ROOT (WILT) DISEASE OF COCONUT - WHERE AND WHITHER

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The root wilt disease of coconut which has affected more than 30% of the 750,000 hectares of coconut plantations in Kerala is causing an estimated annual loss of about 340 million nuts. It has been steadily spreading in all directions and of late been reported from the coconut grooves of the neighbouring state of Tamil Nadu and northern districts of Kerala. Co-ordinated research programmes drawn up and implemented since 1970 with the establishment of the CPCRI have yielded useful results about the management of the disease, though the exact cause of the disease is not yet clear. Since the disease does not kill the palm outright but only reduces its vigour and yield, management of the diseased palms with a view to increase their productivity is of considerable practical use. Equally important is the need to check the spread of the disease and to contain it within the present geographical limit. For obvious reasons, varieties tolerant to the disease and capable of giving high yield alone can be a lasting solution to this complex problem. If success of any sizable measure could be achieved in these areas, the coconut farmer can well live with the disease and still get high yield from the coconut land. Indications from the ongoing research programmes are that these are feasible.

Management Advantages

Data available go to show that by improving the soil physical condition and nutrient status primarily through organic sources can substantially help to increase the yield of root (wilt) affected palms. When animal waste was recycled there was an overall increase in yield of diseased palms by 26.1% (plot average.) This also resulted in increased soil organic carbon content and microbial activity. Mixed cropping in the root (wilt) affected coconut areas with cocoa under irrigated conditions with the recommended dose of fertilizers for each of the crops increased the yield of coconuts per palm from 17.6 nuts to 46, an increase of over 160%. Research work done earlier on mixed cropping of cocoa with coconut had shown that such a system increases the population of free nitrogen fixing bacteria and phosphate solubilising and gibbrellin producing bacteria and fungi. Some of the possible crop models for mixed cropping in coconut in the root (wilt) affected areas are given below.

1) Coconut + pepper on coconut + cocoa
2) Coconut + pepper on coconut and pepper on live/dead standard in double hedges between coconuts
3) Coconut + pepper on coconut + cocoa + San Ramon coffee
4) Coconut + pepper on coconut + banana (double hedge)

between rows of coconut and San Ramon coffee in the row of coconut

5) Coconut + pepper on coconut + clove + San Ramon coffee or Banana

According to the ecological and soil conditions appropriate models may be chosen or even additional models developed.

Better Planting Material

The performance of Chowghat Dwarf Orange (CDO) × West Coast Tall (WCT) hybrids in the disease affected areas has been promising. While the average per tree per year yield in 9th year of planting was 50 nuts from WCT it was 112nuts from D×T hybrids. A further study of the data has now shown that the higher yielding of D×T was due to two reasons (1) the disease incidence at the flowering stage or earlier being less than 2% in the hybrids as against over 11% in the WCT and (2) due to the higher yield of the diseased palms in spite of the disease. It is already known that WCT palms if diseased at flowering stage or earlier give a very low yield subsequently. When the yield performance of disease affected WCT palms which contracted the disease either earlier to flowering stage or at flowering was examined it was observed that the mean yield of such palms was half (16.7 nuts) of those which had the disease infection after flowering (35 nuts) as against 27.8 and 82.7 nuts/palm/year respectively in the case of D x T. Thus the higher yield in D x T palms is due to a much less disease incidence before or at flowering and lower decline even after the disease is contracted.

Need for Large Scale Field Programmes

The available research results and field observations strongly support the need for immediate planning and implementation of appropriate field programmes with a view to increasing the productivity of the existing root (wilt) affected gardens on one hand and upgrading the plantations through regular removal of the diseased trees and replanting with quality seedlings on the other. Large scale demonstration plots should be started to bring out the advantages of adding organic matter to the soil which can take the shape of mixed farming involving growing of grass in the inter spaces of coconut, feeding the animals with cut grass and recycling the animal waste through the garden or mixed cropping with crops like cocoa, pepper, etc. Some of these demonstrations should be under irrigated conditions since tall coconut grown with cocoa under irrigation has given higher yields compared to other treatments. It is also essential that the diseased palms are removed on a phased programme and planted with dwarf x tall seedlings. Since there is definite advantage in growing D x T hybrids in the diseased areas of southern Kerala where rainfall distribution and soil conditions are favourable concerted efforts are called for by all agencies connected with coconut industry to develop large areas under hybrid seed garden to produce D x T hybrids. For a total replacement of all the root (wilt) affected palms, 50 million seedlings are required. This is a colossal basic need of the State which has to be provided by the public sector. Assuming that the entire replacement of diseased palms can be done over a period of 10 years, for meeting the annual requirement of 5 million hybrid seedlings, 2000 ha of seed garden is to be organised. It does not seems to be an impossibility even in Kerala to establish hybrid seed garden over such an extent. Action has to be initiated by the concerned agencies on this without losing any more time.

Since technology is available o r improving the yield and reducing the intensity of disease there should be a very comprehensive investment oriented programme for implementing these achievements. This will call for a massive project by agencies such as ARDC. It is also important that this programme is implemented on an area basis contiguously from north and south towards the centre so that the foci of infection are reduced considerably and higher efficiency is achieved.

The efforts that are now being made for the eradication of the diseased palms so as to contain the disease should be intensified by not only the Government of Kerala but by the adjoining states as well. There should be a total removal of all the affected palms beyond the northern boundary (Karuvannoor river) after effectively keeping the buffer zone between Karuvannoor river and Chalakudi river totally free of diseased trees. In Kanyakumari and other districts of Tamil Nadu adjoining Kerala State similar

eradication programmes are called for. To make this effective it is essential that the field staff of the the departments concerned (Department of Horticulture, Karnataka; Department of Oilseeds, Tamil Nadu) working in these districts are trained on disease identification so that they are able to spot out such palms and get them removed. Since there is positive indication that total removal of diseased palms reduces the subsequent incidence of the disease this can go a long way in checking the spread of the disease.

The need for internal quarantine needs no stress. Planting materials of coconut should under no circumstances be taken out of the diseased belt. The required machinery for enforcing this may be planned and developed by the State Governments concerned on top priority basis.