

Impact of Front Line Demonstrations (FLDs) on *Kharif* Maize in Bundelkhand Region

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Introduction:

Bundelkhand is a geographical and cultural region and also a mountain range in central & North India. The hilly region is now divided between the states of Uttar Pradesh and Madhya Pradesh, with the larger portion lying in the latter state. Bundelkhand region is covered 15 Districts of both Uttar Pradesh & Madhya Pradesh. In Uttar Pradesh, seven Districts namely; Jhansi, Jalaun, Lalitpur, Chitrakoot, Banda, Hamirpur & Mahoba and eight Districts namely; Datia, Chhatarpur, Damoh, Panna, Sagar, Tikamgarh, Vidisha & Niwari in Madhya Pradesh comes under Bundelkhand region. Maize is the very old crop of Bundelkhand region after pulses and oilseeds. It is cultivated several years back in Bundelkhand but due to more damage by the “Anna Pashu” and with low productivity farmers replace the maize by growing pulses & oilseeds. They left the field fallow in *Kharif* season. In India, maize is cultivated in different states name; Uttar Pradesh, Madhya Pradesh, Haryana, Punjab, Bihar, Chhattisgarh, Jharkhand, Gujarat, Maharashtra, West Bengal, Orissa, etc. In Uttar Pradesh, maize cultivated Districts are Jhansi, Meerut, Saharanpur, Muzaffarnagar, Bareilly, Muradabad, Rampur, Dhampur, Jalaun, Lalitpur, Kanpur, Sahmli, Aligarh, Etawa, Firozabad, Sikohabad, Allahabad, Varanasi, etc. Front Line Demonstrations (FLDs) on maize were conducted in five villages namely; Piprain Jhansi District of Uttar Pradesh, Panchampura, Kunwarpura & Daryan Kala in Tikamgarh District & Sanora in Datia District of Madhya Pradesh. Total of 40 farmers were selected on the basis of their socio-economic conditions. The main objective of the FLDs to improve the socio-economic condition of the Bundelkhand farmers, increasing the maize cultivated area during *Kharif* season in Bundelkhand region and also utilization of the *Kharif* fallow land for cultivation of maize crop.

Methodology:

Front Line Demonstrations (FLDs) on maize conducted in five villages name; Piprain Jhansi District of Uttar Pradesh, Punchampura, Kunwarpura & Daryan Kala in Tikamgarh District & Sanora in Datia District of Madhya Pradesh in Bundelkhand region during *Kharif-2020* under SCSP which was funded by Indian Institute of Maize Research (IIMR), New Delhi, Sub-Campus, Punjab Agricultural University, Ludhiana, Punjab. The total sanction amount was 3.5 lakh for successfully conducted FLDs on maize during *Kharif-2020* in Bundelkhand region. Total 40 FLDs were conducted in 40 hectare areas.

Two high yielding single cross hybrids namely DHM-117 & DHM-121 were used for the distribution of seed under FLDs on maize during *Kharif-2020* in Bundelkhand region. Both the hybrids are suitable for growing in Bundelkhand region because these hybrids were released for zone-IV. The average yield of these hybrids is 80 q/ha. and mature in medium duration (90-100 days). Farmers has used local commercial cultivars for grain production of *Kharif* maize. Water soluble fertilizers (18:18:18 superphosphate) were distributed to the farmers. 3 kg 18 : 18 : 18 superphosphate fertilizer were distributed for 1 FLDs/ 1 hectare area. The significant responses were recorded of that fertilizers after applying in *kharif* maize under Front Line Demonstrations (FLDs) on maize during *kharif-2020*.

Table-1: List of the farmers selected for conducted FLDs on maize.

S.No.	Name of villages	District	State	Total no. of farmers
1.	Pipra	Jhansi	Uttar Pradesh	05
2.	Punchampura	Tikamgarh	Madhya Pradesh	10
3.	Kunwarpura	Tikamgarh	Madhya Pradesh	10
4.	Daryan Kala	Tikamgarh	Madhya Pradesh	10
5.	Sanora	Datia	Madhya Pradesh	05
6.	Total no. of farmers			40



Results & Discussion:

The results were revealed that the performance of the crop stands good with healthy crops. The number of cobs was recorded 1 to 3 cobs per plant. The number of grain rows was recorded approximately 20 rows per cob and the number of grains was recorded 400-500 grains per cob. In infestation of Fall armyworm was seen during the early crop growing (vegetative) and later (milking to maturity and after maturity) stage. This is the very serious insect of maize crop which is damage the crop in every stage of the crop. Scientists have suggested the use of Spynosed 45 S.C. 0.5 ml/litre of water or Emidamectin benzoate 5 S.C. 100 g or Endoksacarb 14.5 S.C. 200 ml/litre or Fifronil 5 S.C. 500 ml/litre or Chlorantraniliprole 250

ml/litre chemicals spraying the crop with eddying 800-1000 litre of water at insect attacking stage. The average yield production of *kharif* maize was recorded as 12 quintals per hectare and 40 quintals per hectare, respectively from farmers and FLDs practices. The average net returns (Rs/ha) of *kharif* maize were recorded 15,000 Rs/ha and 50,000 Rs/ha, respectively from farmers & FLDs practices. The average cost of production of *kharif* maize was recorded 6,000 Rs/ha and 16,000 Rs/ha, respectively for both farmers & FLDs practices. The average yield gains & net return gains were recorded 20-25 % & 35,000 Rs/ha., respectively. The significant average cost: benefit ratio of *kharif* maize production was recorded 1.2 & 3.6 from both farmers & FLDs practices, respectively. The significant differences were recorded from farmer's practices and FLDs practices in several points such as variety, seed rate, seed treatment, time of sowing, method of sowing, fertilizers management, water management, plant protection, threshing, harvesting & marketing, etc.

Table-2: Details of the average yield and cost: benefit ratios from FP & FLDs practices.

S. No.	Area (ha)	Average yield (q/ha)		Average net returns ('000 Rs/ha)		Average yield gains (%)	Average net return gain (Rs/ha)	Average Cost : Benefit ratio	
		FP	FLDs	FP	FLDs			FP	FLDs
1	1 ha	12	40	15,000	50,000	20-25	35,000	1.2	3.6

Summary & Conclusion:

The Farmers with or without resources keep their land fallow in *Kharif* and cultivate wheat, gram, linseed and lentil in *Rabi*. Here we found *Kharif* Maize a promising crop to increase cropping intensity in Bundelkhand region. With a majority of population living in villages understudied area were economically isolated. Those were below the poverty line and their livelihood dependant solely on agriculture and livestock rearing the SCST Plan seems to be a boon for uplifting their status. Farmers were benefitted from the FLDs practice in comparison to their traditional practices. The average yield production of maize from farmers practices and FLDs practices was 12 quintals per hectare and 40 quintals per hectare, respectively. The cost: benefit ratio from farmer's & FLDs practices was 1.2 & 3.6, respectively.