VERMICOMPOSTING OF OIL PALM WASTES

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National Research Centre for Oil Palm

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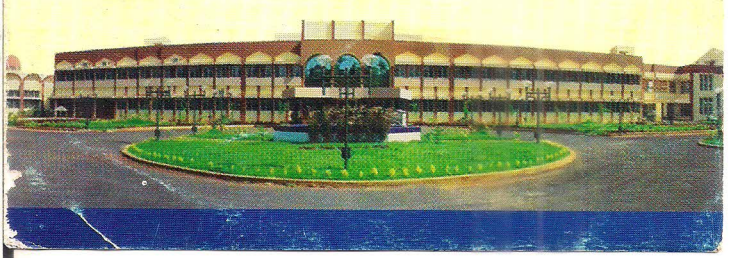
(Indian Council of Agricultural Research)

PEDAVEGI - 534 450, WEST GODAVARI DISTRICT, A. P.



VERMICOMPOSTING OF OIL PALM WASTES

Introduction:

Oil Palm, one of the richest source of vegetable oil also gives a large amount of byproducts of nutrient value in the form of fronds, empty fruit bunches, mesocarp wastes, shell etc. If these materials are properly managed and recycled in the field, a major part of the nutrient requirement of palms could be met.

Composting by Earth Worms:

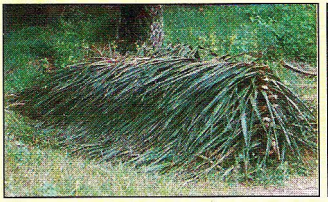
Earthworms, commonly known as the "Scavengers of nature" have the capacity of feeding on any organic debris and converting them into quality manure. Though, different species of earthworms are available, *Eudrillus euginiae* may be used, which had a wide adaptability under humid tropical conditions of India.

Preparation of site:

Composting can done in earthern pits (where the soil is very firm), cement tanks or pits plastered with bricks and cement. The pits can be 1-2 M width, 0.5M height and of convenient length. A pit of 2 M length 1 M width and 0.5 M height can accommodate about 300-350 Kg of biomass. The top should be sufficiently protected by a roof against rainfall or excess sunlight. Sufficient drainage should be provided at the bottom.

About 22-25 tonnes of biomass could be expected from a hectare of plantations every year. A pit size of 3x2x0.5m can accommodate approximately one tonne of waste at a time. A standard composting yard with four pits of this size can accommodate the wastes in continuous cycles depending on the availability from the plantations

Preparation of materials:



The fronds and empty fruit bunches, may be chopped into pieces of12-15 cm size. This may be done manually or mechanically using a shredder. The fronds and EFB can be mixed in the ratio of about 2:1 and is mixed with cow dung. Thirty percent of cow dung on weight basis should be added in the form of slurry. Cow dung may be well mixed with the material after filling in the pits and is kept for 2-3 weeks incubation. Moistening at periodic intervals and turning of wastes at weekly intervals are important.

Introduction of earthworms:

After 2-3 weeks of incubation, when the temperature of the heap comes down to normal (27-32°C) worms are introduced. At least one worm should be introduced per Kg of waste. If more number of worms are introduced, composting will be faster. Sufficient moisture must be ensured by periodical watering.

Separation of compost:

The compost will be ready with in a period of 2-2$^{1}/_{2}$ months time. When the compost is ready up to the top layer, watering may be stopped for 2-3 days, so that worms will go down. The compost can be separated with the help of a sieve or even manually. Fresh waste after incubation can be put in the pit and the cycle continues.

Nutrient value:

The compost produced is black in color with granular consistency and good handling quality. It contains 1.82-2.2%N,

0.23-0.3P, 1.0-1.2%K, 0.4-0.8%Ca and 0.4-0.7%Mg. Out of the total of 10tonnes of compost expected a year, almost the full N- requirement, 50% requirement of P and 60-70% requirement of K of palms could be met.

Precautions:

Never use urea or any inorganic fertilizers while composting, A wire mesh may be put on the top of the pit against birds or field rats. The pit may be covered with palm leaves, if the sunlight is very high. A small channel may be kept all along the borders to retain water to prevent entry of ants.

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