IMPACT OF FRONT LINE DEMONSTRATION ON GAIN IN KNOWLEDGE ABOUT GREEN GRAM PRODUCTION TECHNOLOGY AMONG FARMERS

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ABSTRACT

Green Gram (Vigna radiata L.) is as one of the most important pulse crops of the Panchmahal district of Gujarat. However, its productivity of green gram in the district is very low. Attempts are made to improve productivity and to increase area under green gram by adopting HYVs (high yielding variety). In order to compare conventional green gram with HYVs varieties, 100 front line demonstrations were carried out in systematic manner on farmers' field to show the worth of a new varieties in comparison to local check and thereby convincing farmers about potentialities of improved production management practices of green gram for further adoption, involving feasible and effective scientific package of practices. The demonstrations clearly showed enhancement of productivity, at the same time area under green gram cultivation was also noticed to be enhanced. The yield was found to increase from 680 kg/ha in local check to 960 kg/ha in demonstrations. Similarly, the benefit cost ratio for HYVs varieties was found to increase to 2.0 as compared to local check (1.47). The impact of FLDs was analysed which showed improvement of knowledge and satisfaction of farmers as the main reason for mass scale adoption.

Keywords: *green gram, production technology, frontline demonstration*

INTRODUCTION

Pulses are important food crops for human consumption and animal feed. Being leguminous in nature, they are considered to be important components of cropping systems because of their viability to fix atmospheric nitrogen, add substantial amounts of organic matter to the soil and produce reasonable yields with low inputs under harsh climatic and soil conditions. The total production of pulses in the world was 14.76 billion tones from the area of 14.25 billion hectares in the year 2013-14 while in India total pulses production was 19.78 million tons from the area of 23.63 million hectares in the year 2013-14 of which, Gujarat contributed nearly 1.21 lakh tonnes (50.66%), owing record productivity of 526 kg/ha from 2.3 lakh ha area. Green gram (Vigna radiate L. Wilczek.) is the third important pulse crop in India. It can be grown both as kharif green gram and summer green gram. With the advent of short duration, MYMV (Mung bean yellow mosaic virus) tolerant and synchronous maturing varieties of green gram (55-60 days), there is a big opportunity for successful cultivation of green gram in green gram-wheat rotation without affecting this popular cropping pattern. It ranks third in India after chickpea and pigeonpea. It has strong root system and capacity to fix the atmospheric nitrogen into the soil and improves soil health and contributes significantly to enhancing the yield of subsequent crops (Jat et al. 2012). Keeping in view the present study was undertaken to analyze the performance and to promote the FLD on green gram production.

OBJECTIVE

To know the impact of front line demonstration on gain in knowledge about green gram production technology among farmers

METHODOLOGY

The study was conducted in Panchmals district of Gujarat with hundred farm families each from eleven villages of were selected from three Talukas viz. Goghamba, Kalol, and Godhra for gathering the information. A questionnaire containing (6) questions were put before the respondents and data were analyzed. To popularize the improved green gram production practices, constraints in green gram production were identified through participatory approach. Preferential ranking technique was utilized to identify the constraints faced by the respondent farmers in green gram production. Farmers were also asked to rank the constraints

they perceive as limiting green gram production in order of preference**.** Based on top rank farmers problems identified, front line demonstrations were planned and conducted at the farmers' field under technology demonstration. In all, 100 full package frontline demonstrations were conducted to convince them about potentialities of improved variety of green gram 'GAM-5' during 2014 and 2016. Production and economic data for FLDs and local practices were collected and analyzed. The technology gap and technology index were calculated using the following formulas as given by Samui et al. (2000):

The selected respondents were interviewed personally with the help of a pre-tested and well structured interview schedule. Client Satisfaction Index was calculated as developed by Kumaran and Vijayaragavan (2005).

The harvest index was worked out by using following formula.

$$\text{Harvest index} = \frac{\text{Economical Yield}}{\text{Biological yield}} \times 100$$

The data thus collected were tabulated and statistically analyzed to interpret the results.

RESULTS AND DISCUSSION

Performance of FLD

A comparison of productivity levels between demonstrated variety and local checks is shown in table 1. During the period under study it was observed that in front line demonstrations, the improved green gram variety GAM-5 recorded the higher grain yield (9.6 q $ha^{-1)}$ compared to local check (6.8 q ha^{-1}). The percentage increase in the yield over local check was 41.17. Similar yield enhancement in different crops in front line demonstration has amply been documented by Kumar et al. (2010) and Rai et al. (2015). From these results it is evident that the performance of improved variety was found better than the local check under local conditions. Farmers were motivated by results of agro technologies applied in the FLDs trials and it is expected that they would adopt these technologies in the coming years. Yield of the front demonstration trials and potential yield of the crop was compared to estimate the yield gaps which were further categorized into technology index and harvesting index. The technology gap shows the gap in the demonstration yield over potential yield and it was 1.9 q ha^{-1}. The best potential yield comes from the scientists fill where all inputs are given at optimum level. The observed technology gap may be attributed to dissimilarities in soil fertility, salinity and erratic rainfall and other vagaries of weather conditions in the area. Hence, to narrow down the gap between the yields of different varieties, location specific recommendation appears to be necessary. Technology index shows the feasibility of the variety at the farmer's field. The lower the value of technology index more is the feasibility. Table 1 revealed that the technology index values were 16.52%. The finding of the present study is in consonance with the findings of Hiremath and Nagaraju (2009) in case of onion crop.

Table 1: Yield, technology gap and technology index of demonstration

Variables	Yield (q ha^{-1})	Increase (%) over Local check	Technology gap(qha^{-1})	Technology index (%)
Local check	6.8			
Demonstration (GAM-5)	9.6	41.17	1.9	16.52

Therefore, analyzing harvest index and its associations with grain and biomass yields seems to be an important issue for various disciplines of plant biology, including plant physiology, genetics and breeding. Table 2 revealed that the harvesting index of demonstration were local check (GM-4) 192% and demonstration (GAM-5) 255%. The finding of the present study is in consonance with the findings of Kozak et al., 2007.

Table 2: Harvesting index of demonstration

Variables	Seed Yield (q ha^{-1})	Stover Yield (q ha^{-1})	Harvesting index (%)
Local check	6.8	13.1	192
Demonstration (GAM-5)	9.6	24.5	255

The economics of green gram production under front line demonstrations were estimated and the results have been presented in table 3. Economic analysis of the yield performance revealed that front line demonstrations recorded

higher gross returns (Rs. 48000 ha^{-1}) and net return (Rs. 24000 ha^{-1}) with higher benefit ratio (2.01) compared to local checks (table 3). These results are in line with the findings of Rai et al. (2012) and Hiremath and Nagaraju (2009) in case of sesamum and onion crop.

Table 3: Economics of frontline demonstrations

Variables	Cost of cultivation (₹ ha^{-1})	Gross return (₹ ha^{-1})	Net return (₹ ha^{-1})	Benefit cost ratio
Local check	23000	34000	11000	1.97
Demonstration(GAM-5)	24000	48000	24000	2.01

CONCLUSION

The study undertaken with the help of 100 FLD participants at KVK Panchmahal to know the economics of green gram production using HYVs and adoption level and constraint influencing the adoption of HYVs. The results revealed that lack of knowledge of suitable HYVs, soil fertility and low technological knowledge were the three most important factors which inhibited the adoption of HYVs of green gram in Panchmahal. The yield of green gram in demonstration was 9.6 q ha^{-1} as compared to the local check (6.8 q ha^{-1}). The benefit/cast ration for HYV was 2.01 as compared to 1.97 in case of local check. The impact of FLD was also analyzed which showed that there was significant improvement in knowledge level and satisfaction on the part of farmers.

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