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N P K REQUIREMENTS OF COCONUT IN THE BACKWATER REGIONS OF KERALA

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Coconut occupies an important place in the life and economy of the people of Kerala. It is the coastal and backwater regions that contribute the lion's share of the production of coconuts in this state and the industries based on coconut are also located in these parts.

Studies reported by earlier workers have established unequivocally that proper fertilization with N P & K helps in increasing the productive capacity of coconut trees. Thus for red loam soils N, P and K at the rate of 0.5)b, 0.25 1b and 1.0 1b respectively per tree per year were reported to be superior to the other dosages tried (Anonymous 1963). Smith [1964] reported an increase in yield of 20.8 percent by applying 5 pounds of 10-5-20 N P K mixture per tree, an increase of 8.5 percent nuts per palm with 2.55 1b K_2O per palm per year and a decrease to an extent of 7.5 percent nuts per palm with 0.75 1b P_2O_5 alone. Fremond (1964) observed that nitrogen increased the number of female flowers per buneh but lowered significantly the rate offruit setting and the copra yield; addition of potassium corrected these drawbacks and a dose of 1.5 lb of potash per tree gave the best results raising the yield of coconuts by 1 metric ton of copra per hectare per year.

Foale [1964] observed that increasing annual dose of potash had significantly increased the vegetative growth of seedlings in the early years giving over 60 per cent increase in copra yield in the 10th year.

As no information was available on the optimum N P K requirements of coconut grown in the backwater areas of Kerala, studies reported in this paper were taken up to fill up this lacunea in our knowledge. These studies were conducted at the Coconut Research station, Kumarakom, during 1953—1959.

Material and Methods

The test trees were adult coconut palms of the variety West Coast Tall. The trial was laid out in a randomised block design witk six treatments replicated six times. Eight coconut trees of uniform age constituted one plot. The treatments were as below.

	N	P	K
	1b per tree per year		
T1	0.25	0.25	0.50
T2	*0.25*	*0.25*	*1,00*
T3	*0.50*	0.25	*1.00*
T4	*0.50*	*0.75*	1.00
T5	0.50	0.73	1·50
T6	Control (basal dressing alone)		

A basal dressing of 280 cubic feet of river sand and lime at the rate of ½ ton per acre was given to all the trees Nitrogen was given in the form of.

ammonium sulphate, phosphorus in the iorm of bonemeal and potassium in the form of muriate of potash. The manures were applied in a single dose during August-September in circular basins of 6 feet diameter around the tree base and worked into the soil The interspaces of trees were dug once in a year in September October and river sand and lime spread in the soil. The results were assessed from the coconut yields. The data were analysed by taking the yield data for 1952 as the ancillary variable denoting the yielding capacity of the trees and by using the analysis of covariance technique.

Results

Table 1 gives the mean number of nuts obtained from the different treatments for the different years and for all the 7 years taken together. Analysis of the data for the whole period has shown that all the treatments give significantly higher yields over the control. Treatments 5 and *4* viz. 0 50 lb N + 0.75 lb P_2 0_5 + 1.5 lb K_2 0 and 0.50 lb N + 0·75 lb P_2 0_5 + 1·0 lb K_2 0 per tree per year give the maximum yields; treatments *2* and 3 viz. 0·25 lb N + 0·25 lb $P_2 0_5$ + 1 0 lb $K_2 0$ and 0.5 lb N + 0 25 lb $P_2 0_5$ + 1·0 lb $K_2 0$ per tree per year are the next best and Treatment 1 viz. 0·25 lb N + 0·25 lb $P_2 0_5$ + 0.50 lb $K_2 0$ per tree per year, the least effective. It is also indicated that during the first two years no significant difference in yield is evidenced. This is only natural as a coconut flower bud after its initiation in the crown would take 28 months to mature (Menon Pandalai 1958). From the third year onwards, significant difference in yield is observed between the various treatments. Smith (1964) and Fremond (1964) had recorded absence of response of coconut to phosphorus. But in the present studies adequate response is observed for phosphorus as a comparison of yields under the treatments T3 and T4 will show. A general increase in yield including that in control plots is evident in the years 1955 and 1958. This may be due to the favourable climatic conditions existing in those years.

The levels of N and K used in the present studies are lower than the levels tried by Smith (1964). Therefore it remains to be seen whether higher levels of N and K would give further response to nut production

Summary

Field studies to determine the optimum N P K requirements of coconut in the backwater regions of K ttanad in Kerala undertaken at the Regional Coconut Research Station, Kuraarakom, during the years 1953 to 1959 showed that the highest yields were recorded by the treatments O.[5] lb N, 0·75 lb P_2O_5 and 1.0 lb K_2O per tree per year and 0·5 lb N, 0·75 lb P_2O_5 and 1·5 lb K_2O per tree per year. The yield of coconut manifested response to P_2O_5 application also.

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Table 1

Mean number of coconuts obtained under different manurial treatments during different years.

Treatment No.	1953	1954	1955	1956	1957	1958	1959	Mean
T1	365·71	427·33	639·91	499·85	499·70	539·96	483·10	493·65
T2	394·81	437·76	603·75	568·00	512·42	543·53	476·44	505·24
T3	358·49	440·89	668·74	516·88	511·34	538·33	474·54	501·32
T4	389·04	486·40	734·18	619·45	566·99	672·25	557·86	575·17
T5	398·09	494·05	736·99	604·99	579·65	639·10	578·67	575·94
T6	409·17	407·07	509·25	418·17	373·24	428·84	402·56	421·19
C. D. (0·05)	—	—	111.66	70·45	68·50	128·91	81·78	31·18

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