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RESEARCH ARTICLE :

Role of front line demonstration on transfer of Moong production technologies in Barmer district of Rajasthan

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SUMMARY : Krishi Vigyan Kendra conducted front line demonstration on Moong variety SML668/ IPM02-03/RMG268/GM04 at farmers fields in district Barmer during years 2009-2014. The productivity and economic returns of Moong in demonstrated plots were calculated and compared with the corresponding local check. The data obtained was pooled for five years. It was observed that on an average 35.04 per cent higher grain yield was recorded in demonstration plots than the local check. The extension gap, technology gap and technology index were 1.67 q/ha, 1.436 q/ha and 22.818 q/ha, respectively. An additional investment of Rs. /ha coupled with scientific monitoring of demonstration and non-monetary factors resulted in additional return of Rs. 16576/ha over the farmers practices. Fluctuating minimum selling price of moong during different years influenced the economic returns per unit area.

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KEY WORDS:
Moong, Pulse, Productvity, Front line demonstration

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BACKGROUND AND OBJECTIVES

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). Front line demonstration is a long term educational activity conducted in a systematic manner at farmers fields to prove the worth of a new practice/technology. Farmers in India are still producing crops based on the knowledge transmitted to them by their forefathers leading to a grossly unscientific agronomic, nutrient management and pest management practices. As a result of these, they often fail to achieve the desired potential yield of various crops and new varieties. Barmer district is in Western

Table A : Particulars showing the details of Moong grown under front line demonstrations and farmers practices

Sr. No.	Particulars	Farmers practice (Local Check)	Frontline demonstration
1.	Variety	Local var.	GM04/IPM02-03/SML668/RMG268
2.	Seed rate (kg/ha)	15	12
3.	Seed treatment	No	Carbendazim@2 g per kg seed
4.	*Rhizobium* culture	No treatment	Sedd treatment with *rhizobium* culture
5.	Line spacing	30 cm	22.5 cm
6.	Sowing time	Mid July	July - August
7.	Weed management	No use of herbicide	Stomp@ 2.5 l/ha
8.	Spray technology	1/2-1/3 of recommended	375-500 l/ha
9.	Nutrient management	12.5:40:0	62.5:0:0
10.	Pest management	No use of plant protection measures	Rogar@ 250ml/ha

zone the traditional cropping systems of this district is Bajra/Pulse-Cumin/Isabgol. The soil is low in organic carbon, medium in P and K. Till date the productivity level of moong 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 and plant protection technologies. Therefore, it is very essential to demonstrate the high yielding varieties, resistant to biotic and abiotic stresses and other production technologies which the framers generally do not adopt. Keeping above points in view front line demonstration was conducted on Moong by Krishi Vigyan Kendra. The main objectives of the study were to exhibit the performance of recommended high yielding moong varieties with recommended practices for harvesting higher crop yields. To compare the yield levels of local check (farmers practices) and FLD plots. To collect feedback for further improvement in the performance of Moong cultivation practices.

RESOURCES AND METHODS

Front line demonstrations on moong were conducted at farmer's field in district Barmer to assess its performance during the year 2010-2014. The soil of the district is generally sandy to sandy loam in texture which is low organic carbon (0.09 – 0.215 %), available phosphorus (11-14 kg/ha) and medium to high in potash. Each demonstration was of 0.4 ha area and the critical inputs were applied as per the package of practices. The quality seed of moong variety during all the years of the study was used for conducting FLD. The sowing was done during July and harvested during September to October (Table A). Demonstration at farmers fields were regularly monitored by scientist of Krishi Vigyan Kendra from sowing to harvesting. The grain yield of demonstration crop was recorded and analyzed. Different parameters were calculated to find out technology gaps (Yadav *et al.*, 2004) as follows :

Extension gap = Demonstration yield – Local check yield

Technology gap = potential yield – Demonstration yield

Technology index = Potential yield – Demonstration yield× 100/Potential yield

OBSERVATIONS AND ANALYSIS

The findings of the present study as well as relevant discussion have been presented under following heads :

Grain yield :

On an average the demonstrated plots showed 35.046 per cent increase in grain yield (Table 1). The highest increase in grain yield (48.58 %) was observed in year 2013 which might be due to seed of improved and other improved variety technologies about which the farmers were ignorant.

Extension gap :

An extension gap between demonstrated technology and farmers practices ranged from 1.05 to 2.41 q/ha during different five years and on average basis the extension gap was 1.67 q/ha (Table 1). This gap might be attributed to adoption of improved technology in demonstrations which resulted in higher grain yield than the traditional farmers practices.

Technology gap :

Wide technology gap were observed during different

Table 1 : Grain yield and gap analysis of front line demonstration on Moong at farmer's field

Year	No. of Demo.	Area (ha)	Yield (q/ha)		Increase (%)	Extension gap (q/ha)	Technology gap (q/ha)	Technology index (%)
			Demon.	Local check				
2010	30	12	6.61	5.56	19.30	1.05	1.39	17.375
2011	30	12	6.49	5.23	24.00	1.26	1.51	18.875
2012	30	12	6.00	4.33	38.70	1.67	2.00	25.00
2013	30	12	7.37	4.96	48.58	2.41	0.63	7.875
2014	30	12	6.35	4.39	44.65	1.96	1.65	20.625
Average	30	12	6.564	4.894	35.046	1.67	1.436	

Table 2 : Economic analysis of demonstrated plots and farmers practice

Year	Average cost of cultivation (Rs./ha)		Average gross return (Rs./ha)		Average net returns (Rs./ha)		B:C	
	Demo	Local	Demo	Local	Demo	Local	Demo	Local
2010	3479	1300	16000	14500	12521	13200	3.30	2.75
2011	10375	8565	22713	18305	12334	9740	1.19	1.13
2012	10700	8400	25800	18600	15100	10200	1.41	1.21
2013	12350	9350	26850	16800	14500	7450	2.17	–
2014	12850	10160	41275	28575	28425	18415	3.21	–
Average	9951	7555	26528	19356	16576	11801	2.256	1.018

years and this was lowest (0.63 q/ha) during 2013 and was highest during (2.0 q/ha) during 2012. The average technology gap returns found was 1.436 q/ha. The difference in technology gap during different years could be due to more feasibility of recommended technologies during different years. Similarly, the technology index for all the demonstration during different years were in accordance with technology gap (Bhagwan and Chauhan, 2006 and Howal *et al.*, 2010). Higher technology for transferring to farmers and insufficient extension services for transfer of technology. More of Similar findings were also reported by Bhat *et al.* (2009) on apple, Jadhav and Manjunath (2011) on mango and Patel *et al.* (2011) on cotton.

Economic gap :

Different variables like seed, fertilizers, bio fertilizers and pesticides were considered as critical inputs for the demonstration as well as farmers practices and on an average an additional investment of Rs. 2396/ha were made under demonstrations. The highest incremental benefit: cost ratio was 3.30 during the year 2010. Overall average BCR was found to be 2.256. The results confirm the findings of frontline demonstrations on oilseed and pulses crops by Yadav *et al.* (2004); Singh *et al.* (2012) and Lathwal (2010).

Conclusion :

Front line demonstration programe was effective in changing attitude of farmers towards pulse cultivation. Cultivation of demonstrated plots of moong with improved technologies has increased the skill and knowledge of the farmers. FLD also helped in replacement of local un recommended varieties with improved recommended varieties. This also improved the relationship between farmers and scientist and built confidence between them. The farmers where improved technology was demonstrated also acted as primary source of information for other farmers on the improved practices of moong cultivation and also acted as source of good quality pure seeds in their locality for the next crop. The concept of front line demonstration may be applied to all farmer categories including progressive farmers for speedy and wider dissemination of the recommended practices to other members of the farming community.

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