

Response of Long and Medium Duration Varieties of Finger Millet (*Eleusine coracana* (L.) Gaertn.) to Farm Yard Manure and Nitrogen

BY

P. RANGASAMY¹ and K. KUMARASWAMY²

ABSTRACT

Field experiments were conducted for three seasons to find out the response of medium and long duration varieties of finger millet to nitrogen and farm yard manure. The results revealed that the application of farm yard manure at 25 tonnes/ha did not significantly increase the grain yields in both medium and long duration varieties. Application of N at 112.5 kg/ha to both medium and long duration varieties of finger millet was the optimum and economical dose.

INTRODUCTION

The results obtained from trials conducted to find out the response of long and medium duration varieties of finger millet to nitrogen and farm yard manure, at the Agricultural College Farm, Coimbatore are reported.

MATERIALS AND METHODS

The experiment was laid out in split plot design with varieties as main plot treatments and levels of farm yard manure and N as sub-plot treatments with two replications during monsoon seasons of 1965 and 1966 and summer season of 1968. The soil of the experimental plots represented red soil group. Finger millet varieties viz.,

CO. 6, CO. 1 and CO. 5 of medium duration (115 to 135 days) and CO. 4, K. 1 and K. 2 of long duration (above 135 days) were tested against two levels of farm yard manure viz., (1) control (No Farm Yard Manure), (2) 25 tonnes of Farm Yard Manure/ha and seven levels of N viz., 0, 22.5, 45.0, 67.5, 90.0, 112.5 and 135.0 kg/ha. N was applied in the form of ammonium sulphate in two split doses, half at the time of planting and the other half a month after planting. All experimental plots received a basal dose of P and K at 10 kg P/ha and 18 kg K/ha in the form of superphosphate and muriate of potash respectively. Ears harvested separately from each plot (gross size 5 × 3 m; net size 4.5 × 2.5 m) leaving one row on all sides of the plots were

1. Instructor, Department of Botany, Tamil Nadu Agricultural University, Coimbatore 641003.

2. Deputy Agricultural Officer (Chemistry), Soil Testing Laboratory, Coimbatore 641003.

TABLE 1. Varietal performances of the finger millet varieties (Grain yield in kg/ha).

Years	Medium duration varieties					Long duration varieties				
	C 0.6	C 0.1	C 0.5	S. E.	C. D.	C 0.1	K 1	K 2	S. E.	C. D.
1965	575	664	744		N. S.	767	1116	1259		N. S.
1966	731	1072	1061		N. S.	1051	1208	1473	40	240
1968	1727	1074	2025		N. S.	1256	1408	1303		N. S.
Mean	1011	1237	1277		N. S.	1025	1244	1345	66	227

TABLE 2. Comparison of levels of farm yard manure (Grain yield in kg/ha)

Treatment	Medium duration varieties					Long duration varieties				
	1965	1966	1968	Mean	per cent over control	1965	1966	1968	Mean	per cent over control
Control (No Farm yard manure)	659	947	1864	1157	—	1041	1206	1276	1174	—
25 tonnes Farm yard manure/ha	663	962	1954	1193	3	1053	1281	1371	1235	5
S. E.										
C. D.	N. S.	N. S.	N. S.	N. S.		N. S.	N. S.	N. S.	N. S.	

thrashed and the grain yields of individual plots were recorded. The yield data were statistically scrutinised and response curves were also drawn (Goulden, 1959)

RESULTS AND DISCUSSION

All medium duration varieties of CO. 6, CO. 1 and CO. 5 yielded simi-

larly in all the three years (Table 1). In case of long duration varieties, K1 and K2 recorded significantly higher grain yield than CO. 4 in the year 1966 and all the varieties yielded similarly during the other two years. The combined analysis of the data revealed K. 2 variety to be on par with K. 1 variety and

TABLE 3. Comparison of N levels (grain yield in kg/ha)

Treatment	Medium duration varieties					Long duration varieties				
	1965	1966	1968	Mean	per cent over control	1965	1966	1968	Mean	per cent increase over control
Control	415	901	1645	987	—	498	802	1020	773	—
22.5 kgN/ha	585	1001	1845	1145	16	734	1078	1092	968	25
45.0 kg N/ha	685	932	1890	1169	18	985	1221	1223	1143	48
67.5 kg N/ha	624	961	1900	1162	18	1132	1331	1330	1264	64
90 kg N/ha	680	778	1932	1130	14	1228	1326	1377	1307	69
112.5 kg N/ha	820	1091	2168	1360	38	1366	1448	1598	1471	90
135 kg N/ha	817	1016	1982	1272	29	817	1016	1617	1272	65
S. E.	69		123	43		77	80	80	45	
C. D.	196	N. S.	351	149		219	230	240	125	

superior to CO 4 variety which in turn was on par with K 1 variety.

The results further revealed that application of farm yard manure at 25 tonnes/ha did not increase the grain yield significantly over control in both long and medium duration varieties (Table 2.).

Application of N increased grain yields of both medium and long duration varieties and the variations recorded among different levels of N were statistically significant. Application of N at 112.5 kg/ha and 135 kg N/ha levels was significantly superior to other lower levels of N for both

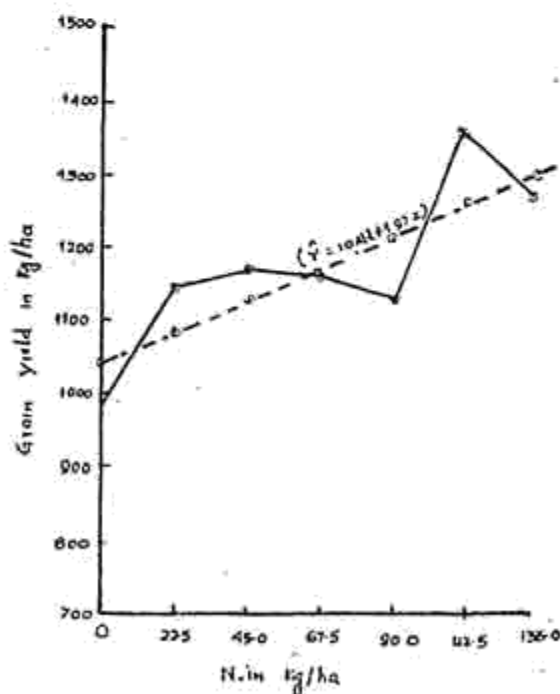


Fig.1. Response curve for medium duration varieties

medium and long duration varieties. Application of N progressively increased the grain yield and the increase at 112.5 kg N/ha level was 38 per cent over control in case of medium duration varieties and 90 per cent over control in case of long duration varieties. The yield increase declined after this level. The regression analysis showed a linear response of medium duration varieties to N with a prediction equation of

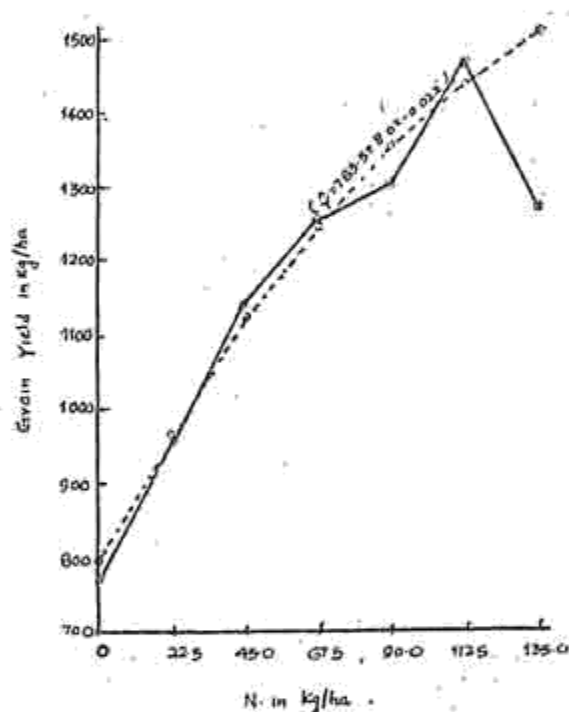


Fig. 2. Response curve for long duration varieties

$\hat{Y} = 1041.1 + 1.97x$ and a quadratic response of long duration varieties to N with a prediction equation of $\hat{Y} = 783.5 + 8.6x - 0.02x^2$ (Figure 1 and 2)

Ananthapadmanabhan *et al.* (1967) recommended 68 kg N/ha as optimum dose for finger millet in the Lower Bhavani Project area of Tamil Nadu.

Kolandaiswamy (1967) recommended 100 kg N/ha at planting as optimum dose for CO. 7 finger millet. Rangasamy and Krishnan (1970) reported 44 kg N/ha as optimum dose for CO 2 and CO 7 varieties of finger millet. Rangasamy (1973) recommended 112.4 kg N/ha for short duration and 67.5 kg N/ha for early duration varieties of finger millet. In the present investigation, since the N levels at 112.5 kg/ha and 135 kg/ha were superior to other lower levels and were on par with each other in increasing the grain yield, 112.5 kg N/ha level may be taken as the economic and optimum dose for both medium and long duration varieties.

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