

MANAGEMENT OF DROUGHT SITUATION IN COCONUT PLANTATIONS

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Coconut in the states of Kerala, Karnataka and Tamil Nadu were affected by drought during last year; particularly in Tamil Nadu and southern Kerala the palms were worst affected. Death of young and old palms is a common sight in most of the districts of Tamil Nadu where there is no irrigation source. In the Parambikulam-Aliyar Project areas, thousands of palms have died and a few thousands of palms are in withering stage. Drought affected adult coconut palms are characterised by bending of leaves, wilting in lower whorls, reduction in female flowers, shedding of buttons and immature nuts and drastic decline in nut production. The water economy of palms is adversely affected leading to various physiological and biochemical changes.

CONTINGENT PLAN TO MANAGE DROUGHT SITUATIONS

The palms which have already died have to be cut and removed immediately so that good timber value can be obtained. In the

other places where the palms are in wilting stage, the following management practices can be followed :

1. *Soil Management*

1. With the receipt of late rains/showers the palm basins to a radius of 1.8 m can be opened and mulching can be done in the basins. For mulching, coir dust @ 50kg/palm can be used wherever it is freely available and covered with soil.
2. A circular trench all around coconut basin leaving 1.8 m may be taken to a width and depth of 0.5 m and husk burial can be done in 3 or 4 layers. Husks should be arranged with the concave side up and covered with soil. This will help the husk in absorbing rain water and making it available to palms. This may be done once in 3 or 4 years.
3. Application of green manures/ green leaf manures and organic manures like FYM and compost may be applied at 50-100kg/ palm in the basins
4. Spreading the dried coconut leaves and other organic residues around the palms in basins can be done as mulch which will help to reduce soil temperature and prevent evaporation and conserve moisture.
5. If tanks are nearby, addition of tank silt at 100 - 200 kg/ palm basins will help in increasing the organic matter of soil. It will increase the water retaining capacity of light-textured soil.
6. To reduce transpiration loss, lower senescent leaves (3-5 per palm) may be removed. This will reduce the severity of drought. This is recommended only under drought situations and not under normal conditions.
7. Spreading of 2 kg sodium chloride (common salt) around the palm basin during drought period condenses the air moisture and keeps the soil cool.

II. Water management

1. If very little water is available, life saving irrigation can be done by burying 2 or 3 earthen pots/hollow bamboos and filling up these with available water. This will help in moistening the sub-soil. The pots are to be covered with lids and in lower portion of the pot, a small hole is made and a wick is inserted in the hole for dripping water.
2. If water is available for drip irrigation, drip system can be laid. 3-4 drippers/palm may be placed and the dripper may be allowed to drip into another tube buried at a depth of 30 cm so that the discharge can be in sub-soil; thus surface loss can be prevented.
3. If adequate water is available basin irrigation with 200 litres/palm once in a week can be done. However, every effort should be made not to waste water. In that case the basin management by growing green manure crops like Sunnhemp, Calopogonium and Pueraria and incorporation in basins may be done.
4. Where water is plenty in some wells, flood irrigation is resorted to in Tamil-Nadu. If prolonged drought continues the water level is likely to go down. Hence care has to be taken to irrigate with only required quantity of water through basins.

5. In backyards and house compounds, effective recycling of used water to coconut basins can be done.

III. Soil Conservation

1. In slopy lands, terracing the palm basins also can be done. Short linear trenches across the slopes may be dug in staggered manner which will intercept run-off water and aid percolation. This will help in increasing soil moisture.
2. In mildly slopy lands water-harvesting devices like forming slight slope in between the coconut rows can be done. This will help in percolation of water in the palm rows.
3. If land is of uniform level, bunds can be formed dividing the field into plots so that the run-off can be prevented. All these soil and moisture conservation methods will help the rainfed palms in getting adequate moisture.
4. If *rabi* rains are also delayed and if mulching has already been done, life saving irrigation has to be continued wherever water is available.

IV. Crop Management

1. With the onset of *rabi* rains, sowing of crops like cowpea and other pulses, oilseed crops, fodder crops like jowar, bajra, maize etc. can also be done. This sowing of crops should be

away from the coconut basins of 1.8 m radius.

2. In the palm basins, fertilizers have to be applied at 1 kg urea, 2 kg super phosphate and 2 kg muriate of potash, 0.5 kg magnesium sulphate and 50 kg of green leaf or compost or farm yard manure and raked and covered with soil, using *rabi* rains.
3. After the harvest of pulses and oilseeds, the remaining plant residues may be used as mulch in the palm basins.

V. New Planting

1. In case of replacing the dead palms, a pit of 1m³ can be dug, filled with two layers of husk at bottom and then filled with soil upto 60 cm and planting can be taken-up. This type of planting facilitates the root development at a depth of 50 cm and enables the plant to draw sub-soil moisture. Normally in Tamil Nadu, Andhra Pradesh and Karnataka, shallow planting is done. Shade has to be provided to the young seedlings either artificially or by growing one or two rows of green manure like sunnhemp along the sides of the pit.
2. In case of new planting, one has to be careful in ascertaining the availability of water for irrigation and then take up planting, particularly in Tamil Nadu. If irrigation is not possible, then one should not think of planting coconut

where the rainfall quantity and distribution are not adequate.

VI. Pest Management

The scales, mealy bug and leaf eating caterpillar are found to attack the palms in some areas. Spraying of labacid @ 0.1% for mealy bug and Nuvacron for scales and leaf eating caterpillar may be done to control these pests. If rhinoceros beetle attack is severe, hooking the beetle and leaf axil filling with BHC sand mixture can be done. When Nuvacron is used, care should be taken not to harvest the nuts for 45 days to avoid residue problem.

VII. Disease Management

In the Ganoderma/Thanjavur wilt disease affected areas, the drought and summer may influence the spread of disease. Addition of 5 kg neem cake/palm/year and drenching with 40 litres of Bordeaux mixture at quarterly intervals or root feeding of 2 g aureofunginsol and 1 g copper sulphate in 100 ml water may be given thrice a year. Removal of dead palms, opening trenches to isolate the diseased palms, mulching the soil and irrigation are to be taken up.

The drought situation may also aggravate the stem bleeding incidence. The bleeding portions on the stem may be chiselled out thoroughly and warm coaltar may be applied on the wounds. Other management practices like neem cake application, addition of organic manures, mulching etc. are also to be adopted which will help in reducing the intensity of the disease.

Palms being perennial crops one year's drought will affect the yield for at least two years. Hence adopting the soil and moisture conservation measures to the extent possible are very much essential to manage the situation.

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