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Research Note

Evaluation of yield of maize through improved variety

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SUMMARY : The study was carried out during *Kharif* season of 2011, 2012 and 2013 in seven villages of Narmada district. In all 32 demonstrations on maize crop were carried out in area of 11.6 ha with the active participation of farmers with the objective to demonstrate the latest technology of maize production potential. The improved technology consisting of suitable variety 'Gujarat Maize 6'. The results revealed that FLD recorded higher yield as compared to farmers practice over the years of study. The improved variety recorded average yield of 1409 kg/ha which was 18.5 per cent higher than that obtained with farmers practice of 1189 kg/ha. In spite of increase in yield of maize, technological gap, extension gap and technology index existed which was 1034, 219 kg/ha and 42.3 per cent, respectively. The improved variety gave higher gross return of 15030 Rs./ha, net return of 4031 Rs./ha with benefit cost ratio 1.4 as compared to local check (12688 Rs./ha, 2289 Rs./ha and benefit cost ratio 1.2).

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Maize is the most important cereal crop known as queen of cereals due to unparrellel productivity among cereal crops. In India, maize occupies third position both in area and production after rice and wheat. In Gujarat it is grown on 4.19 lakh ha area with production 6.03 lakh m tons with productivity of 1439 kg/ha during the year 2008-09 (DAO, 2010). Maize is one of the important cereal crop grown in *Kharif* season in the district. Narmada covers 5384 ha of land under maize cultivation with average productivity of 3000 kg/ha. The low yield productivity due to erratic rainfall, small land holdings, adoption of local cultivars, low and imbalance use of fertilizers and no use of plant protection measures. Yield of maize can be enhanced at least 26.7 per cent with adoption of improved technologies such as improved cultivars, recommended dose of fertilizers and control of pests. (Dhaka *et al*., 2010), fertilizer and plant protection are most critical inputs for increasing yield (Mishra *et al*., 2009). Realizing situations front line demonstration on maize production technology were planned and conducted to show the production potential, economic benefit of improved technologies under real farmers' condition.

Soils of the region are medium black clay with medium to low fertility with pH ranging from 7.0 -7.5. Materials for the present study comprised of high yielding variety "Gujarat Maize 6" of maize. Locally cultivated variety was used as local check. In the present study, the data on output of maize cultivation were collected from FLDs plots, besides the data on local practices commonly adopted by the farmers of this region were collected. In demonstration plots, quality seed was provided, whereas traditional variety was maintained in case of local checks. The demonstrations on farmers fields were facilitated by KVK scientists in performing field operations like sowing, spraying, weeding, harvesting etc., during the course of training and visits. For the

Table 1: Productivity, technology gap, extension gap and technology index of maize under FLDs

Years	Area (ha)	No. of farmers	Yield (kg/ha)			% increase over control	Technology gap (kg/ha)	Extension gap (kg/ha)	Technology index (%)
			Potential	Demonstration	Control				
2011	7.6	19	2443	1414	1180	19.8	1029	234	42.1
2012	2.0	5	2443	1389	1187	17.1	1054	202	43.1
2013	2.0	8	2443	1423	1201	18.5	1020	222	41.8
Mean	11.6	32	2443	1409	1189	18.5	1034	219	42.3

Table 2: Gross realization (Rs./ha), cost of cultivation (Rs./ha), net return (Rs./ha) and B: C ratio as affected by improved and local practices

Year	Gross realization Rs./ha		Cost of cultivation Rs./ha		Net return Rs./ha		B: C ratio	
	Improved technologies	Local check	Improved technologies	Local check	Improved technologies	Local check	Improved technologies	Local check
2011	14852	12387	10180	9580	4672	2807	1.5	1.3
2012	14585	12464	11259	10659	3326	1805	1.3	1.2
2013	15654	13214	11559	10959	4095	2255	1.4	1.2
Mean	15030	12688	10999	10399	4031	2289	1.4	1.2

study, technology gap, extension gap and technology index were calculated as suggested by Samui *et al*. (2000).

Results of 32 front line demonstrations conducted during 2011 to 2013 in 11.6 ha area on farmers fields of seven villages of Narmada district indicated that the cultivation practices comprised under FLD *viz.*, use of improved varieties produced on an average 18.5 per cent more yield of maize compared to local check (1409 kg/ha).The results indicated that the front line demonstrations have given a good impact over the farming community of Narmada district as they were motivated by the new agricultural technologies applied in the FLD plots. Data further showed that the yield of maize in the following years increased successively indicating clearly the positive impact of FLD over existing practices of maize cultivation (Table 1). The technology gap observed may be attributed to the dissimilarity in the soil fertility status and weather conditions. Hence, variety wise location specific recommendation appears to be necessary to minimize the technology gap for yield level in different situations (Mukharjee, 2003). The highest extension gap ranged from 202 kg/ha to 234 kg/ha during the period of study emphasizing the need to educate the farmers through various means for the adoption of improved agricultural production technologies to reverse this trend of wide extension gap. More and more use of latest production technologies with high yielding variety will subsequently change this alarming trend of galloping extension gap. The new technologies will eventually lead to the farmers to discontinue the old varieties and to adopt new variety. This finding is in corroboration with the findings of Raj *et al*. (2013). The technology index showed the feasibility of the evolved technology at the farmer's fields. The lower the value of technology index more is the feasibility of the technology. As such, reduction of technology index from 41.8 (2013) to 43.1 per cent (2012) exhibited the feasibility of technology demonstrated (Table 1). These results are in conformity with the findings of Jeengar *et al.* (2006) and Mokidue *et al*. (2011). The comparative profitability of maize cultivation with adoption of improved technology and farmers practices has been presented in Table 2. With the adoption of improved technology under FLDs recorded higher gross returns (Rs.15030/ha), net returns (Rs.4031/ha) and B: C ratio (1.4) compared to farmers practice. These results are in conformity with the findings of Rao *et al*. (2013) and Balai *et al*. (2013) Hence, by conducting front line demonstrations of proven technologies, yield potential of maize can be increased to grate extent. This will subsequently increase the income as well as the livelihood of the farming community.

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