

**A NOTE ON THE PERFORMANCE OF HYBRID MAIZE UNDER
VARYING PLANT POPULATIONS AND DIFFERENT LEVELS
OF NITROGEN IN RED LOAM SOILS OF KERALA**

The high yields of hybrid maize have led to its cultivation in almost all parts of the country. Preliminary trials conducted in red loam soils of Vellayani, Kerala have shown that this crop can be successfully cultivated in Kerala (Nair *et al* 1966.) Plant population per unit area is an important factor that influences the crop yield. Another factor that influences the yield is the application of fertilizers, especially nitrogen, as the crop is highly responsive to higher levels of nitrogen. Hence the present investigation was conducted to find out the optimum spacing (plant population) and nitrogen dose for the hybrid maize variety Ganga 5 in red loam soils.

The experiment was conducted at the Agricultural College farm Vellayani during the summer season of 1971-72. The soil of the experimental area is red loam and acidic (pH 5.8); the total nitrogen, available phosphorus and available potash were 0.058, 0.004, and 0.0016 percent respectively. The trial was conducted in a randomised block design with four replications. The treatments included four levels of nitrogen: 0, 40, 80 and 120 kg. N per hectare and three spacings; 60 cm x 25 cm (66,000 plants per hectare), 70 cm x 25 cm (57,000 plants per hectare) and 80 cm x 25 cm (50,000 plants per hectare). The variety Ganga 5, was selected due to its high adaptability to Kerala conditions. The uniform fertilizer application included 50 kg P₂O₅ and 50 kg K₂O per hectare. In addition, a dose of 5000 kg farm yard manure was applied to all treatments.

(a) *Average number of cobs per plant.* From the data in Table 1, it is seen that the spacing 60 cm X 25 cm has produced the maximum number of cobs per plant although the differences were not statistically significant.

Regarding the effect of different levels of nitrogen, 120 kg of N per hectare has produced significantly higher number of cobs per plant than both 0 and 40 kg N per hectare.

(b) *Yield of maize grain.* From the data in Table 2 it is clear that the different spacings had no significant effect on grain yield. However, the spacing 70 cm x 25 cm (66,000 plants per hectare) gave the maximum

Table 1**Average number of cobs per plant due to different treatment**

Treatment	Average number of cobs per plant
<i>Spacing in cm</i>	
60x25	1.42
70x25	1.39
80x25	1.36
'F' test	not significant
<i>in kg per hectare</i>	
0	1.16
40	1.41
80	1.46
120	1.50
'F' test	significant
G. D. (0.05)	0.067

Table 2**Average yield of maize grain and stover in kg per hectare**

Treatment	Yield of grain	Yield of stover
<i>Spacing in cm</i>		
60 × 25	1738	4430
70x25	1900	4459
80 × 25	1823	3685
'F' test	Not significant	Significant
G. D. (0.05)		1235
<i>Nitrogen in kg per hectare</i>		
0	1599	2237
40	1770	4289
80	1990	4252
120	1923	5978
'F' test	Not significant	Significant
G. D. (0.05)		1416

grain yield of 1900 kg per hectare. Increased levels of nitrogen, i. e. 40, 80 and 120 kg nitrogen per hectare increased the grain yield over no nitrogen although the results were not statistically significant, Maize crop generally responds to application of high levels of nitrogen. In the present study also there was response up to 80 kg nitrogen per hectare.

(c) *Yield of stover.* From Table 2, it is evident that closer spacing produced higher yield of stover than wider spacings. Both 60 cm x 25 cm and 70 cm x 25 cm produced significantly higher yield of stover than the spacing, 80 cm X 25 cm. This may be due to the higher population of plants in treatments with closer spacings. Similarly higher levels of nitrogen also gave significantly high yield of stover. The highest yield was obtained from the application of 120 kg N per hectare. These results confirm the findings of earlier workers like Shah and Gautam (1964).

Thanks are due to Shri. C. M. George, Professor of Agronomy, Agricultural College, Vellayani for providing the facilities required for the work.

REFERENCES

- Nair, K. P. M. Menon, A. G. G. and George C. M. 1966. Studies on hybrid maize. Effect of spacing and fertility levels on the yield of Deccan hybrid makka. *Agri. Res. J. Kerala.* 4: 24-30
- Shah, V. H. and Gautam, C. P. 1964. Nitrogen fertilization for maize. *Agri. Res.* 4: 2

Agricultural College &
Research Institute,
Vellayani.

V. K. SASIDHAR
N. SADANANDAN

(Ms. Received: 22-7-1972)