap was recorded 1.6 qt/ha. The technology gap observed dissimilar due to weather conditions, soil fertility status. Hence, location specific recommendation appears to be necessary to bridge the gap between the yields. But to minimize the extension gap it is need to educate the farmers through various means for more adoption of improved high yielding variety and recommended practices to bridge the wide extension gap. This extension gap requires urgent attention from planners, scientists, extension personnel, development department and NGOs working in the agricultural fields.

The technology index shows the feasibility of the evolved technology at the farmer's field. The lower the value of technology more is the feasibility of the technology. The technology index was found 20.83% indicating the performance of this variety in malwa region was satisfactory.

The data presents in Table 2 indicated that adoption of improved technology of moong not only gives the opportunity of higher yield, but also provides higher benefit cost ratio *i.e.* 2.49 as compared to 2.08 in the farmer's practices. This may be due to higher yield obtained under recommended practices compared to farmer's practices. Similarly result has earlier being reported on moong by Bhan *et al*. (2014) and on chickpea by Tomar *et al*. (1999); Tomar (2010); Mokidue *et al*. (2011) and Singh *et al*. (2014). It was also observed from the data of front line demonstration recorded higher gross return and net return as compared to local check (Table 2). The gross and net returns were found Rs. 38800 and Rs. 23200 in CFLD while in farmer's practices these were found Rs. 31160 and Rs. 16160, respectively.

Conclusison:

Cluster frontline demonstrations on moong conducted in different villages of Dewas district and result concluded that average highest yield 8.2 q/ha found in emonstrations plot followed by 6.6 q/ha in control plots. There was 24.00 per cent increase in yield observed in demonstration plot over farmers' practice. It was observed that potential yield can be achieved by imparting scientific knowledge to the farmers, providing the quality need based inputs and proper management. Horizontal spread of improved technologies may be achieved by the successful implementation of frontline demonstrations and various extensions activities like training programme, field day,exposure visit organized in CFLDs programmes in the farmer's fields. For wide dissemination of technologies recommended by SAUs and other research institute, more number of FLDs should be conducted.

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