

Cultural practices in Coconut Garden - September

C. Thampan, P. Subramanian and S. Jayasekhar

ICAR-Central Plantation Crops Research Institute, Kasaragod

Planting

In low lying areas, planting of coconut seedlings can be undertaken in small sized pits or on mounts raised to one metre above water table. Prevent accumulation of rain water in the seedling pits by ensuring adequate drainage. In regions like Tamil Nadu field preparation should be done for new planting.



Manuring

Circular basins of 1.8m in radius and 25 cm depth may be dug and green leaf or compost or farm yard manure at the rate 50 kg per palm may be spread in the basin. Two third of the recommended dose of chemical fertilizers may be spread over the green leaf or compost and covered. Application of 500 g N, 320 g P₂O₅ and 1200 g K₂O per palm per year is generally recommended for adult plantations. To supply two-third of the above nutrients it is necessary to apply about 0.72 kg urea, 1 kg rock phosphate (in acidic soil) or 1.33 kg Super Phosphate (in other soils) and



1.33 kg of Muriate of potash (MOP). Under irrigated conditions, one fourth of the recommended dose of chemical fertilizers can be applied during September.

It is always recommended to apply chemical fertilizers based on the soil test results rather than going by the general recommendations.

Wherever Boron deficiency is noticed 100 g Borax may be applied in the basin. For coconut palms showing yellowing of leaves due to Magnesium deficiency, 0.5 kg of magnesium sulphate can be applied in the basins along with other fertilizers.

The above schedule of manuring is suitable for all the major coconut growing regions which are mostly benefitted by South-West monsoon during the season. In localities of Tamil Nadu, which are mostly benefitted by North-East monsoon the first dose (one third of recommended dose) of chemical fertilizers can be given during September. Under such situations, lime or dolomite or gypsum @ 1kg/palm need to be applied two weeks before the first dose of chemical fertilizers are applied.

Green manuring

Wherever green manure crops are grown, plough in the green manure crop (after attaining 50 per cent flowering) and incorporate into the soil.

Intercultural operations

Ploughing/digging of interspace is to be undertaken to keep the plantation free of weeds. Care should be taken to avoid injury to coconut palm while ploughing.

Nursery management

Weeding should be done in the nursery. Five month old ungerminated nuts and dead sprouts should be removed from the nursery. In localities of Tamil Nadu, which are mostly benefitted by North-East monsoon, land preparation can be taken up for sowing seednuts.

Crown cleaning

Wherever crown cleaning has not undertaken during August the same may be done during this month.



Mulching

Mulching of palm basins can be undertaken during the second fortnight of September to conserve moisture

Plant protection

Integrated Pest Management

Rhinoceros beetle

Adopt mechanical method of control by extracting beetles with beetle hooks, without causing further injury to the growing point of the palm. The top most leaf axils may be filled with powdered neem cake/marotti cake (*Hydrocarpus sp/ pongamia*) @ 250 g + fine sand (250g) per palm as a prophylactic measure. Filling the innermost three leaf axils with 4 g each of naphthalene balls covered with sand (12 g/palm) for juvenile palms. Placement of two perforated sachets containing *chlorantraniliprole a.i.* 0.4% (5 g) or fipronil (3 g) or one botanical cake (2 g) developed by ICAR-CPCRI and incorporation of the biomass of weed plant *Clerodendron infortunatum* Linn. in the cow dung/compost pit can also be done. The breeding sites may be treated with green muscardine fungus (*Metarhizium anisopliae*)

Red Palm Weevil

Avoid causing injury to the palms, as they would attract the weevil to lay eggs. Mechanical injury if any, caused should be treated with coal tar. While cutting fronds, petiole to a length of 120 cm is to be

left on the trunk to prevent the entry of weevils into the trunk. Removal and burning of palm at advanced stage of infestation would aid in destruction of various stages of the pest harboured in the trunk. Prophylactic leaf axil filling suggested for rhinoceros beetle is very essential as this pest pave way for red palm weevil.

If damage occurs in the crown, the damaged tissue has to be removed and insecticide suspension, *imidacloprid* (0.02%) @1 ml/L of water may be poured in. In case of entry of weevil through the trunk, the hole in trunk may be plugged with cement/tar and the top most hole is made slanting with the aid of an auger and the insecticide solution is poured through this hole with funnel.

Eriophyid mite

Spraying on the terminal five pollinated coconut bunches with neem oil garlic soap mixture @ 2 per cent concentration (neem oil 200 ml, soap 50 g and garlic 200 g mixed in 10 litres of water) or spraying neem formulations containing 1 per cent azadirachtin @ 4 ml per litre of water or spraying palm oil (200 ml) and sulphur (5g) emulsion in 800 ml of water and root feeding azadirachtin 10,000ppm @ 10 ml + 10 ml water is effective. Along with the recommended dose of manures and fertilizers, 5 kg neem cake should also be applied.

Coreid bug

Spray neem oil-soap emulsion (0.5%) on the



pollinated bunches. The emulsion can be prepared by adding 5 ml neem oil and 8 g bar soap in one litre water.

Rugose Spiralling Whitefly

No chemical insecticide should be sprayed on leaves. Apply 1% starch solution on leaflets to flake out the sooty moulds.

In severe cases, spray neem oil 0.5% and no insecticide is recommended. Install yellow sticky traps on the palm trunk to trap adult whiteflies. Encourage build up of parasitoids (*Encarsia guadeloupa*) and re-introduce parasitized pupae to emerging zones of whitefly outbreak.

In situ habitat conservation of the sooty mould scavenger beetle, *Leiochrinus nilgirianus*

Integrated Disease Management

Bud rot

Remove the infected tissues of the spindle completely. Two or three healthy leaves adjacent to the spindle may have to be removed, if necessary, for easy removal of all rotten portions and thorough cleaning. After removing the affected tissues apply 10% Bordeaux paste and cover the wound with a polythene sheet to prevent entry of rain water. The protective covering has to be retained till normal shoot emerges. Destroy the infected tissues removed by burning or deep burying in the soil. Spray 1% Bordeaux mixture to the surrounding palms

Stem bleeding

Avoid burning of trashes near the tree trunk. Avoid injury to the tree trunk. The affected tissues should be completely removed using a chisel and smear the wound with 5% hexaconazole (5 ml in 100 ml of water) and drench the basins @ 25 lit. of 0.1% solution

Smearing paste of talc based formulation of *Trichoderma harzianum* on the bleeding patches on the stem (The paste can be prepared by adding 50 g of *Trichoderma* formulation in 25 ml of water)



Soil application of *Trichoderma harzianum* enriched neem cake @ 5kg per palm and adopt recommended irrigation/moisture conservation practices.

Leaf rot

Remove rotten portion of the spindle leaf and 2-3 successive leaves and pour fungicide solution containing 2 ml hexaconazole 5 EC in 300 ml water/ palm or talc based formulation of *Pseudomonas fluorescens* or *Bacillus subtilis* @ 50 g in 500 ml water/palm into the well around the base of the spindle leaf

Undertake prophylactic measures to prevent rhinoceros beetle attack

Basal Stem Rot/Ganoderma wilt

Remove dead palms, palms in advanced stages of the disease and destruct the bole and root bits of these palms. Isolation of diseased palms from healthy palms by digging isolation trenches of 2 feet depth and one feet width around the basin can also be done. Avoid flood irrigation or ploughing in infected gardens to prevent spread of the inoculum.

Addition of 50 kg of farmyard manure or green leaves per palm per year and application of *Trichoderma harzianum* enriched neem cake @ 5 kg per palm and irrigating the palm once in 4 days and mulching around the basin is also useful.

Raising banana as intercrop wherever irrigation is possible Root feeding of hexaconazole @ 2% (100 ml solution per palm) or soil drenching with 0.2% hexaconazole / 1 % Bordeaux mixture @ 40 litre solution per palm can also be done.

Field sanitation

Special care should be taken to remove the organic debris/fallen trees etc in the coconut gardens in Kerala state affected by the recent heavy rainfall/flood situation. ■