

BACTERIAL WILT DISEASE OF TEAK SEEDLINGS IN THE FOREST NURSERIES AND ITS CONTROL

Teak (*Tectona grandis*) is indigenous to India, Burma, Thailand, Indonesia and many other islands in the Far East (Bakshi 1976). The species has been widely planted in this country. A large number of teak seedlings are being raised every year. From the Forest Range Nurseries of Khaskhali, Bakkhali, Chunati and Idgah, death of 3 months' old seedlings were reported to the Bangladesh Forest Research Institute. In the nurseries of Bakkhali and Khaskhali, the percentage of mortality of teak seedlings was about 35 and 80 respectively. Khaskhali was the worst affected of all the reported nurseries. In Napithkhali, wilting killed 50% of the seedlings raised in 18 beds. The lower leaves died first and then the upper ones followed. Information of this disease also came from Ultachari in 1985, Taktanala in 1986 and Farua in 1988.

In August of 1978, an adequate number of 3 months' old diseased samples were collected from Khaskhali and Bakkhali nurseries. Samples were also collected from Dolahazara nurseries. Under running water, soil adhered to the roots of seedlings, was washed off. Wilted stems, tap and branch roots, dead leaves and control of all the samples were selected for isolation of pathogen.

The samples under test were washed in clean water and then in dilute detergent (e. g. Chlorox) mixed water to remove adhering dirt and subsequently cleaned with distilled water. Some pieces of roots were surface-sterilized with 0.1% mercuric chloride solution for one minute. These samples were dried with sterilized blotting paper and then cut into 1-1.5 cm small pieces. Some selected roots and stems were debarked and wood and bark samples were taken separately as

inocula. All types of inocula were placed onto TWA, 2% MA and NA media. Plates were incubated at 25°C.

After five days of incubation of the plates, it was observed that mainly one type of bacterium grew consistently from the majority of inocula plated onto NA medium. The isolated bacterium was identified as *Pseudomonas solanacearum* which was also confirmed by the Commonwealth Mycological Institute. The disease created a serious threat to the entire nursery stocks of Bakkhali and Khaskhali. The leaves of infected seedlings turned yellowish which spreaded to give a burnt appearance later. First the lower leaves were affected and the apical ones later. The apical portion of each leaf dried up and within a few days the whole seedling became completely wilted. Some leaves showed brown, dried areas at irregular patches in between veins. The dark discolouration of vascular tissues became soft and decayed. The very young seedlings were more rapidly affected. In many cases, the tap roots rotted just below the soil level.

The diseases was prevented successfully by removing all the dying and dead seedlings from the bed and arranging adequate drainage.

The bacterium occurs in the soil and can remain in the soil for many years (Senevirate 1978). It infects young plants. The disease has a global distribution in the tropics and temperate zone. The pathogen, *P. solanacearum* has a wide host range in plants belonging to 17 families of which solanaceous plants are most susceptible (Spaulding 1961). Wilt of teak seedlings has been recorded from the Philippines (Roldan and Andres 1953), Malaysia (Mitchell 1962), Burma

(Doo 1968) and India (Bakshi 1976). *P. solanacearum* is one of the major pathogens of potato diseases in Latin America (French 1977). It also causes disease in banana, tobacco, tomato, wheat, casuarina, ground nut and Ricinus (CMI 1968 ; Senevirate 1978 ; Olsson 1978). Tomlinson and Mogistein (1989) described bacterial wilt of peanut (*Arachis hypogaea*) caused by the same pathogen in Papua New Guinea. Bacterial wilt by *P. solanacearum* of *Eucalyptus* spp. was first recorded in Guangxi and Guangdong provinces of China in 1983 and 1986 respectively (Wu and Liang 1988). It was also reported to cause a leaf spot of *Capsicum annum* and tomato seedlings (Hayward 1978). Brown rot due to *P. solanacearum* is widespread on potato in Egypt (Goorani 1978). In Bangladesh, it is the major problem of teak nurseries.

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