

RESEARCH NOTE

Response of Maize (*Zea Mays*) to Fertilizers at
Bibile and Maha Illuppallama

A $3 \times 3 \times 3$ factorial experiment confounded in 3 block of 9 plots each, with three replications, using 0, 50 and 100 lb N/acre as ammonium sulphate, 0, 40 and 80 lb. P_2O_5 /acre as concentrated superphosphate and 0, 30 and 60 lb. K_2O /acre as muriate of potash was conducted at Agricultural Experimental Station, Bibile and Agricultural Research Station, Maha Illuppallama on Maize (T-48) during Maha 1969/70. Phosphorus and potassium were applied as basal dressing. Nitrogen was given in two split doses, one-fourth as basal and three-fourths at 4 weeks after planting (knee high stage). A plot size of 10 ft. $\times$ 25 ft. and a spacing of 10 ins. in the row and 2½ ft. between the rows were used.

The soil analysis and the main effects of N, P and K for the two locations are presented in Table 1, 2 and 3 and the results summarized as follows:—

- (i) At both locations 50 lb. N/acre was significantly superior (at 1% level) to the 0 level and there was no significant difference between the 50 and 100 lb. levels of N.
- (ii) At Bibile P gave a significant response at the 1% level. The 80 lb. P_2O_5 /acre level was significantly superior to both 40 and 0 lb. P_2O_5 /acre levels. On the other hand, at Maha Illuppallama there was no significant response to P.
- (iii) There was no significant response to K at both locations.
- (iv) None of the two factor interactions was statistically significant.

The results at Bibile are in agreement with those obtained for the variety Dixie 22 by Kathirgamathaiyah and Dharmarajah.¹ The response of maize to fertilizers at both locations appear to follow closely the nutrient status of the soils. The lack of response to P at Maha Illuppallama is possibly due to the very high phosphorus status of this soil (Table 1). Such a build-up is likely under regular heavy dressings of P fertilizers. Likewise the satisfactory K status of the soils explains the absence of response to this nutrient. Although the N status of these soils are low, the maximum limit appears to be around 50 lb. N/acre for this variety at both locations. This result is in agreement with that obtained by earlier workers.¹

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1. Kathirgamathaiyah, S. and Dharmarajah. N. Trop. Agriculturist, CXXIII, 91-94, 1970.
2. Administrative Report of the Department of Agriculture, 1966-67, Govt. Publications Bureau, Colombo, Ceylon. Part IV: pp C 94.

RESPONSE OF MAIZE TO FERTILIZERS

TABLE 1.

Soil Analysis

			<i>Bibile</i>		<i>Maha Illuppallama</i>
pH	..	..	5.2	..	5.5
Total N%	..	..	0.09	..	0.12
Available Phosphorus (Olsen's) lb. P_2O_5 /acre	..	..	16.0	..	86.0
Exchangeable Potassium (m.e. %)	..	..	0.15	..	0.36
Organic Matter%	..	..	1.62	..	1.70

TABLE 2.

Mean Yields of Maize in Bu.ac. at Bibile

<i>Level</i>		<i>N.</i>		<i>P.</i>		<i>K.</i>		<i>L.S.D.</i>
0	..	41.9	..	39.8	..	46.0	..	5%-4.2
1	..	47.6	..	46.7	..	46.9	..	1%-5.6
2	..	49.7	..	52.7	..	46.3	..	

TABLE 3.

Mean Yields of Maize in Bu.ac. at Maha Illuppallama

<i>Level</i>		<i>N.</i>		<i>P.</i>		<i>K.</i>		<i>L.S.D.</i>
0	..	26.0	..	41.2	..	41.9	..	5%-5.4
1	..	48.0	..	41.2	..	41.2	..	1%-7.3
2	..	48.0	..	41.7	..	40.8	..	