

YIELD RESPONSE OF COMPOSITE MAIZE (*ZEA MAYS* L.) VARIETIES UNDER RAINFED CONDITION OF FOOT HILLS OF NAGALAND

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Maize is an important crop of North Eastern Hill Region. In Nagaland, maize is cultivated in an area of 31.5 thousand hectares with a total productions of 34.9 thousand tones (Anon. 1994-95). However, productivity of maize is still very low. The poor productivity potential of local maize varieties grown by the farmers of Nagaland is responsible for low yield of maize. The present experiment was conducted to test some of the newly released fertilizer responsive maize varieties for enhanced yield and for their suitability under rainfed conditions of foothills of Nagaland.

The experiment was conducted under rainfed conditions during Kharif season of 1998 on the experimental farm of School of Agricultural Sciences and Rural Development, Medziphema (310 m altitudes of 25° 45' N latitude and 93° 53' E longitude) in the foothills of Nagaland. The total rainfall during the crop season (April to July) was 443.4 mm.

The soil of the experimental field was well drained sandy loam with available N, P₂O₅ and K₂O contents being 596.8, 36.73 and 110.0 kg/ha respectively in the 0-15 cm soil layer having pH-4.2 and organic carbon content 1.07%.

The experiment was conducted with ten composite maize varieties in a randomized block design with three replications. At the time of field preparation, 20 tonnes/ha of FYM was applied uniformly. Standard package of practices were followed. Fertilizers @100kg N, 60 kg P₂O₅ and 40kg K₂O/ha were applied at the time of sowing. Half the doze of N and full dozes of P and K were applied as basal and the remaining half doze of N was applied in two equal instruments at knee high and tasselling stages. Intercultural operations were done as and when required. Harvesting was done on July 28, 1998 after full maturity. Sowing was done at a distance of 75 cm row to row and 25 cm plant to plant.

Plant height, number of green leaves/plant, stem thickness of varieties did not differ significantly. However, leaf area index (LAI) (Table 1) differed significantly. The LAI of all the varieties increased with the increasing growth stage upto 75 DAS, but there were no significant differences in different varieties upto 50 DAS, Ageti-76 recorded significantly higher LAI followed by Pusa composite-I, Navjot and Seta Lagos 8532. Singh et al (1979) also reported similar findings.

There was no significant differences in various yield attributing characters except 1000 grain weight amongst the varieties (Table 2) significantly among themselves. The highest test weight was recorded in Pusa composite-II (96-R-4215) and the lowest in Pusa composite - I.

However, there were significant variation in yields amongst the varieties. Variety Kiran recorded the highest yield of 10.83 q/ha followed by Navjot, Munneng 8331 and Navin. The yield, in general, was low which may perhaps be due to water stress condition in early growth stage in May as well as excess soil moisture condition during silking and tasselling stages in the second fortnight of June. Mahajan et al. (1996) found wide variations in yields of different composite maize varieties grown under rainfed conditions depending upon their genetic ability for higher yield.

On the basis of the results of this preliminary investigation, it may be concluded that composite maize variety Kiran will be suitable for rainfed conditions.

REFERENCES

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Table 1. Leaf Area Index of different composite Maize varieties

Variety	Days after sowing			
	25	50	75	Maturity
Kiran	216.9	1437.5	155.9	1477.1
Gujrat Makki-2	208.2	1129.6	1121.4	1038.4
Pusa composite II (Origin-96-R-4215	178.7	1200.9	1162.6	1120.0
Navjot	269.2	1532.0	1680.4	1611.0
Navin	217.5	1063.9	1288.9	1138.7
Pusa composite I	469.6	1382.9	1714.0	1648.4
Pusa composite II (Origin-Hyb. 96-R-4243	166.2	997.9	1205.6	1183.0
Ageti-76	828.3	1332.6	1859.1	1774.7
Munneng 8331	233.0	1852.9	1452.2	1414.9
Seta Lagos 8531	224.4	1196.7	1695.0	1630.3
SEM +- CD-5%	209.77 N.S.	1227.3 N.S.	139.07 413.22	52.19 306.26

Table 2. Some yield attributing characters and yield of different composite maize varieties.

Variety	No. of cobs/m ²	Grain weight/ cob(g)	1000 grain weight(g)	Grain yield(g/ha)
Kiran	25.3	83.9	198.9	10.8
Gujrat Makki-2	29.3	60.6	206.8	5.0
Pusa composite II (Origin-96-R-4215	28.3	63.3	214.2	6.0
Navjot	30.3	78.2	189.5	8.9
Navin	25.3	37.8	181.1	7.3
Pusa composite I	34.0	62.5	146.9	5.0
Pusa composite II (Origin-Hyb. 96-R-4243	34.0	55.1	170.2	4.0
Ageti-76	36.3	59.1	173.0	6.3
Munneng 8331	25.3	73.1	211.7	7.5
Seta Lagos 8531	27.0	67.0	209.9	7.0
SEM +- CD-5%	3.07 N.S.	7.78 N.S.	13.59 40.38	1.67 4.95