

STEM BLEEDING DISEASE OF COCONUT IN KERALA

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Stem bleeding disease of coconut still remains a baffling problem, the cause of which is yet uncertain. This particular aspect was taken up by the Central Plantation Crops Research Institute and a detailed study on the pathogenic nature of the disease was investigated. This paper deals with the study conducted in order to have a clear understanding of the symptomatology of the disease-externally and internally-existing in southern Kerala.

Stem bleeding disease of coconut was first reported from Sri Lanka (Petch, 1908). Subsequently, it was found to occur in India and other coconut growing countries (Menon & Pandalai, 1958). In India, stem bleeding disease is prevalent in Goa, Andhra Pradesh, Gujarat, Karnataka, Tamil Nadu and Kerala. Oozing of the fluid is also one of the symptoms in the Ganoderma wilt disease found in Karnataka and Andhra Pradesh and in Thanjavur wilt prevalent in Tamil Nadu. These diseases are lethal. In Kerala, the exudation of a reddish brown fluid from the lower part of the stem is the initial symptom; yet the affected palm continues to yield for a long period. On the basis



Fig. 1 Discolouration progressing inside the bark

of the above information a preliminary study on development of symptoms and internal pattern of spread and damage was undertaken.

In general, distribution of the disease in Kerala was seen mainly along the coastal tract. But rare occurrence of the disease towards the interior tract is also observed irrespective of the soil conditions. In Kerala the disease has been recorded from almost all tracts.

To have a clear understanding of the initiation of external symptom and internal spread, a systematic study was conducted in four gardens at Kandalloor and Allumpeedika - plantations having more than six hundred palms. This study revealed that formation of the bleeding patches was visible on the stem at the ground level. The fluid exuded from the trunk turns black as it dries up on the bark. When this particular region was chiselled out in the vertical plane, it was observed that the brown patches were spreading internally upwards on the stem before the exudation became visible externally in these areas [Fig. 1].

A palm in the advanced stage of the disease was uprooted to study the internal damage due to the disease. The root system was exposed and the stem was cut lengthwise and breadthwise to study the internal damage. Simultaneously sampling of tissues from different parts was also made for isolation of the associated fungal organisms. Brown colouration was markedly visible inside the bole towards the lower part. But the discolouration observed at the bark region near the ground level progressed towards the top without apparently damaging the vascular tissue. This observation is also in agreement with the symptoms described earlier by Menon and Pandalai [1958]. The oozing of the fluid was found to be only from the cortical parenchymatous tissues. Development of profuse bleeding patches occurred on the trunk even at a height of about seven metres from the ground level and at about two and half metres below the base of the crown. Interior to the cortical damage of the stem at this region white colour was observed in the fibrous group of tissue lying close to the cortical parenchymatous tissue.

Browning and whitening of tissues are positive indications of

the presence of cellulose and lignin decomposing fungal organisms. Hence these observations are suggestive of the involvement of pathogenic organisms associated with the disease. Lily [1984 a, b] isolated *Phomopsis cocoine* and *Schizophyllum commune* from stem bleeding affected coconut palms.

These two groups of fungi were frequently isolated from the pieces of stem tissue of diseased palms around Kandalloor and Allumpeedika. Since the fungi found were in the apparently healthy tissue above the affected lesion, the application of fungicide or hot coal tar should not be restricted to the bleeding particles, but the healthy tissue above the infected portion should also be treated after partially removing the bark. This will help in arresting the further spread. Further studies in this direction are in progress.

ACKNOWLEDGEMENT

Authors thank Dr. K. K. Nambiar, Head of the Division of Plant Pathology and Dr. P. Rethinam, Project Co-ordinator for Coconut for encouragement and Dr. N. P. Jayasankar, Joint Director, C.P.C. R.I., R S. Kayamkulam for providing all the facilities to undertake this study.

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