
MANAGEMENT OF COCONUT GARDENS AFFECTED BY ROOT [WILT] DISEASE

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Introduction

The coconut palms in central and southern Kerala suffer from a debilitating disease—the root (wilt) known popularly as “Kattu Vischa”. Although the disease is not deadly, the progressive reduction in yield of diseased palms leads to considerable economic loss. A conservative assessment indicates a loss of about rupees three hundred million a year. The coconut crop being of multifarious utility the economic erosion is keenly felt by people in different spheres of activity. Originating from three isolated pockets in central Kerala nearly hundred years back the disease now affects about 2.5 lakh ha. of coconut gardens and is slowly spreading to the southern and northern regions as well as to the east at the south. Neither the casual nature of the disease nor its mode of spread are yet fully understood and hence specific control measures as in other diseases like Bud rot or Leaf rot are not known. However, the information available at the Central Plantation Crops Research Institute, Regional Station, Kayangulam suggests possible methods for the rejuvenation of the disease affected gardens. They are enumerated hereunder.

Eradication of diseased palms

Hygiene and sanitation are the prerequisites for the control of any infectious disease. This is true in the case of coconut root (wilt) also. Experimental evidence revealed that coconut seedlings grown in plots in soil collected from disease free area develop the disease when the soil is mixed with roots of diseased palms. Similarly it has been observed that coconut seedlings planted in the field after removal of all diseased palms contracted the disease to a lesser extent (2.0%) as compared to those in gardens planted in between diseased palms (10.0-15.0%). This indicates that removal of infective material reduces disease incidence. However, it is not a practical operation for a cultivator to adopt as the diseased palms continue

to be productive though at a reduced scale. The possible method is to cut and remove uneconomic palms, which yield less than 10 nuts a year so that as much infection source as possible can be got rid off. While doing so it is necessary to remove the hole and the roots to the extent possible and burn them.

Agronomic trials

Yield records at CPCRI, Kayangulam (1950 to 1962) reveal that application of 3 kg of NPK fertilizers (0.5, 0.5 & 2.0) per tree per year with 50 kg of green manure and 0.5 ton lime per acre increased the yield of diseased palms by four nuts per tree per year, while that of apparently healthy increased by eight nuts during the same period. On the other hand, in the absence of manuring and cultivation, reduction in yield to the extent of 11 nuts per tree per year occurred. Eradication of badly diseased palms and adoption of manuring as mentioned above helped to maintain the average yield of palms at the CPCRI Farm at 35.0 to 40.0 nuts per year although the disease showed a progressive increase during this period. Application of 0.5 kg magnesium sulphate or 2.0 kg dolomite per tree per year was found to reduce yellowing of leaves and increase yield of nuts.

Intercropping with fodder crops, grasses and legumes like hybrid napier, *Stylosanthes gracilis*, *Pueraria javanica* and *Centrosema pubescens* under irrigated condition increased yield of coconut palms in different stages of disease by 28.0 per cent on an average. Foliar yellowing decreased but disease intensity increased. The net profit by mixed farming—maintaining four milch cows in an area of 1.3 ha. under fodder—showed an increase by Rs. 2494/- per year. The animals were fed with the fodder and minimum concentrates, the intercrops were manured separately and the animal wastes were also recycled.

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Plant Protection

It is known that the root (wilt) disease affected palms are prone to a secondary disease, namely leaf rot. The latter disease manifested as rotting of the tender leaves from tip downwards is caused by a fungus—*Helminthosporium* or *Bipolaris halodes*. This infection occurs in nearly 20.0 per cent of the root (wilt) diseased palms and to a limited extent—2.0 to 3.0 per cent—in apparently healthy palms growing within the disease affected area. Onset of leaf rot leads to rapid deterioration in the health of the palms and hence should be promptly attended to. Application of 0.5 per cent Bordeaux mixture or 0.3 per cent dithio-carbomates twice a year—in April-May and September-October—has been recommended for the control of leaf rot. A word of caution on the proper application of the fungicidal spray will be relevant. Spraying should be done after removal of all leaf rot affected material—the spray should cover the inner whorl of leaves particularly the emerging leaf as the fungal invasion takes place in the young tender leaflets the disease affected materials that are cut and removed should be burnt.

Underplanting/Replanting

Underplanting in the inter spaces of adult palms and replanting to replace badly affected diseased palms are necessary to maintain the economy of the grower. Selection of the planting material is of prime importance in this programme, coconut being a perennial crop. Planting with disease resistant material is the

best method against the onslaught of the disease. With this objective studies on the performance of the progenies of disease free palms growing among the disease affected palms as compared to those of healthy palms from healthy area was studied from 1951 onwards. Progenies of diseased palms were also planted simultaneously. Available data reveal that at the age of 15 years disease incidence in the three groups range from 78.0-100.00 per cent and their productivity was related to the intensity of disease. Progenies of the diseased palm had the maximum disease and lowest yield (100.0 per cent and 30 nuts per palm per year). Those of the healthy palms growing among the disease affected palms were more susceptible to the disease (88.0 per cent and 45 nuts per palm per year) than those of the healthy from disease free area (78.0 per cent and 50 nuts per palm per year). Intensity of disease was minimum in the latter group. The high yielding hybrids Tall × Dwarf and Dwarf × Tall are good planting materials as they are less susceptible to the disease and yield better than the West Coast Tall.

The massive and extensive root system, complexity of the causal nature of the disease and its possible spread through soil are major problems rendering the control of the disease almost impossible. Until the primary causal factor is determined and specific protective measure is evolved improvement of the existing diseased palms by adoption of better management practices including control of secondary diseases and planting of best available seedlings for new/underplanting should be adopted to render the coconut crop in Kerala more economical.