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Front line demonstration – An effective tool for increasing the productivity of groundnut and soybean in Jalgaon district of Maharashtra

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ABSTRACT

Groundnut and soybean is an important oilseed crops widely consumed in India, which plays a major role in supplementing the income of small and marginal farmers of Jalgaon district (M.S.). The front line demonstration (FLD) were conducted by the Krishi Vigyan Kendra, Pal, Dist- Jalgaon (M.S.) with improved package of practices of groundnut and soybean cultivation for three years (2006-07 to 2008-09) and achieved the expected yields as compared to district productivity. The yield of groundnut and soybean crops can be increased by demonstrating their cultivation technologies at the farmer's field under the supervision of scientists working in the operational area. During the period under study it was observed that yield of demonstration was significantly higher (groundnut 1805 kg/ha, soybean 2,490 kg/ha) than the farmers practices (local check). In all the years front line demonstration had a significant increase in yield of demonstrations over farmer practices.

Key words : Groundnut, Soybean, Front line demonstration, Yield

INTRODUCTION

Groundnut and soybean is an important oilseed and cash crop, which has a vital role in Indian agriculture, industry and export trade. These crops are commercially and nutritionally very important source of oil and proteins. Groundnut kernels are rich in vitamin A, B and E. Because of high nutritive value and its rich oil percentage soybean cultivation is increasing day by day.

India ranks first in the world in groundnut area (7.30 million ha.) and its rank in second in the production (8.30 million ton) but productivity is almost 1/3rd to USA (Anonymous, 2000). Similarly the planted area under soybean in India is above 6.50 million ha, which produces above 7.00 million tones of soybean with an average productivity 1,070 kg. ha^{-1}.

Now a days oilseed are more beneficial to the farmers in terms of money as compared to cereals. Groundnut and soybean crops are grown as a cash crop in the country. Keeping in view of above facts front line demonstration is introduction by the Indian Council of Agricultural Research, New Delhi, with the inception of technology mission of pulse and oilseed crops during mid eighties. The basic objectives of FLD are to speedy spread of the newly introduced high yielding variety of groundnut and soybean and acquaint extension functionaries and local farmers with front line varieties and management technologies.

MATERIALS AND METHODS

Front line demonstration on groundnut and soybean was conducted by Krishi Vigyan Kendra, Pal, Dist- Jalgaon during the period from 2006-07, 2007-08 and 2008-09 in *Kharif* season, in six villages of two tahsils, Raver and Yawal. The total 109 number of farmers were associated under this programme. The demonstration of improved technology was taken in an area 0.40 ha. of each farmers. Total 45 ha. area was covered in 3 years for demonstration of recommended improved practices of groundnut and soybean. In the demonstration, one control plot was also kept where farmer practices were carried out. The result was compared with the full package of practices. The primary data were collected from the selected FLD farmers with the help of interview schedule and interpreter and presented in the term of percentage and the qualitative data were converted into quantitative forms and calculated by using the following formula:

$$\%\text{increased yield} = \frac{\text{Demonstration yield - Farmers yield}}{\text{Framers yield}} \times 100$$

RESULTS AND DISCUSSION

In Jalgaon district groundnut and soybean are important *Kharif* season crop and the difference between the demonstration package and farmer practice has been presented in Table 1. It can be observed that the farmer practices lack the improved package of practices in soybean cultivation.

Perusal of data (Table 2 and 3) revealed that under demonstration plots, groundnut and soybean yield was found substantially higher than that under farmers practice during all the year. Under different location, the groundnut yield in demonstration plots ranged between 1468 to 1805 kg.ha^{-1} over observation period, which was 41.28 to 56.96 per cent higher over farmer practices (local

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Table 1 : Difference between demonstration package and farmers practice under FLD on groundnut and soybean

Particulars	Groundnut		Soybean	
	Demonstration	Farmer practices	Demonstration	Farmer practices
Variety	JL-286 JL-501	Local	DS-228	Local
Seed rate	120 Kg/ha	120 to 130 Kg/ha.	75 Kg/ha.	100 to 110 Kg/ha
Seed treatment	Thirum – 5 gm/kg seed	No seed treatment	Carbendizm- 2.5 gm/kg seed	No seed treatment
Situation	Rainfed	Rainfed	Rainfed	Rainfed
Fertilizer dose	25:50:00 (NPK) kg.ha^{-1}	20:40:00 (NPK) kg.ha^{-1}	50:75:00 (NPK) kg.ha^{-1}	25:50:00 (NPK) kg.ha^{-1}
Plant protection	Need based insecticides and fungicides spray	No spray of insecticides and fungicides	Need based insecticides and fungicides spray	Injudicious use of DP chemicals

Table 2 : Increasing the productivity of groundnut through front line demonstration

Year	Under FLD Programme		Average yield (kg.ha^{-1})		% yield increase over farmers practices	Extension gap (kg.ha^{-1})	C.B. Ratio
	Total farmers	Total area (ha.)	FLD	Farmers practices			
2006-07	13	5.00	1,468	1,039	41.28	429	2.57
2007-08	20	10.00	1,805	1,150	56.96	655	2.82
2008-09	25	10.00	1,596	1,117	42.88	479	2.45
Total/average	58	25.00	1,623	1,102	47.27	521	2.61

Table 3 : Increasing the productivity of soybean through front line demonstration

Year	Under FLD Programme		Average yield (kg.ha^{-1})		% yield increase over farmers practices	Extension gap (kg.ha^{-1})	C.B. Ratio
	Total farmers	Total area (ha.)	FLD	Farmers practices			
2006-07	13	5.00	1,980	1,315	50.57	665	2.82
2007-08	13	5.00	2,490	1,810	37.57	680	2.67
2008-09	25	10.00	2,210	1,635	35.17	575	2.16
Total/average	51	20.00	2,227	1,587	40.32	640	2.55

check). On an overall basis, 47.27 per cent increase in yield was recorded. Similarly soybean yield in demonstration plots ranged between 1980 to 2490 kg.ha^{-1} over observation period, which was 35.17 to 50.57 per cent higher over farmer practices (local check). On overall basis 40.32 per cent increase in yield was recorded. These results are in conformity with the findings of Tomar *et al.* (2003), in front line demonstration on soybean and Tiwari and Sexsena (2001) and Tiwari *et al.*(2003) in other crops.

Improvement in yield of groundnut and soybean was mainly due to knowledge and adoption of appropriate production technology *i.e.* use of high yielding varieties JL-286, JL-501 of groundnut and DS-228 of soybean crops, appropriate sowing time, seed treatment, method of fertilizer application and plant protection practices adopted under the front line demonstration. The above findings are similar with the earlier finding of Singh (2002). Similarly Kirar *et al.*(2005) also emphasized the importance of FLD in soybean production.

The economic analysis given in the Table 2 and 3 indicate that the cost benefit (C.B) ratio in groundnut crop ranged from 2.45 to 2.82 with a mean value of 2.61 in the form of increased yield. Similarly, in soybean crop the cost benefit (C.B.) ratio ranged from 2.16 to 2.82 with a mean value of 2.58 in the form of increased yield. These results are in conformity with the findings of Billore *et al.* (2004), Katare *et al.*(2003).

Table 4 : Area and productivity of different oilseed crop in Jalgaon district (Maharashtra) during *Kharif* 2006-07

Crop	Area (ha.)	Productivity (kg.ha^{-1}.)
Maharashtra		
Groundnut	4,28,000	958
Soybean	23,47,000	1,493
Jalgaon		
Groundnut	6,300	1,112
Soybean	14,600	1,620

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