Impact of front line demonstration (FLD) on the yield of soybean in Dewas district of M.P.

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Abstract: Front line demonstrations are the best powerful tool of extension to motivate the farmer for adoption of an innovation. Forty FLDs were conducted by the KVK dewas during kharif season from 2010-11 to 2012-13. All these demonstrations were carried out by the active participation of farmer’s with the objective to demonstrate the improved technologies of oilseed production potential. The improved technologies consist, use of high yielding short duration variety JS 95-60, proper seed rate, seed inoculation with rhizobium and PSB culture, integrated nutrient management and integrated plant management. Demonstrations recorded higher yield over farmer’s practice. The improved technology gave higher yield of 1938 kg/ha as compared to 1584 kg/ha in the farmer’s practice. In spite of increase in yield of soybean, technology gap, extension gap and technology index existed. The improved technology gave higher gross return, net return with high benefit cost ratio (2.21) as farmer’s practice (1.94). An average additional investment of Rs 2053/- per ha coupled with scientific monitoring of front line demonstration and non monitoring factors were resulted in additional return of Rs 12101/- per ha.

Key words: Front line demonstration, Soybean, Oilseed, Impact

Introduction
Soybean (Glycine max Merrill) is a legume that grows in tropical, subtropical and temperate climate. It occupies third position among the oilseed crop in India after ground and rapeseed mustard. Madhya Pradesh has its major share in area (70%) and production (65%) of soybean in India (Sharma, 2013), but productivity of soybean in M.P. is very low (10 q/ha) as compare to genetic potential (25q/ha). The adoption of recommended production technology among farmers is not very encouraging. The reason may be that the most of the technology have not yet reached to the farmer’s fields. Adoption levels for several components of the improved technology were low, emphasizing the need for better dissemination (Kiresur et al., 2001; Sharma, 2003).

Front line demonstration (FLD) is the one of the mandate of Krishi Vigyan Kendra (Farm Science Centre). It is a long term education activities conducted in a systematic manner in farmer’s field to worth of a new practice/technology. Farmers in India are still based on the knowledge transmitted to them by their fore fathers leading to a grossly unscientific agronomic, nutrient management and pest management practices. Hence Krishi Vigyan Kendra Dewas has conducted front line demonstration on recommended practices of soybean in kharif season during 2010-11 to 2012-13 (3 years). The objectives were kept under this study - 1) To assess the response of yield of soybean, 2) To investigate the harvest index and technology index of soybean crop in dewas district, 3) To evaluate the economics of the soybean.

Materials and Methods
Utilizing the information generated during participation rural appraisal of KVK Dewas, 47 front line demonstrations (each 0.40ha) on improved package of practices in adopted village were organized consecutively for three years. The soil of the fields in these villages is vertisol with pH ranging from 7 to 7.6. The normal annual rainfall of dewas district is 1067 mm receives maximum rainfall during south west monsoon period i.e. June to September. About 90% of the annual rainfall takes between October to May period.

The package of improved practices demonstrated included a new short duration high yielding variety JS-9560, proper seed rate (80 kg/ha), proper RxR spacing (40cm), Integrated Nutrient Management (@ 20:60:20:25, N:P:K:ZnSO₄, rhizobium culture and PSB culture as a seed inoculation @ 5gm/kg of seed), seed treatment by carboxin (@ 2m/kg of seed), Integrated Pest Management (deep ploughing + one spray of trizophos @ 750 ml/ha), sowing by ridge and furrow system and Integrated Weed management (imazathapyr @ 800 ml/ha at 21 DAS + one hand weeding at 40 DAS). Deep ploughing was done during the April and crop was sown between 25th june to 7th July. An entire dose of fertilizer was applied as basal before sowing. Simultaneously farmer’s practices also carried out as a local check. Farmers practices were involved old variety JS-335, which was sown and harvested simultaneously using ridge and furrow method without any seed treatment with fungicides and bio-fertilizers, higher seed rate (125kg/ha),

Table-1: Extension activities conducted during the front line demonstration

<table>
<thead>
<tr>
<th>Activities</th>
<th>Number</th>
</tr>
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<tbody>
<tr>
<td>Training</td>
<td>10</td>
</tr>
<tr>
<td>Field day</td>
<td>3</td>
</tr>
<tr>
<td>Sangosthi</td>
<td>7</td>
</tr>
<tr>
<td>Film shows</td>
<td>9</td>
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ha), broadcasting of DAP at 20-25 days after sowing (DAS) and injudicious use of insecticide and weedicide.

Site selection, farmers selection were considered as suggested by Choudhary (1999). The observation on seed yield, straw yield per ha were recorded. Other parameters like harvest index, technology index were worked out as suggested by Kadian et al. (1997). The gross return, net return, cost of cultivation and benefit cost ration were also calculated. Training to the farmers of respective villages was imparted before conducting the demonstrations with respect to envisaged technological.

**Results and Discussion**

The data revealed that the farmers were not aware improved package of practices of soybean i.e. short duration high yielding variety, seed rate, sowing method, balance dose of fertilizer, seed treatment, weed management and plant protection measures. The farmers were using variety and high seed rate. As per the recommendation 20 kg N, 60 kg P$_{2}$O$_{5}$, 20 kg K$_{2}$O and 25 kg ZnSO$_{4}$ per hectare should be applied as a basal at the time of sowing but the farmers were broadcasted DAP and urea in the standing crop. The result revealed that in front line demonstrations seed yield of soybean recorded were 1840 kg/ha, 1920 kg/ha and 2049 kg/ha as compared to farmers practices 1570 kg/ha, 1530 kg/ha and 1659 kg/ha in the year 2010, 2011 and 2012 respectively. In comparison to farmers practices, an increase of 17.4 to 26.1 percent (average 22.33%) is seed yield due to improved practices was recorded.

The technical gap were found 658 kg/ha, 577 kg/ha, 451 kg/ha during the year 2010-11, 2011-12 and 2013 respectively average of 562 kg/ha. The technology gap observed may be due to dissimilarity in the soil fertility status and local climatic situation. Hence location specific recommendation appears to be necessary to minimize the technology gap for yield level in different situation. The extension gaps which ranged from 237 kg/ha to 398 kg/ha during the period emphasized the need to educate the farmers through various methods or the adoption of improved agricultural production technology to reverse this trend wide extension gap. More and more use of latest production technology with high yielding variety will simultaneously change this alarming trend of galloping extension gap. The new short variety JS 95-60 provide opportunity to the farmers to increase the cropping intensity up to 300%. The technology index shows the feasibility of the evolved technology at the farmers yield. The Lower value of technology index more is the feasibility of technology. The technology index was calculated 26.32%, 23.08% and 18.05% in the year 2010-11, 2011-12 and 2012-13 respectively with the mean of 22.48%. These results are in agreement with findings of Kumar et al. (2010); Jain et al. (1998) and Tiwari et al. (2013).

For economics analysis the cost of different inputs were considered as cost of cultivation for demonstration as well as farmers practices. The input and out puts prices of commodities prevailed during the year of demonstration calculating the cost of cultivation, gross return , net return and benefit cost ratio. The data of economics of soybean presented in table No. 3 and revealed that average gross return (Rs. 65986/-) and average net return (Rs.36203/-)
with higher benefit cost ratio 2.21 as compared to 1.94 of local check. Similar results have earlier been reported on chickpea by Tomar et al. (1999) and Tomar (2010) and in soybean by Tiwari et al. (2013). Further and addition cost of Rs. 2053/ ha has given additional net return Rs 11641/- The extension activities during the study period i.e. training, field day, kisan sangosthi were organized in these villages and presented in Table 1.

The study was under taken to ascertain the economics of soybean production technologies. Front line demonstration (FLDs) play a very important role to disseminate recommended technologies is shows the potential of technology resulting in an increased in yield at farmers level. The results convincingly brough out that the yield of soybean can be increase with the intervention on recommended package of practices. These practices may be popularized in this area by the extension agency to bridge the higher extension gaps.

References