

“What have you done to cure the root (wilt) disease?” the light-hearted scoffer often asks and Pilate-like doesn't pause for a reply. To persons of that ilk and not less to more serious-minded ones is addressed this brief but comprehensive review of measures for

THE CONTROL OF ROOT (WILT) DISEASE OF COCONUTS

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UNDoubtedly the root (wilt) disease is the most important disease of the coconut palm in India because not only does it cause most severe losses to the crop but has been baffling the minds of the research workers in understanding its nature for a long time. This disease is widespread

in the Central Kerala area and affects nearly 1,00,000 acres of coconut plantations. It is observed to be slowly spreading both north and south.

SYMPTOMS OF THE DISEASE

A characteristic feature of the disease is slow wilting of the crown and

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rotting of the root system; hence the name given to it. Infected palms exhibit flaccid, abnormally bent leaflets with tip and marginal necrosis, often accompanied by breaking of the petiole. Abnormal shedding of buttons and immature nuts is also not infrequent. The root system begins to rot and the production of new roots is greatly reduced. While young seedlings generally do not show signs of the disease, the most vulnerable age of the palm to infection is at the pre-bearing or bearing stages. The disease is prevalent in palms growing in all types of soil although it is observed to be comparatively less severe in laterite soils.

EFFORTS AT CONTROL

The Central Coconut Research Station, Kayangulam has been undertaking investigations on the pathological, physiological and chemical aspects of the disease to evolve an effective method for its control.

When systematic research work was undertaken, the main problem to be solved was the cause or nature of the disease. Continued investigations have now shown that the disease is a complex of several factors involving viruses, fungi and nutritional deficiency of soil. The rotting of the roots which accompanies the disease has been found to be associated with the presence of fungi such as *Rhizoctonia solani* and *Rhizoctonia bataticola*. *R. solani* has been found to be consistently associated with the wilted palms, but these fungi only play a secondary role. Studies have revealed that the soils of diseased tracts have low nutrient status for calcium, available potassium and iron, exchangeable bases and per cent base saturation. Further

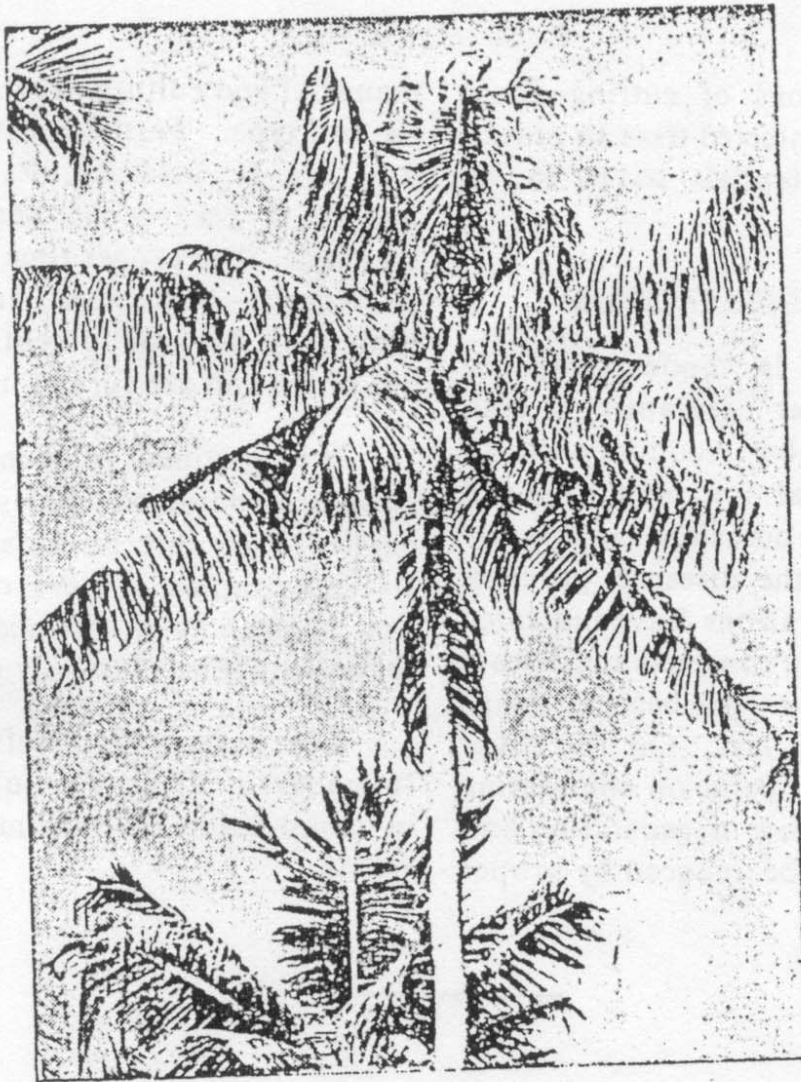
investigations revealed that the disease is neither due to deficiency of nutrients — macro or micro. A mechanically transmissible virus has recently been isolated from the diseased palms. It is transmitted by the banana lace wing bug *Stephanitis typicus* which commonly breeds on coconut. The virus is also soil borne. It infects other crop plants like cowpea, pulses etc., which are often inter-cultured in the coconut gardens. The evidences obtained lead to believe that the disease is pathogenic.

INJECTION OF COMPOUNDS AND NUTRITIONAL TRIALS

Multiple approaches have been made in order to cure the disease. Several compounds e.g., 1182 F, B naphthoxy acetic acid, Phenyl acetic acid, 2, 4-Dichlorophenoxy acetic acid, 2-4 methyl indole butyric acid, indole propionic acid, urea, calcium chloride, iron, copper, sodium etc., were injected into the diseased trees through their root system to find out whether they had any curative effect. A number of nutritional and manurial trials were conducted. Increased doses of N, P, K and Ca and application of organic manures like cowdung and groundnut cake were tried. Micronutrients singly and in all possible combinations were given to diseased trees. In highly diseased trees where the root system was badly crippled the palms were fed through induced roots on the trunk. None of these treatments, however, cured the disease.

VIROLOGICAL APPROACH

The association of a virus with the disease possibly as the principal causative agent has now attracted attention



A coconut palm affected by root (wilt) disease

towards evolving a control from that standpoint. Some insecticidal treatments for the control of the vector *Stephanitis typicus* have been conducted and it was found that DDT and Rogor 40 in combination could effectively bring down the vector population. Keeping trees continually protected against the insect vector, however, is not easy, and so does not give a practicable solution. The soil-borne nature of the virus added to the complexity of the problem of control. Chemical treatments to inactivate the virus in the soil were tried and

some success has been achieved. Pentachloronitrobenzene has been found to be effective but its large scale application to achieve field control poses a difficult problem. Chemotherapy by the use of anti-viral agents has not been tried yet and has been taken up recently. A large number of anti-viral chemicals and some plant extracts are passing a screening test to find their inhibitory effects on the viral activity and toxic effects on the palms. Until a solution to the nature of the disease and effective methods of control are found out, the

old recommendations of cutting down and removing the infected trees to reduce the inoculum potential have to be followed.

RECENT OBSERVATIONS

Some work is under way to determine whether replanting with quality seedlings be recommended or some better material for replanting can be evolved from the occasional apparently healthy palms in the diseased gardens. Some recent observations have indicated that if a young palm contracts the disease at the bearing or pre-bearing stage deterioration sets in fast. On the other hand a middle-aged palm on contracting disease shows a slow degeneration and much damage can be reduced by proper

manurial and cultural treatments to suit the soil type. Fertilizers at the rate of 0.34 Kg. N, 0.34 Kg. P_2O_5 and 0.681 Kg. K_2O per tree per year are recommended. The proper time for manuring is August-September and judicious liming of the soil to neutralize the low pH of the soil are further recommended.

It is pertinent to mention that only sustained continued efforts can meet the challenge of this formidable problem. In the meantime if more of your attention is given to a diseased garden, the losses would be effectively reduced.

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