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NEW OR UNUSUAL RECORDS

SAPROPHYTIC COLONIZATION OF *GEOTRICHUM* SP. ON *HEVEA BRASILIENSIS* ROOTS, A CONDITION THAT RESEMBLES WHITE ROOT DISEASE

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An unusual outbreak of saprophytic fungal colonization on *Hevea* roots resembling white root disease has been shown to be caused by the fungus *Geotrichum* sp.

Key words: *Hevea brasiliensis, Geotrichum sp.*, white root disease

INTRODUCTION

Our attention was drawn in July, 1992 to an incidence where purchase of budded stumps of *Hevea* has been refused from a commercial nursery by the Regional Advisory Officer on the grounds that the seedlings in the nursery are affected by white root disease, a deadly root disease of rubber caused by *Rigidoporus lignosus*. This commercial nursery was situated in Ratnapura, a wet, rubber growing district of Sri Lanka and consisted of around 20,000 seedlings. It was reported that more than 75% of the plants are affected by the condition. Subsequently during the year 1993 same problem was brought to our notice from a large scale commercial nursery situated in the Gampaha District.

On the closer examination of the affected seedlings, it was revealed that the above ground symptoms characteristic to the white root disease viz. yellowing & buckling of leaves, were not present in any one of the plants. In the light of this situation it was decided to carry out a detailed study on this condition.

MATERIALS AND METHODS

The suspected fungus was isolated from the surface of affected tap roots on Potato Dextrose Agar (PDA) and sent to CAB International Mycological Institute, U.K. for authentification. The fungus was identified upto the generic level as a species of *Geotrichum* Link (IMI 354411).

The infectivity of the fungus was tested on *Hevea brasiliensis* seedlings raised from seeds of the clone PB 86, growth in a seedling nursery in Meerigama, Colombo District. To bulk up the mycelium for use as inoculum, four agar plugs, 12 mm diameter, were removed from 7-day-old culture of the isolate of *Geotrichum* growing on PDA medium and introduced on to 100g of sterilized woodowels in 500 ml conical flasks. After incubation at 28 $\pm$ 2°C for 30 days, the contents of the flasks were introduced on to the roots of 14 months old 15

Hevea seedlings. Each seedling was inoculated with contents of one flask after exposing the roots. Roots were covered immediately with soil after inoculation.

RESULTS AND DISCUSSION

The most conspicuous symptom of the condition was the presence of a net work of whitish mycelium on the root system (Fig. 1A). The tap roots and the laterals of the affected plants were found to be completely covered with superficial mycelium. No rhizomorphs characteristic to the genus *R. lignosus* (Fig. 1B) were seen and there was no collar or root rot due to the fungal attack. The mycelium could be easily removed if swabbed with wet cotton wool. The canopies above ground parts of the affected plants were absolutely free from any disease symptom.

The characteristic *Geotrichum* colonization was observed on the examination of roots of the artificially inoculated plants after 35 days. Reisolates from surfaces of roots constantly yielded *Geotrichum* sp. No symptoms associated with *Geotrichum* were noticed on uninoculated plants which served as control.

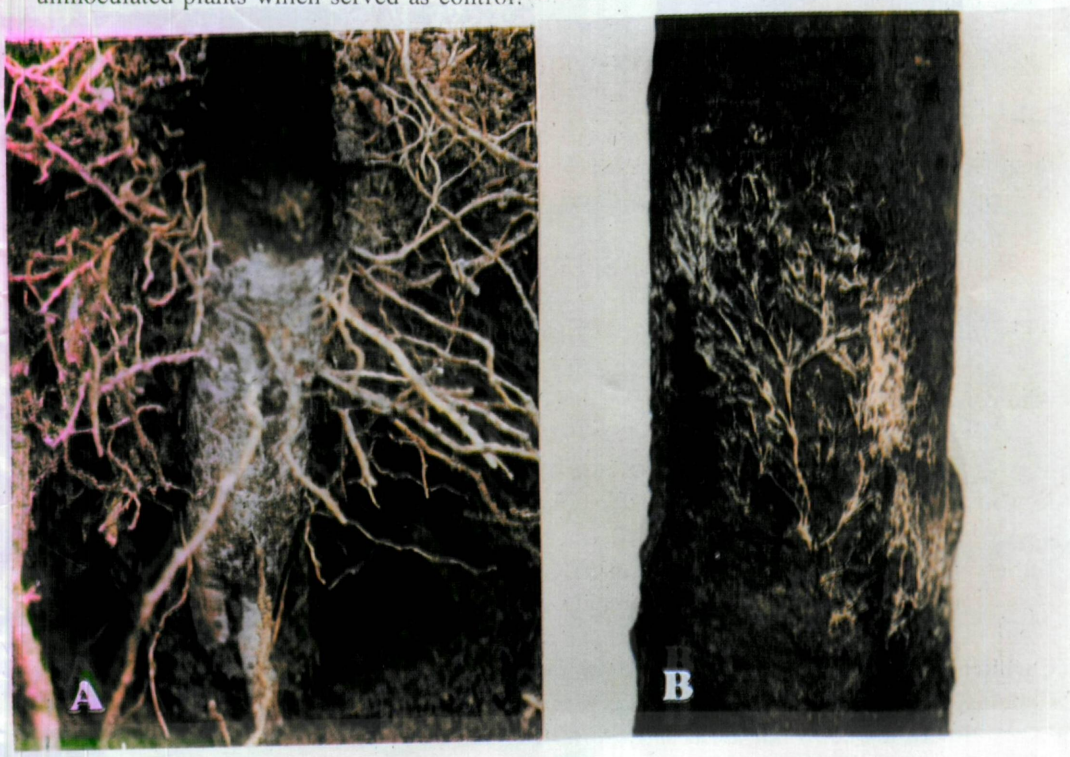

Fig. 1. *Hevea* roots (A) associated with *Geotrichum* sp. and (B) affected by *Rigidoporus lignosus*. Note the net work of whitish mycelium on A compared to fungal growth with rhizomorphs in B.

A survey conducted to find the factors that contributed to this unusual outbreak revealed that the soil of the nurseries where the condition was detected had been covered with leaf litter and decaying coconut roots which are also heavily colonized by the same fungus.

Although the genus *Geotrichum* is wide spread in nature (Anonymous, 1946; Cooke, 1963; Butler, *et al.*, 1965) no literature is available to conclude that this fungus is a serious pathogen of plants (Hoog *et al.*, 1986) except that it causes watery soft rots of fruits and vegetables, sour rot on citrus (Smith, 1917; Horn *et al.*, 1958; Sinclair *et al.*, 1962; Butler *et al.*, 1965), melon (Ceponis, 1966), tomato (Poole, 1922) and root rot of carrot (Wright *et al.*, 1964; Suhag, 1982). Most of the species are found in nutritionally rich, fluid substrates, such as rotting plant material, pulp, food stuffs or polluted water (Hoog *et al.*, 1986) and few species have been reported as human and animal pathogens (Beneke, 1957; Conant *et al.*, 1954; Emmons *et al.*, 1957).

This is the first report of the occurrence of *Geotrichum* sp. on *Hevea brasiliensis* roots in Sri Lanka (Anonymous, 1988). Further, there appears to be no previous records of this unusual association of *Geotrichum* with *Hevea* root in any other part of the world (Chee, 1976; Anonymous, 1988).

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