

ORIGIN, DISTRIBUTION AND SPREAD

N. GOPINATHAN PILLAI
Central Plantation Crops Research Institute
Regional Station, Kayangulam
Krishnapuram 690 533, Kerala

Over a century ago, the Root (wilt) disease of coconut was recognised in areas now in Kerala State. Butler (1908) referred to the malady as "Root disease" probably because root rotting was recorded as a prominent symptom of the diseased palms. A later terminology referred to the disease as "wilt disease" as the visible symptom was flaccidity of the foliage. Subsequent references to the disease have been variations in combinations of root rot and wilt symptoms. To overcome the confusion in referring to the same disease by different names (there are over 30 of them available in literature), Mathen, Gopinathan Pillai and Radha (1976) after examining the appropriateness of the various appellations, suggested on the basis of priority and frequency of usage that the disease may, for the sake of uniformity, be referred to by all workers as 'Coconut Root (wilt) disease' until such time that an alternate name can justifiably replace it.

ORIGIN OF THE DISEASE

The origin and time of occurrence of the disease is still a matter of great speculation. The first ever documented evidence is that of Butler (1908). This was closely followed by the report of Kunjan Pillai (1911). In these publications the first outbreak of the disease is reported to be from Erattupetta area of Meenachil Taluk in Kottayam Dist., the probable time of occurrence being between 1874 and 1884. Perhaps the disease became manifested in these areas in significantly alarming proportions only ^{after} the "great floods" of 1882. From the other records available, it is now known that around 1897 the disease was reported from Kaviyoor and Kalloppara areas of Thiruvalla Taluk and a little later from Kayangulam area of Karthigappally Taluk (Butler, 1908; Varghese, 1934, Menon and Pandalai, 1958). The disease incidence is therefore presumed to have its origin in these three isolated foci of infection.

DISTRIBUTION AND SPREAD

Ever since the occurrence of the disease in a serious form after 1882, the malady was spreading steadily in all directions from the three foci of infection initially recognised. An attempt at determining the extent of spread of this disease

made by Butler (1908) and Kunjan Pillai (1911) indicated that in Meenachil, Thiruvalla, Kayamkulam and Alleppey, the disease affected about 24,000 ha of coconut plantations. The disease was later traced up to Cochin in the north and Kottarakkara in the south (Varghese, 1934). Isolated centres of infection were also reported by him in and around Adoor, Mavelikara, Alleppey, Cochin and Moovattupuzha. In his report, rapid spread of the disease along the banks of Meenachil, Manimala, Pamba and Kallada rivers was also mentioned. Menon and Nair (1951) recorded areas bordered by Quilon in the south-west, Punaloor in the south-east, and Ochanthuruthy in the north-west, and Malayattoor in the north-east to be affected by Root (wilt) disease. Very heavy infection was also recorded by them in places around Kayamkulam, Alleppey, Thiruvalla, Changanacherry, Meenachil, Erattupetta, Pathanamthitta, Mattancherry and Ernakulam. In a subsequent reconnaissance survey Verghese (1959) could locate pockets of disease occurrence in areas beyond Quilon in a few villages east of Attingal on the bank of Vamanapuram river. Menon and Pandalai (1958) estimated the extent of disease occurrence to be around 40,000 ha. More recently, however, based on observations on the spread of the disease over the previous five years, Gopinathan Pillai, Lal and Shanta (1973) reported a contiguous distribution of the disease in six districts (Trivandrum, Quilon, Alleppey, Kottayam, Ernakulam and Trichur) of Kerala State. The limits of the spread of disease was reported to be Ala, Verandarappally and Kalloor of Trichur district in the north and Nemum, Ottasekhar mangalam and Maranalloor of Trivandrum district in the south. According to them, more than 30 per cent of the 750,000 ha under coconut in Kerala was affected by the disease. Further, a sporadic occurrence of the disease was recorded from Tamil Nadu in localities around Kulesekhar and Vallom villages of Kanyakumari and Tirunelveli districts respectively. Gopinathan Pillai (1976) later reported that the disease was prevalent in Ponmanai village of Kanyakumari district. Among the disease affected tracts in Kerala State, Karunagappally, Kuttanad, Kanjirappally, Meenachil and Kanayannoor taluks present heavy infection.

Gopinathan Pillai et al (1973) indicated that the disease was prevalent in all the major soil types in Kerala State. However, the spread of the disease was observed to be fast in light textured sandy, sandy loam and alluvial soils as well as heavy textured clayey soils than in the laterites. The incidence was relatively higher in waterlogged, low-lying areas adjacent to rivers and canals. In "Keri" soils too the disease incidence was heavy.

A possible involvement of surface and subsurface soil moisture in the rapid spread of the disease has been suggested previously (Varghese, 1934; Menon and Nair, 1951; Pillai and Pushpadas, 1966). Subsequent investigations by the author support the view that areas close to river banks and lying near canals are invariably infected heavily by the disease. However, banks of the lower tides of the rivers in both the northern and southern borders of the diseased tracts were invariably free of the disease. When the disease was recorded in hillocks, the first incidence was usually found occurring at the foot where water collects. Subsequently spread occurred along the gradient to other elevated areas. Other interesting observations were the occurrence of healthy pockets surrounded by diseased gardens, marked variations in disease intensity within diseased tracts, presence of apparently healthy palms in the midst of palms in the advanced stages of disease and individual diseased palms especially in laterite tracts remaining over several years without transmitting the disease to neighbouring palms.

Recent observations on the pattern of spread of the disease in selected coconut gardens with low incidence of disease lent support to the earlier observation of rapid spread in sandy, sandy loam and alluvial soils and slow spread in lateritic gardens. Frequent occurrence of the disease in jumps was another interesting observation. The rate of spread of the disease was monitored in the northern border of the diseased tract and it was found to be 1 to 4 KM from the nearest source of infection. The pattern of disease spread characterised by frequent jumps or leaps is suggestive of the possible involvement of a pathogen transmitted by an aerial vector (Gopinathan Pillai, Sasikala and Mathen, 1981).

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