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A NOTE ON THE USE OF CHILEAN NATURAL POTASSIUM NITRATE FOR MANURING COCONUT

The coconut palm has been under cultivation in India from very early times and at present occupies a total area of 1.1 million hectares. Studies reported by earlier workers have established clearly that proper fertilization with N, P and K helps in increasing the productive capacity of coconut palms.

Marar and Pandalai (1961) reported that Chilean nitrate proved superior to Ammonium sulphate as a source of nitrogen for coconut. Ramanandan *et al* (1962) reported that an N K fertilizer made from sea bitterns can be used in the place of ammonium sulphate for coconut. The commonly used straight fertilizers for manuring coconut at the present time are ammonium sulphate and urea for nitrogen; muriate of potash and potassium sulphate for potash.

Chilean natural potassium nitrate containing 15 per cent nitrogen and 12 per cent potash was made available by M/s. Rallis (India) Ltd. for trials as a manure for coconut The material undoubtedly required some fortification with other fertilizers for application to the coconut in order to get the required quantities of nutrients in the right proportion. The material was compared with the ordinarily used fertilizers, ammonium sulphate and muriate of potash.

A trial with randomised block design using four treatments and eight replications (single tree plots) was started in 1962 in field X of the Central Coconut Research Station (present Central Plantation Crops Research Institute), Kasaragod and continued upto 1969. The replications were formed on the basis of pre-treatment yield data for the period 1958-61. The eight replications actually represented 8 yield groups, in descending order. The mean pre-treatment yield for all the four treatments was 57.7 nuts per palm per year. The treatments were (T_1) Chilean natural potassium nitrate 3.8 kg (to supply 0.34 kg N and 0.45 kg K_2O) + Superphosphate (ordinary) 1.4 kg (to supply 0.23 kg P_2O_5); (T_2) Chilean natural potassium nitrate 2.3 kg. + Muriate of potash 0.36 kg. + Superphosphate (ordinary) 1.4 kg; (T_3) Ammonium sulphate 1.7 kg. + Superphosphate (ordinary) 1.4 kg. + Mureate of potash (ordinary) 0.91 kg. and (T_4) Control — no manure.

In the case of coconut the effect of manuring on yield will be seen only after 2½ years after manuring. The statistical analysis of the yield data for individual years (1964-69) did not reveal any difference between treatments.

Table 1

Analysis of variance

Source of variation	d. f.	S. S.	M. S.	F.
Years	5	17938.7	3587.74	17.00***
Treatments	3	858.5	286.17	1.36
Group	7	34956 3	4993.76	23.67***
Years x Treatment interaction	15	3575.6	238.37	1.13
Years x Groups	35	6278.2	179.38	0.85
Treatment x Groups	21	17312.3	824.40	3.91***
Error	105	22154.3	210.99	
Total	191	103073.9		
*** Significant at 0.1% level		34956.3	4993.76	

Table 2

Mean values

Yield groups / Treatments	G_1	G_2	G_3	G_4	G_5	G_6	G_7	G_8	Mean
T_1	112.8	83.2	72.2	66.0	48.8	67.0	29.0	57.3	67.0
T_2	73.5	75.3	77.3	73.0	63.0	62.0	48 5	30.5	62.9
T_3	81.5	73.8	74.5	81.3	48.8	46.0	70.7	52.5	66.1
T_4	80.2	76.8	71.2	57.8	57.8	54.2	44.7	52.7	62.0
Mean	87.0	77.3	73.8	69.5	54.8	57.3	48.2	48.3	
Interaction is significant					S. E. = 5.93 C. D. = 16.4				

Pooled analysis of the data for this period also did not reveal any statistically significant differences between treatments. The results are summarised in Tables 1 and 2. Between yield groups and between years differences were significant

Table 2 (Contd.)

(b) Years X Mean		(c) Groups	Mean	
			Pre treatment	Post treatment
1964	71.5			
1965	45.6	G_1	82.5	S7.0
1966	69.6	G_2	72.4	77.0
196?	75.5	G_3	67 6	73.8
1968	62.4	G_4	63.9	69.5
1969	62.5	G_5	53.9	54.8
General Mean	64.5	G_6	49.4	57.3
S. E. of Mean	2.5?	G_7	40.0	48.2
C. D. between		G_8	31.7	48.3
means	7.10	Mean	57.7	64.5
		S. E.		2.96
		C. D.		8.2

(P = G.001). Interactions of the years with treatments and yield groups were very little where as treatment x yield group interaction was highly significant (P = 0.001) thereby showing that the treatments have not responded uniformly in the different yield groups.

However, when the usual fertilizers (Ammonium sulphate, super phosphate and muriate of potash) were added there was a mean increase of 4.1 nuts over the control plot. But the increase in the yield of nuts when Chilean natural potassium nitrate was added along with superphosphate (T_1) is 5 nuts, over the control plot (no manure). So Chilean natural potassium nitrate can be used as an N K fertilizer for coconut.

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സംഗ്രഹം

പതിനഞ്ചു് ശതമാനം നൈട്രജനും (പാകൃജനകം) പന്ത്രണ്ടുശതമാനം പൊട്ടാഷും (ക്ഷാരം) അടങ്ങുന്ന ചിലിയൻ നാച്യുറൽ പൊട്ടാസിയം നൈട്രേറും സാധാരണ ഉപയോഗിക്കപ്പെടുന്ന രാസവളങ്ങളായ അമോണിയം സൾഫേറും മ്യൂറിയേറ്റ ഓഫ് പൊട്ടാഷും raioro തമ്മിപ്പെടുത്തിക്കൊണ്ടു് ഒരു പരീക്ഷണം നടത്തുകയുണ്ടായി. അമോണിയം സൾഫേറിനും മ്യൂറിയേറ്റ് ഓഫ് പൊട്ടാഷിനും പകരമായി തെങ്ങിനു് നൈട്രജൻ — പൊട്ടാഷ് (പാകൃജനക—ക്ഷാര) വളമായി ചിലിയൻ നാച്യുറൽ പൊട്ടാസിയം നൈട്രേറു് ഉപയോഗിക്കാമെന്നു് പരീക്ഷണം വ്യക്തമാക്കുന്നു.

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