

Yield Gap Study and Impact of Demonstrated Technology in Oilseed Crops in Shivpuri District of Madhya Pradesh



Agriculture

KEYWORDS : Yield gap, front line demonstration, adoption level.

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ABSTRACT

The study was conducted in the Shivpuri district of Madhya Pradesh with the objective of assessment on yield gap and impact of demonstrated technology in oilseed crops in the district. In all 108 demonstrations were conducted taking 3 adopted and 2 other villages by KVK during 2007-08 to 2009-10. The study concluded that higher yield under demonstrations over the farmers practice was found in case of balance fertilizer application in soybean (38.88%), use of organic inputs in soybean (35.37%), improved variety Pusa Jagnath (33.33%), Pusa Jai Kisan (26.63%) of mustard and TAG 24 (26.67%) of groundnut followed by other demonstrations. Thus, the training to the farmers and participatory front line demonstrations is an efficient measure for reducing knowledge gap of farmers, enhancing productivity, generating production data and collection of feedback for large scale adoption of technology.

Introduction-

Front line demonstration is the most effective tool for extending useful technologies and their adoption among the target groups. The objectives of front line demonstration on crops are to demonstrate the superior production potentials of various location specific/ region specific technologies to practicing farmers and test their implement ability and viability and obtain feedback from the end users and bring about necessary corrections to improve their acceptability and suitability in real farm situation vis-à-vis prevailing traditional farmers practices. Front line demonstrations are also one of the methodologies to evaluate performance of technology under on farm condition, technology adoption by the participating farmers and its diffusion to non participating farmers. Large variation in crop yield exists from place to place depending on the environment, soil type and use of cultivation practices. Training to the farmers and participatory front line demonstrations is an efficient measure for reducing knowledge gap of the farmers and enhancing productivity, generating production data and collecting feed back for large scale adoption of the technology (Singh, Navab et al., 2004).

Methodology-

The study was conducted in five villages namely Piparsama, Rator, Badagaon, Fatehpur and Kiroli of Shivpuri district of Madhya Pradesh. Three of these villages namely Piparsama, Rator and Badagaon were adopted by KVK during three years 2007-08, 2008-09 and 2009-10 and a total of 108 demonstrations were conducted on farmers' field. Out of this 66 demonstrations on improved varieties of mustard, groundnut and soybean, 12 on balance fertilizer application in soybean, 12 on organic farming (use of PSB+Rhyzobium+FYM) in soybean, 6 on micronutrient management in groundnut, 6 on weedicide application in mustard and 6 on seed treatment with Vitavax + Thirum in groundnut.

Result & Discussion-

The data presented in Table 1 expressed that under demonstration plot the crop yield was found to be substantially more than that under local check during all the years. Maximum yield increase (38.88%) was found with application of balance fertilizer in soybean (12.5 q/ha) against the local check (9.0 q/ha). In the improved variety of soybean (JS 95-60), mustard (Pusa Jagnath, Pusa Jagnath & Rohini) and groundnut (TAG 24) crop yield on demonstration plots were noted to be 12.5, 20.0, 23.30, 14.2 and 15.72 q/ha respectively which were 21.12, 33.30, 26.37, 23.71 and 26.67 percent respectively higher over control. In case of balance nutrient management in soybean, use of ZnSO₄

in groundnut, IWM in mustard, organic farming in soybean and disease management in groundnut demonstration plots gave an average yield of 12.5, 10.75, 18.75, 13.88 and 10.75 respectively which accounted for 38.88, 13.99, 20.00, 35.37 and 13.99 percent increase over local check i.e., 9.0, 9.43, 15.0, 9.81 and 9.4 q/ha respectively. Similar results were reported by Singh, D.K. et al (2007).

Table 1: Increase of Yield, Technology and Extension Index of Component Demonstrations.

| S. N. | Components of demonstrations | Demonstrated crop | Demonstrated technology | No. of Demonstrations | Main yield | | Increase % over FP |
|-------|------------------------------|-------------------|---------------------------------------|-----------------------|------------|-------|--------------------|
| | | | | | IP | FP | |
| 1 | INM (NPK: 20:60:20) | Soybean | Balance nutrient management | 12 | 12.5 | 9.0 | 38.88 |
| 2 | Rohini | Mustard | Improved variety | 12 | 14.2 | 11.41 | 23.71 |
| 3 | Zinc Sulphate | Groundnut | Use of micro nutrients | 6 | 10.75 | 9.43 | 13.99 |
| 4 | JS 95-60 | Soybean | Improved variety | 6 | 12.5 | 10.32 | 21.12 |
| 5 | IWM | Mustard | Use of Pendi-methylene 1 ltr a.i. /ha | 6 | 18.75 | 15.0 | 20.0 |
| 6 | Pusa Jagnath | Mustard | Improved variety | 12 | 20.0 | 15.0 | 33.33 |
| 7 | TAG 24 | Groundnut | Improved variety | 24 | 15.72 | 12.41 | 26.67 |
| 8 | Pusa Jai kisan | Mustard | Improved variety | 12 | 23.30 | 18.40 | 26.63 |
| 9 | Organic farming | Soybean | PSB + Rhyzobium + FYM | 12 | 13.28 | 9.81 | 35.37 |
| 10 | Seed treatment | Groundnut | Seed treatment with Vitavax + Thirum | 6 | 10.75 | 9.43 | 13.99 |

Assessment of technology interventions (Table 2) showed that improved variety of soybean JS 95-60, groundnut TAG 24, and mustard varieties (Rohini, Pusa agnath and Pusa Jaikisan) were maximum popularized and adopted by 42.59, 31.48 and 35.18 percent farmers respectively. Other intervention points i.e., seed treatment with Vitavax and Thirum (44.45%), use of PSB + Rhyzobium + FYM in soybean (41.66%), use of ZnSO₄ in groundnut

(36.11%) and balance use of NPK in soybean (31.48%) were also adopted by a large number of farmers in view of their impact on crop yield. The knowledge gap about the technology and the availability of technology was reduced by means of training and the impact was visualized by farmers in the demonstrations. Thus, it became quite effective in achieving higher production and economic returns from the investment. Monetary return can be increased substantially by training of farmers regarding intervention points like improved varieties, use of PSB+Rhyzobium+ FYM in soybean, use of ZnSO₄ in groundnut and balance use of NPK in soybean. Similar results were reported by Sashidharan et al. (2007).

Table 2 - Adoption Level of Technology Intervention of Front Line Demonstration:

| S N | Problem | Technology intervention | Adoption level | | | | Change in adoption % |
|-----|----------------------------------------------------------|--------------------------------------------------------------------------------------|----------------|------|-------|-------|----------------------|
| | | | Before | | After | | |
| | | | F | % | F | % | |
| 1 | Lack of knowledge and unavailability of improved variety | Mustard var. Rohini, Pusa Jagnath, Pusa Jaikisa | 07 | 6.48 | 38 | 35.18 | 28.70 |
| 2 | Lack of knowledge and unavailability of improved variety | Groundnut var. TAG 24 | 03 | 2.77 | 34 | 31.48 | 28.71 |
| 3 | Lack of knowledge and unavailability of improved variety | Soybean var. JS 95-60 | 01 | 0.92 | 46 | 42.59 | 41.67 |
| 4 | Lack of knowledge and non use of micronutrients | Zinc Sulphate 25kg/ha in groundnut | 02 | 1.85 | 39 | 36.11 | 34.26 |
| 5 | Lack of knowledge about PSB + Rhyzobium + FYM | Use of PSB + Rhyzobium + FYM in soybean | 04 | 3.70 | 45 | 41.66 | 37.96 |
| 6 | Lack of knowledge and no use of balance fertilizers | Balance use of NPK 20:60:20 kg/ha | 03 | 2.77 | 34 | 31.48 | 28.71 |
| 7 | Lack of knowledge and no seed treatment | Seed treatment with 1g Vitavax +2g Thirum per kg seed and crop rotation in groundnut | 06 | 5.40 | 48 | 44.45 | 39.05 |
| 8 | Lack of knowledge and no use of weedicide | Use of Pendimethylene 1kg ai /ha in mustard | 01 | 0.92 | 25 | 23.14 | 22.22 |

Conclusions-

It can be concluded from the discussion that higher yield under demonstrations over to local checks was found in case of improved variety of mustard (Pusa Jaikisan), balance use of NPK in soybean, use of PSB+Rhyzobium+FYM in soybean and use of ZnSO₄ in groundnut under demonstrations. The assessment of adoption of technology interventions showed that the improved variety of soybean (JS 95-60), mustard (Pusa Jaikisan) and groundnut (TAG24) were maximum popularized and adopted by farmers. As well as the other intervention points i.e., use of PSB+Rhyzobium+FYM in soybean, use of ZnSO₄ in groundnut and seed treatment with Vitavax + Thirum in groundnut were also adopted by large number of farmers.

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