MANURING OF YOUNG PALMS*

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1. INTRODUCTION

The recommendations made below are based on the results of two field experiments conducted by the Soil Chemistry Division on the manuring of young palms from the seedling stage—one on underplanted seedlings at Letchemy Estate, Nattandiya, (1939-1957) and the other on seedlings planted on a new clearing of secondary jungle at Ratmalagara Estate, Madampe (Commenced in 1948).

These experiments have clearly shown that regular manuring with a balanced fertilizer mixture containing the three major plant nutrients nitrogen, phosphoric acid and potash is essential for the healthy growth of young palms, both in underplantations as well as in new clearings. Manuring improves vegetative growth, promotes early bearing, and leads to high yields.

In the new clearing at Ratmalagara, 90% of palms treated with complete N.P.K. fertilizer mixture were in bearing by the eight year, whereas only 50% of the palms receiving no fertilizers had come into bearing within this period. Palms receiving the complete fertilizer mixture gave an average of 76 nuts per palm for the 13th year, while those not treated with fertilisers gave only 40 nuts per palm.

Phosphoric acid and nitrogen were found to be the dominant requirements of the young palms during their early stages of growth. This is in accordance with the generally established fact that both these nutrients stimulate rapid plant development. Potash assumed a relatively more important position at bearing stage. Excess nitrogen under conditions of phosphate deficiency made the leaves of young palms highly susceptible to infestation with the fungus disease helminthosporium. Similar observations have been made in the sand-pot culture experiments on coconut seedlings carried out by the Chemistry Division.

The experiment on underplanted young palms at Letchemy Estate showed a similar pattern. Palms receiving the complete N.P.K. treament gave 62 nuts per palm in the 15th year, while those not given any fertilisers showed an annual return of only 30 nuts per palm. The

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latter palms have been treated with the complete N.P.K. mixture since the 15th year (1954), but even after eight years (1962) their annual yield (55 nuts per palm) was considerably lower than that of the palms regularly treated with N.P.K. fertilisers from the seedling stage (76 nuts per palm).

The systematic manuring of young palms must therefore be considered to be an indispensable item of capital expenditure. No attempt should be made to cut down on the manuring of young palms when prices fall, for neglect during the early stages of growth can lead to permanent retardation.

Recently, yellowing of palms due to magnesium deficiency has been observed to be wide spread in many coconut growing areas. Second plantations, particularly those on gravelly and light sandy soils, are more likely to develop symptoms of magnesium deficiency. *The inclusion of magnesium fertilisers such as dolomite in all planting holes and in manurial programmes of young replantations or underplantations should therefore be a matter of routine.* (See also Advisory Leaflet No. 43: "On Magnesium deficiency in Coconut Palms").

Seedlings planted in virgin jungle clearings in colonisation schemes have been reported to be attacked by the fungus disease helminthosporium—probably a consequence of phosphate deficiency aggravated by the high content of soil nitrogen generally associated with new clearings. Hence the incorporation of phosphatic fertiliser in planting holes is also recommended below as a routine measure.

2. FERTILIZER MIXTURES AND RATES OF APPLICATION

The preparation of planting holes is described in Advisory Leaflet No. 4. "Transplanting". The top soil used for filling each planting hole should be mixed with 2 lbs. ground dolomite and 1 lb. saphos phosphate.

In the case of second plantations (replantations, underplantations and vacancies on bearing land) particularly on very poor or exhausted soils, about 30 lbs. of dried cowdung and 15 lbs. wood ashes may also be mixed in with advantage.

A fertiliser mixture with a comparatively higher proportion of nitrogen and phosphoric acid is recommended for application during the first four years after transplantation of seedlings. Rates of fertilizer application are graduated according to the age of palms. A higher dosage is recommended for second plantations since in these the nutrient status of the soil is likely to be poorer than in new clearings.

	Fertilizer Mixture (parts by weight) for young palms	
	C.R.I. Young palms Mixture	*C.R.I. Mixture "A"*
Sulphate of Ammonia (20% N)	2	1
(% N)	(8.2)	(6.9)
Saphos Phosphate (27.5% P_2O_5)	2	1
(% P_2O_5)	(11.0)	(9.5)
Muriate of Potash (50% K_2O)	1	1
(% K_2O)	(10.0)	(16.7)

Time after transplanting	*Rates of application of C.R.I. Young Palms Mixture*	
	New Clearings lbs. mixture	*Second plantations lbs. mixture*
6 months	—	1
1 year	1	1
1½ years	1	1½
2 years	1	1½
2½ years	1½	2
3 years	1½	2
3½ years	2	2½
4 years	2	2½

After the 4th year, and until bearing, C.R.I. Mixture "A" should be applied at 2½ lbs. per palm biannually on new clearings, and 3 lbs. per palm biannually on second plantations. When the palms have reached bearing stage, the recommendations in Leaflet No. 36 should be followed.

In second plantations, it is recommended that young palms be treated with dolomite at the rate of 3 lbs. per palm after the 3rd and 6th years. Dolomite should not be mixed with the N.P.K. fertilizer mixtures containing sulphate of ammonia. It should be applied separately, preferably at least a couple of weeks after the N.P.K. fertilizers have been applied.

3. FREQUENCY, AND TIME OF APPLICATION

Generally, rapidly growing young plants require frequent small applications rather than larger doses at longer intervals. Hence, half yearly manuring is recommended. Where circumstances permit, quarterly manuring using split doses may be adopted with advantage during the initial three years. This can be combined with weeding operations.

Fertilizer applications should always be done when the soil is moist, during the South-west and North-East monsoon periods. Quarterly applications may be done at the beginning and towards the end of each of the monsoon periods.

4. METHOD OF PLACEMENT

In the early stages (up to 12-18 months) fertilizers should be applied close to the palm on the weeded surface up to a distance of 1 foot from the base, and the soil turned over with mammoties or mammoty forks. As the palm grows older the area round which fertilizers are applied should be gradually extended up to about 5 feet at flowering.

5. CULTIVATION

Leaflet No. 4 gives particulars of other cultural operations necessary for the healthy growth of transplanted seedlings.

Young palms are particularly susceptible to drought conditions Before the onset of dry periods the soil round the palm should be weeded and mulched with coir dust or coconut husks. When coir dust is used to mulch seedlings an area round the base up to six inches should be left unmulched since when coir dust is in contact with the young leaf bases the latter tend to rot.