

Agri. Res. J. Kerala. 1976 14 (2)

PERFORMANCE OF COWPEA VARIETIES UNDER VARYING LEVELS OF PHOSPHORUS IN RED-LOAM SOILS

Preliminary trials with cowpea varieties showed that 'New Era' can be successfully grown in the red loam soils of Vellayani (Nair, 1966). Varieties like Calicut-51, Calicut-78 and CO-2 were found to give good performance elsewhere in the State. The response to phosphate fertilization of pulses had been reported by many workers (Deshpande and Bathkal, 1965; Moolani and Jana, 1965 and Nair, 1966). The present study was therefore taken up to see the effect of different levels of P_2O_5 on four varieties of cowpea. The experiment was carried out at the farm attached to the College of Agriculture, Vellayani during April - August, 1974 with varieties Calicut 51, Calicut 78, New Era and CO-2 and phosphorus at 0, 20, 40 and 60 levels in a Randomised Block Design. The soil of the experimental site was very low in nitrogen and medium phosphorus content. Phosphorus was applied as superphosphate basally in bands 5 cm below and away from seeds. Seeds were dibbled in lines with a spacing of 25 cm x 20 cm at the rate of one seed per hole nitrogen at the rate of 10 kg/ha and K_2O at 20 kg/ha were applied to all the plots. The harvesting was completed in 110 days. The dried pods were collected periodically and the grains were separated, dried and weighed.

The data on yield of grain obtained from different varieties under different levels of phosphorus are given in Table 1. There was no significant difference in yield among the different varieties. However, on an average, Calicut - 78 and New Era gave slightly higher yields over the other two varieties. But the variety New Era produced the maximum yield of 713 kg grain/ha at the highest level of phosphorus application.

The different levels of phosphorus showed significant difference in yield of cowpea. Maximum yield for all varieties was obtained with the highest level of phosphorus i.e. 60 kg P_2O_5 /ha. The lowest yield in all varieties was noticed with no phosphorus, the yield increasing with successive increments of phosphorus. Thus the response in yield due to phosphorus application was found to be linear showing that the yield could be further increased by addition of phosphorus. The average response per kg of P_2O_5 was 6.8 kg grain in the range of 0-20 kg P_2O_5 /ha, 4.4 kg grain in the range of 20-40 kg P_2O_5 and 7.6 kg grain in the 40-60 kg P_2O_5 /ha. range. The mean response per kg P_2O_5 in the whole range is 6.3 kg grain. Linear response function had been found to be the best fit and is given by $y = 6.101p - 225.67$. The increased yield due to

Table 1

Varieties	Levels of P ₂ O ₅ in kg/ha.				Mean
	0	20	40	60	
Calicut - 51	216.7	429.0	396.6	445.6	372.0
Calicut - 78	286.3	395.6	518.3	566.6	441.8
New Era	246.7	334.0	445.6	713.3	434.8
CO - 2	147.0	300.0	433.3	618.0	350.3
Mean	224.2	360.5	448.5	601.6	..

S.E.M. for comparison of varieties . . . ± 29.48
 C.D. at 5% level for levels of P₂O₅ 85.14
 C.D. at 5% level for combinations 170.27

higher levels of phosphorus may be due to the better utilisation of phosphorus applied in bands close to the plants. This is in agreement with the findings of Sinha (1971).

സംഗ്രഹം

ന്യൂ ഇറാ, കാലിക്കട്ട് 78, കാലിക്കട്ട് 51, കൊ-2 എന്നീ നാലുതരം പയറിനങ്ങൾക്ക് പല അളവുകളിൽ ഫോസ്ഫറസ് വളം നൽകി പരീക്ഷണം നടത്തിയതിൽ, എല്ലായിനങ്ങളിലും 60 കിലോഗ്രാം P₂O₅ വരെ കൂട്ടുന്നതിനനുസരിച്ച് വിളവു വർദ്ധിക്കുന്നതായി കണ്ടു. ന്യൂ ഇറാ എന്നയിനമാണ് ഏറ്റവും കൂടുതൽ വിളവ് തന്നത്

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