

Coconut Research Institute Sri Lanka

FERTILIZER RECOMMENDATIONS FOR COCONUT

Regular application of plant nutrients in appropriate combinations, as organic or inorganic fertilizers, is essential for healthy growth and production. The recommended fertilizer mixtures contain the three major plant nutrients, nitrogen, phosphorus and potassium. In addition, magnesium, another major essential element, should also be applied at regular intervals.

USE OF INORGANIC FERTILIZERS

Separate fertilizer mixtures are recommended for basal dressings at planting, young and adult palms.

1. Basal dressing at planting

For each planting hole, the top soil used for filling should be mixed with the following:

- Dolomite - 1 kg
 - Young Palm Mixture (YPM) - 1 kg
- (See composition below)

In addition to the inorganic fertilizers recommended above, 10 kg of dry cow dung per planting hole would be beneficial.

2. Young Palm Mixture (YPM)

- Urea - 2 parts by weight
- Saphos phosphate - 3 parts by weight
- Muriate of potash - 2 parts by weight

Approximate composition: 13-12-17.

Note: Urea - 46% N; Saphos phosphate - 27.5% P₂O₅; Muriate of potash - 60% K₂O; Dolomite - 20% MgO.

To convert kilogrammes into pounds, multiply by 2.2

To convert grammes into pounds, divide by 450.

Rate of application for seedlings and young palms

<i>Time after transplant</i>	<i>YPM mixture (grammes)</i>
6 months ..	500
1 year ..	600
1½ years ..	600
2 years ..	800
2½ years ..	800
3 years ..	1000
3½ years ..	1000
4 years and upto bearing	1200 every six months

In fertile soils (*eg.* new clearings), the dosage may be reduced by about 25%.

In addition to the application of the above mixture, ground dolomitic limestone should be applied at the rate of 1½ kg per palm once every three years, commencing one year after planting.

3. Adult Palm Mixture (APM)

The following Adult Palm Mixture (APM) is recommended, which replaces CU₁, CU₂, CU₃, CA₁, CA₂, CA₃ fertilizer mixtures.

Urea ..	— 4 parts by weight
Saphos phosphate ..	— 3 part by weight
Muriate of Potash ..	— 8 parts by weight.

Approximate composition: 12-6-32.

The rate of application of the APM would vary with the soil type and climate. The following table may be used as a guide in determining the appropriate dose for blocks yielding around 3000 nuts per acre per year.

<i>Climatic zone</i>	<i>Soil type</i>	<i>Dosage (kg/palm/yr.)</i>
Wet zone ..	Gravel/Cabook, Sand	3
	Loam or clay	2
Intermediate zone ..	Gravel or Sand	3
	Loam or clay	2
Dry zone ..	Gravel	3
	Loam or clay	2
	Sand	2.5

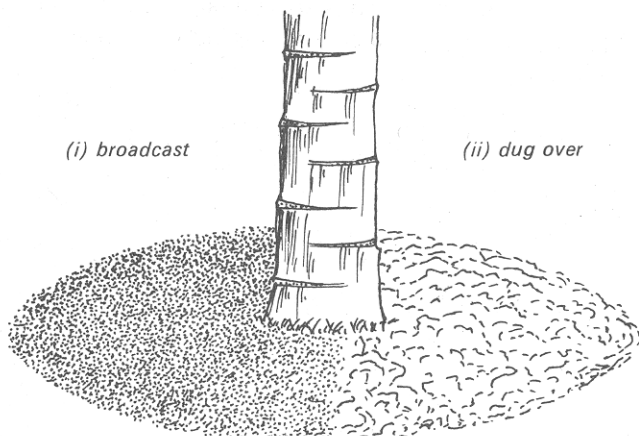
Upto $1\frac{1}{2}$ times the above rates may be applied to improved cultivars (CRIC 60 and CRIC 65), high yielding blocks or blocks with a potential for high yield.

In instances where it becomes necessary to economise on the use of fertilizer due to financial constraints or unfavourable market conditions, a maintenance dose of at least 1.5kg per palm should be applied. Suspension of fertilizer application in such a situation can have disastrous consequences resulting in low yields which would aggravate the financial difficulties.

In addition to the NPK fertilizer mixtures, ground dolomitic limestone should be applied at the rate of 2 kg per palm in the wet zone and 1.5kg per palm in other areas, once in three years as a routine measure to meet the magnesium requirements.

4. METHOD OF FERTILIZER APPLICATION

Young palms: In the early stages (upto $1-1\frac{1}{2}$ years) fertilizers should be broadcast close to the palm covering the entire full circle upto a distance of 0.3 meters (about 1') from the base and incorporated. As the palm grows older this area should be gradually extended upto about 1.5 meters (about 5') at the time of flowering.



Application of APM

Adult palms: Fertilizer should be broadcast in the entire area of the soil surface round the base of the palm upto a distance of 1.75 meters (about 6') from the base. The fertilizer should then be dug over into the soil. Unless weed growth is excessive, it is not necessary to weed round the palms before fertilizer application. The area on which fertilizer has been applied should be mulched with weed trash, dried fronds or husks. A mulch helps to check subsequent weed growth and conserve moisture in the manure circle. It also reduces soil temperature, prevents drying of the soil surface and adds organic matter to the soil on decomposition.

5. FREQUENCY OF APPLICATION

Young palms: At least half-yearly application of fertilizer is recommended. When circumstances permit, quarterly application may be adopted with advantage, particularly on sandy soils subject to heavy rainfall during the monsoons.

Adult palms: Fertilizer application should be carried out annually. In areas where both monsoons prevail, and particularly on sandy soils, half yearly application with each monsoon may be adopted with advantage.

6. TIME OF APPLICATION

Fertilizer should be applied during the rainy season when the soil is moist. On light sandy soils and on lands which tend to get water-logged fertilizer application should be done after the heavy rains are over.

USE OF ORGANIC MANURE

Locally available organic manures such as cattle and goat manure and poultry droppings, can be profitably used for manuring coconut. Although organic manures contain nitrogen, phosphorus and potassium, these are not in the proportion required for the plants. Therefore, they should be supplemented with appropriate inorganic fertilizers to form a balanced mixture to meet the nutritional requirements of the coconut palm. Organic manures not only provide essential nutrients but also improve the physical condition of the soil.

The composition of organic manures vary. Considering the general nutrient content of these manures, they can be applied at the rate indicated below:

7. RATE OF APPLICATION FOR SEEDLINGS AND YOUNG PALMS

	<i>Time after transplant</i>				
	<i>6 months</i>	<i>1 year</i>	<i>2 years</i>	<i>3 years</i>	<i>4 years and upto bearing (every 12 months)</i>
Dried cattle manure supplemented with Saphos phosphate	6 kg	15 kg	20 kg	25 kg	30 kg
Muriate of potash	100 g	250 g	300 g	400 g	500 g
	50 g	150 g	200 g	250 g	300 g
OR					
2. Goat manure supplemented with Saphos phosphate	3 kg	6 kg	8 kg	10 kg	13 kg
Muriate of potash	150 g	400 g	500 g	650 g	800 g
	100 g	200 g	300 g	350 g	400 g
OR					
3. Poultry droppings supplemented with Saphos phosphate	5 kg	13 kg	17 kg	20 kg	25 kg
Muriate of potash	50 g	100 g	150 g	175 g	200 g
	25 g	75 g	100 g	100 g	150 g

Adult palms: Fertilizer should be broadcast in the entire area of the soil surface round the base of the palm upto a distance of 1.75 meters (about 6') from the base. The fertilizer should then be dug over into the soil. Unless weed growth is excessive, it is not necessary to weed round the palms before fertilizer application. The area on which fertilizer has been applied should be mulched with weed trash, dried fronds or husks. A mulch helps to check subsequent weed growth and conserve moisture in the manure circle. It also reduces soil temperature, prevents drying of the soil surface and adds organic matter to the soil on decomposition.

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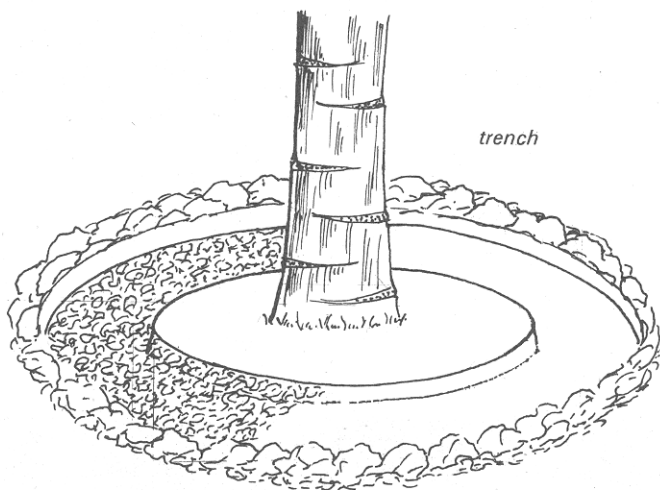
Upto $1\frac{1}{2}$ times the above rates may be applied to improved cultivars (CRIC 60 and CRIC 65), high yielding blocks or blocks with a potential for high yield.

In instances where it becomes necessary to economize on the use of manures due to financial constraints or unfavourable market conditions, a maintenance dose of either 20kg dried cattle manure or 7kg of goat manure or 15kg of poultry droppings should be applied.

In addition to the organic manures, ground dolomitic limestone should be applied at the rate of 2 kg per palm in the wet zone and 1.5 kg per palm in other areas, once in three years as a routine measure to meet the magnesium requirements.

9. METHODS OF ORGANIC MANURE APPLICATION

Young palm: In the early stages (upto $1-1\frac{1}{2}$ years) organic manures should be broadcast upto a distance of 0.3 meters (about 1') from the base and incorporated. As the palm grows older this area should be gradually extended upto about 1.5 meters (about 5') at the time of flowering.



Application of organic manure.

Adult palms: Apply in a trench about 1 meter (3') wide and 15 cm (6") deep. This can be cut around the palm about 1 meters (about 3') away from the base. Manure should be put into the trench together with the necessary inorganic fertilizers. The trenches are then closed and area mulched.

10. TETHERING CATTLE

Tethering cattle to fertilize palms is a common practice. The following may be used as a guideline.

A manure basin is opened within 2 meters (about 6') of the palm. Two heads of cattle are then tethered to the palm continuously for 10 nights. Tethering should be done in such a manner so as to ensure that all droppings fall into the manure basin.

After this period, about 200g Saphos phosphate and 750g of Muriate of potash are broadcast in the basin and soil covered up. The area should be mulched. This method would be adequate once a year and could be done anytime, except in very dry months.

In improved cultivars and high yielding blocks, the period of tethering may be increased appropriately.

In addition, dolomitic limestone should be applied as indicated in paragraph 8.

Prepared by
The Coconut Research Institute of Sri Lanka
March, 1986.