Indian Journal of Natural Rubber Research, **10**(1&2) : 102-106, 1997

TAPPING PANEL DRYNESS SYNDROME IN *HEVEA BRASILIENSIS* ASSOCIATED WITH WOUNDS IN THE ROOTS

A fast spreading type of tapping panel dryness (TPD) syndrome, termed acute TPD was recently observed by Yang *et al.* (1997) in mature trees of natural rubber, *Hevea brasiliensis*. Acute TPD is known to occur within a matter of days to weeks and its symptomatology and histochemistry are not known. In the present investigations it was found that trees affected by acute TPD had wounds present in their lateral roots.

The present study was conducted at the Experimental Farm of the South China Academy of Tropical Crops, Hainan Island, People's Republic of China as part of an international network research on TPD under the auspices of IRRDB. Five trees of *Hevea brasiliensis* (clone RRIM 600) affected by acute TPD on the BO-1 panel under 1/2S d/2 system of tapping were used in the present study. Bark tissues collected from the trunk and roots of the affected trees were examined. For light microscopy, the bark samples were fixed in formalin-acetic acid-alcohol solution, treated with iodine and bromine in glacial acetic acid, dehydrated in a series of normal butyl alcohol and then embedded in paraffin. Sections taken from the samples were stained with fast green. The laticifers showed a brown colour due to the iodine-bromine treatment. A laticiferous cell with *in situ* latex coagulation was distinguishable from a normal laticifer (Hao and Wu, 1993). Those laticifers with *in situ* latex coagulation appeared swollen in the section because of expansion of the coagulated rubber particles during the treatment. Normal laticifers did not show any such swelling.

For electron microscopy, bark samples were excised from the trees and immediately immersed in chilled 6 per cent glutaraldehyde in 0.1 mol/L phosphate buffer (pH 7.2). The samples were cut into small blocks and fixed in glutaraldehyde at 4°C for 16 h followed by fixing in 2 per cent OsO_4 in the same buffer for 6 h at room temperature. They were then dehydrated in a series of ethanol and embedded in Epon 812 resin. Ultra thin sections were then cut with an LKB-V microtome, stained in uranyl acetate and lead citrate and examined under a JEM 100 CX-II electron microscope.

The trees affected by acute TPD had their bark completely dry from the tapping panel downwards up to the root neck and beyond (Fig. 1). When punctured with a sharp needle, it took more time (120 seconds) for latex to emerge from the bark of the stock region than from the scion region (10 seconds). The soft bark was more brown close to the root neck than the tapping panel region. Further observations, 12 to 15 months after the trees had gone dry, revealed that the trees remained fully dry. At this time, it was noted that the lateral roots of the acute TPD affected trees had black wounds (Fig. 2) and that the dryness was present up to the wounds, but not beyond. These wounds were found 30 -120 cm away from the root neck region and 90 -160 cm away from the tapping panel region in the different trees. The bark between the wound and the tapping panel remained fully dry (Fig. 1). The wound was black in colour with cracks present on it. The cause and timing of the wounding are not known.