Evaluation of Improved Varieties of Oilseed and Pulse Through Community Approach in Tikamgarh District of Madhya Pradesh

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ABSTRACT

Cluster Frontline demonstrations of six improved oilseed and pulses under ten year varieties viz. Chickpea (JG-16) Blackgram (IPU94-1 and Pratap Urd-1), Soybean (JS 95-60, and RVS 2001-04) and Mustard (Pusa Jagannath) with recommended production, productivity and protection technologies were conducted at randomly selected 348 farmers field in an area 139.20 hectare covering three blocks viz. Tikamgarh, Baldevgarh and Jarara zone of bundelkhand in Tikamgarh district of Madhya Pradesh during the period of 2015-16 to 2017-18. Results revealed that all the demonstrated improved above varieties performed significantly better in terms of increase in yield with a minimum of 29.5 percent in Mustard to a maximum of 62.5 percent in Blackgram over the existing cultivars. This indicates the opportunities of wider seed replacement in the district and greater feasibility adoption of improved varieties by the farmers.

Keywords: *Oilseed and Pulses, Varieties, Community approach*

Increasing productivity of crops ensure the livelihood security of the farmers because it depends upon the productivity of their fields. To overcome this situation oilseed & pulses can play a vital role besides the cereal crops. Oilseed and pulses are the rich sources of proteins, quality nutrition and valuable cash also. They are more beneficial to the farmers in terms of money as compared to cereals. Many oilseed and pulse crops are grown as a cash crop in the country. If the production of both these increases the income of farmers will certainly increase thereby their standard of living will be improved (*Gautam et al, 2007*). India is the major producer of oilseed crops like groundnut, rapeseed, mustard, sunflower, linseed, safflower, castor, soybean and sesame. India occupies the first position in both with regard to area and production of mustard (*Rathore et al, 2002*). Tikamgarh district of Madhya Pradesh is having a great potential of oilseed and pulses crop production round the year due to favorable soil and agro-climatic condition, majority of the farmers of this region are still practicing traditional farming as the good quality seeds of private seed companies are expensive and are also not easily available in the rural areas. Therefore, for creating awareness among the farmers, efforts has been made to popularize the high yielding varieties of Chickpea, Blackgram, Soybean and Mustard with their production, productivity and improved technologies through community approach. The FLD programme always found useful in enhancing the knowledge and adoption level of farmers in various aspects of oilseed production technologies. FLD practices created great awareness and motivated the other farmers to adopt appropriate oilseed production technologies (*Singh et al, 2014*). During the study, Technology has been demonstrated by Cluster Frontline Demonstration (CFLD) with an objective to evaluate the yield and others performance of oilseed and pulse varieties with the existing cultivars at farmer's field.

METHODOLOGY

The present study was conducted in three blocks of Tikamgarh district of Madhya Pradesh viz. Tikamgarh, Baldevgarh and Jatara during the season of Kharif Soybean (JS 95-60, and RVS 2001-04),

Blackgram (IPU94-1 and Pratap Urd-1) and Chickpea (JG-16), Mustard (Pusa Jagannath) Rabi season during the year of 2015-16 to 2017-18. A total of six varieties of different oilseed and pulse crops, were randomly demonstrated in 348 farmer's field in total of 139.20 hectare area. The demonstration plots and farmer's plot were kept minimum 0.40 and maximum 0.80 hectare to visualize the differences and making self assessment by the farmers. The demonstration trials were regularly monitored and others sectional data on output of new varieties against traditional practices followed by farmers were collected. The collected data were further pooled for the three years and analyzed for estimating technology gap, extension gap, technology index and extension index of each demonstrated varieties.

Demonstrated Technologies under Community Approach: Apart from improved varieties, following package and practices have been advocated in the cultivation of oilseed and pulse crops.

Preparation of field:

1. Deep ploughing during summer season to control soil borne insect-pest and disease pathogens.
2. Soil treatment with trichoderma @ 5.0 kg and PSB @ 2.5 kg/ha before sowing of seed.

Seed treatment technology:

1. Seed treatment with carbandazim 2.5gm + imidacloprid @ 1.0 ml and trichoderma + PSB @ 5.0 gm /kg seed.
2. Sowing of seed in kharif season ridge & furrow and rabi season line sowing method .

Production technology:

Chickpea:

- Sowing of chickpea at 30 X 5-10 cm distance on line sowing with seed drill to save quantity of seed and irrigation water.
- Seed treatment of chickpea with carbandazim 2.5 gm + imidacloprid @ 1.0 ml + trichoderma + PSB @ 5.0 gm /kg seed.
- Spray of pendimethalin (stomp xtra 38.7%) @ 3.5 lit/ha. at 0-3 DAS to control herbicide.
- Weeding, hoeing and earthing by cycle hoe or manually at 30-35 days after sowing.
- Spray of profenofos 50% EC @ 2.0 ml/liter of water to control insect.

Soybean:

- Sowing of soybean at 30-40 X 10 cm distance on ridge & furrow sowing method suitable for dry spell and heavy rainfall condition.
- Seed treatment of soybean with carbandazim 2.5 gm + imidacloprid @ 1.0 ml + trichoderma + PSB @ 5.0 gm /kg seed.
- Spray of imazethapyr (10% SL) @ 100 gm/ha at 15-25 DAS to control 70 BLWS and grasses.
- Intercultural operation by cycle hoe after 30-35 DAS.

Blackgram:

- Sowing of blackgram at 30 X 5-10 cm distance on ridge and furrow sowing method with seed drill to save quantity of seed and irrigation water.
- Seed treatment of blackgram with carbandazim 2.5 gm + imidacloprid @ 1.0 ml + trichoderma + PSB @ 5.0 gm /kg seed.
- Spray of pendimethalin (stomp xtra 38.7%) @ 3.5 lit/ha. at 0-3 DAS to control herbicide.
- Weeding, hoeing and earthing by cycle hoe or manually at 30-35 DAS.
- Spray of profenofos 50% EC @ 2.0 ml/liter of water to control insect.

Mustard:

- Sowing of mustard at 45 X 15 cm distance on line sowing with seed drill to save quantity of seed and irrigation water.
- Seed treatment of mustard with carbandazim 2.5 gm + imidacloprid @ 1.0 ml + trichoderma + PSB @ 5.0 gm /kg seed.
- Spray of pendimethalin (stomp xtra 38.7%) @ 3.5 lit/ha. at 0-3 DAS to control herbicide.
- Weeding, hoeing and earthing by cycle hoe or manually at 30-35 days after sowing.
- Spray of imidacloprid (17.8% SL) @ 0.5 ml/liter of water to control insect.

RESULTS AND DISCUSSIONS

Blackgram: The results revealed that demonstrated varieties of Blackgram (IPU 94-1 and Pratap Urd -1) fetched an average yield of 8.30 q/ha at farmer's field as against 5.20 q/ha in local check. The data given in table-1 shows the significant increase of blackgram yield upto 62.5 percent over control. IPU 94-1 variety is performing best in the farmer's field. IPU 94-1as also advocated for improved variety of Blackgram, there is a great scope of its high adoptability among the growers. Scientist has been observed good performance of IPU

94-1 and Pratap Urd-1 at farmer's field and both varieties are gaining popularity among the farmers.

Soybean: Demonstrated varieties of Soybean (JS95-60 and RVS 2001-04) fetched an average yield of 14.24 q/ha at farmer's field as against 10.63 q/ha in local check. Shows the significant increase of Soybean yield upto 37.46 percent over control. RVS 2001-04 variety is performing best in the farmer's has been recorded with 37.46% increase over control. The extension index, technology index were 18.68 and 31.45% and technology gap, extension gap is 6.92 and 4.11q/ha. respectively. Indicating high feasibility of its adoption among farmers.

Chickpea:Evaluating the demonstrated crop of Chickpea variety JG-16 compared with variety practiced by the farmers. An average yield of 13.35 q/ha has been recorded with 40.5% increase over control. The extension index and technology index were 19.25 and 33.25% respectively. This variety and technology performance extremely well in the farmer's field which resulted in better adoption and replacement of other varieties of Chickpea.

Mustard: The results revealed that demonstrated variety of Mustard (Pusa Jagannath)) an average yield of 14.45 q/ha at farmer's field as against 11.15 q/ha in local check. The data given in table-1 shows the significant increase of mustard yield upto 29.59% over control. Pusa Jagannath variety performed very well in the farmer's field with a technology gap and extension gap of 5.55 and 3.30 q/ha. respectively. Performing

Table 1. Yield performance of demonstrated varieties and existing cultivars

Crop / Variety	No.	Demo Area (ha.)	Yield Potential	Yield FLD	Yield Control	% Yield increase over control	Tech. gap (q/ha)	Ext. gap (q/ha)	Tech. index %	Ext. index %
Chickpea - JG-16	50	20	20.0	13.35	9.50	40.50	6.65	3.85	33.25	19.25
Soybean - JS 95-60	75	30	22.0	13.40	10.30	30.0	8.60	3.10	39.0	14.09
Soybean - RVS 2001-04	48	19.20	22.0	15.08	10.97	37.46	6.92	4.11	31.45	18.68
Blackgram - IPU 94-1	50	20	12.0	6.50	4.0	62.50	5.50	2.50	44.43	20.83
Blackgram - Pratap Urd-1	75	20	12.0	10.10	6.40	57.80	1.90	3.70	15.83	30.83
Mustard - Pusa Jagannath	50	30	20.0	14.45	11.15	29.59	5.55	3.30	27.75	16.50

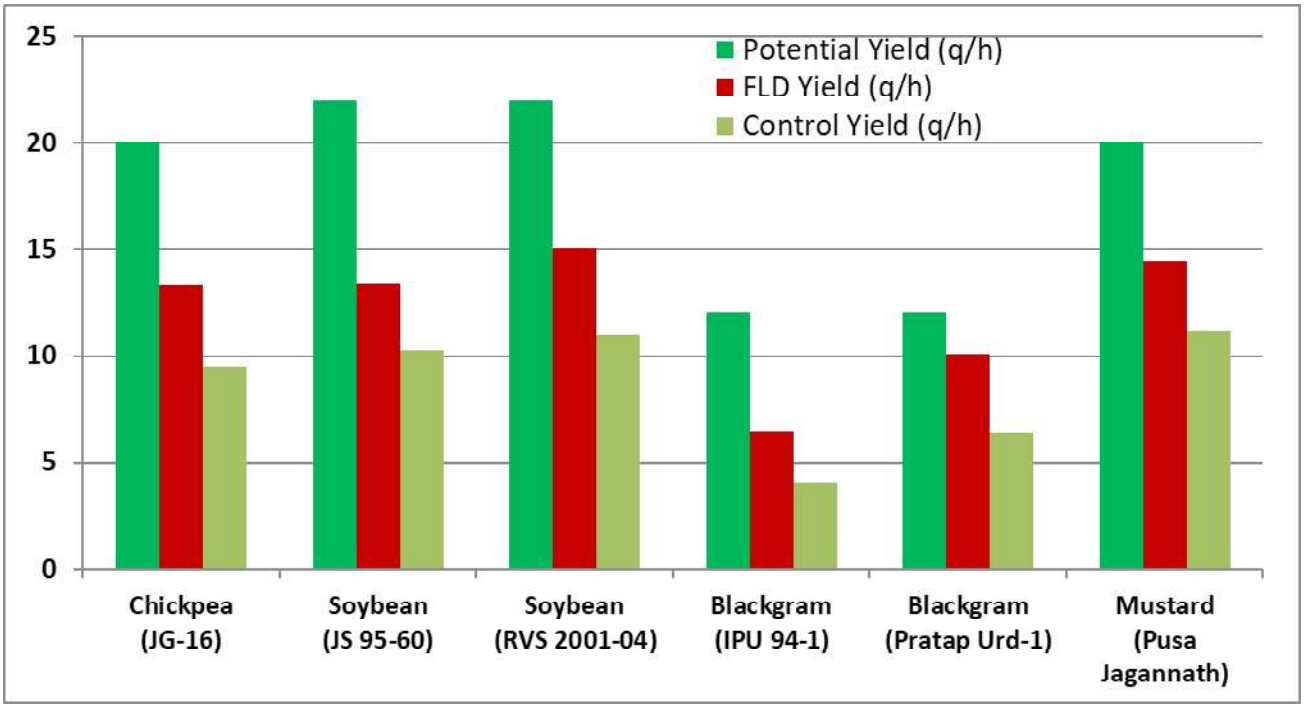

Fig 1. Yield performance of improved varieties

technology index is 27.75 and extension index is 16.50 also. It is concluded that the existing extension gap can be bridged through participatory approach (*Mukhopadhyay, 2002*). The extension agencies could effectively communicate the improved technologies to farming community for better production. Similar findings has also been reported *Kandian et al. (1997*) in oil seeds, *Singh et al. (2002*) in pulses, *Singh et al. (2002)* and *Gupta et al. (2004*) in soybean, *Singh et al. (2014*) in chickpea

CONCLUSION

Cluster Frontline demonstration trials were determined under the supervision of scientists at farmer's field, still a gap between the potential yield and trial yield exists which ranges from 1.90 q/ha in blackgram variety Pratap urd 1 to 8.60q/ha in soybean JS95-60. This may be due to soil fertility, weather and agro-climatic condition. Hence, the location specific recommendations are necessary to bridge this gap, which may have been due to the more traditional farmers practices followed in the region. It can be reduced by giving more cluster frontline demonstration in this district and motivating farmers for adopting the improved variety and technologies since indicates the opportunities of high level of adoption.

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