mononematous, indeterminate, dichotomously branched, flexuous, thick-walled, septa widely placed and thick, 10–16 μm wide. Conidiogenous cells polyblastic, denticulate, denticles clearly visible after secession of conidia. Conidia solitary, dry, acropleurogenous, simple, ovoid, thick-walled, brown, O-septate, 11–15.5 × 7–9.5 μm.

Collected on decaying wood by N. Krishna Rao in a forest near Gundlabrahmaswaram, Kurnool Dist., A.P. on 27 November 1984.

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REPORT ON SOFT ROT OF *DUABANGA GRANDIFLORA* SEEDLING (ROXB. EX DC) WALP.

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Duabanga grandiflora (Roxb. ex DC) Walp. is an important softwood-yielding, fast-growing tree species. It is commonly found in the tropical forests of India, Bangladesh, the Philippines, Japan, Nepal and Bhutan. In India, *Duabanga* is widely distributed in the humid tropical forests of West Bengal, Assam, Meghalaya, Arunachal Pradesh and Sikkim[1]. The wood is used in manufacturing matchboxes, plywood, packing boxes and furniture and as building material for houses in rural areas. It is an early successional species of a jhum fallow (shifting cultivation) and can widely be exploited in afforestation programmes.

The seeds are small and are dispersed during March and April. Seed germination takes place during the rainy season under natural conditions. Seedlings affected by soft root rot disease were found in the Lailad reserve forest of Meghalaya. Diseased

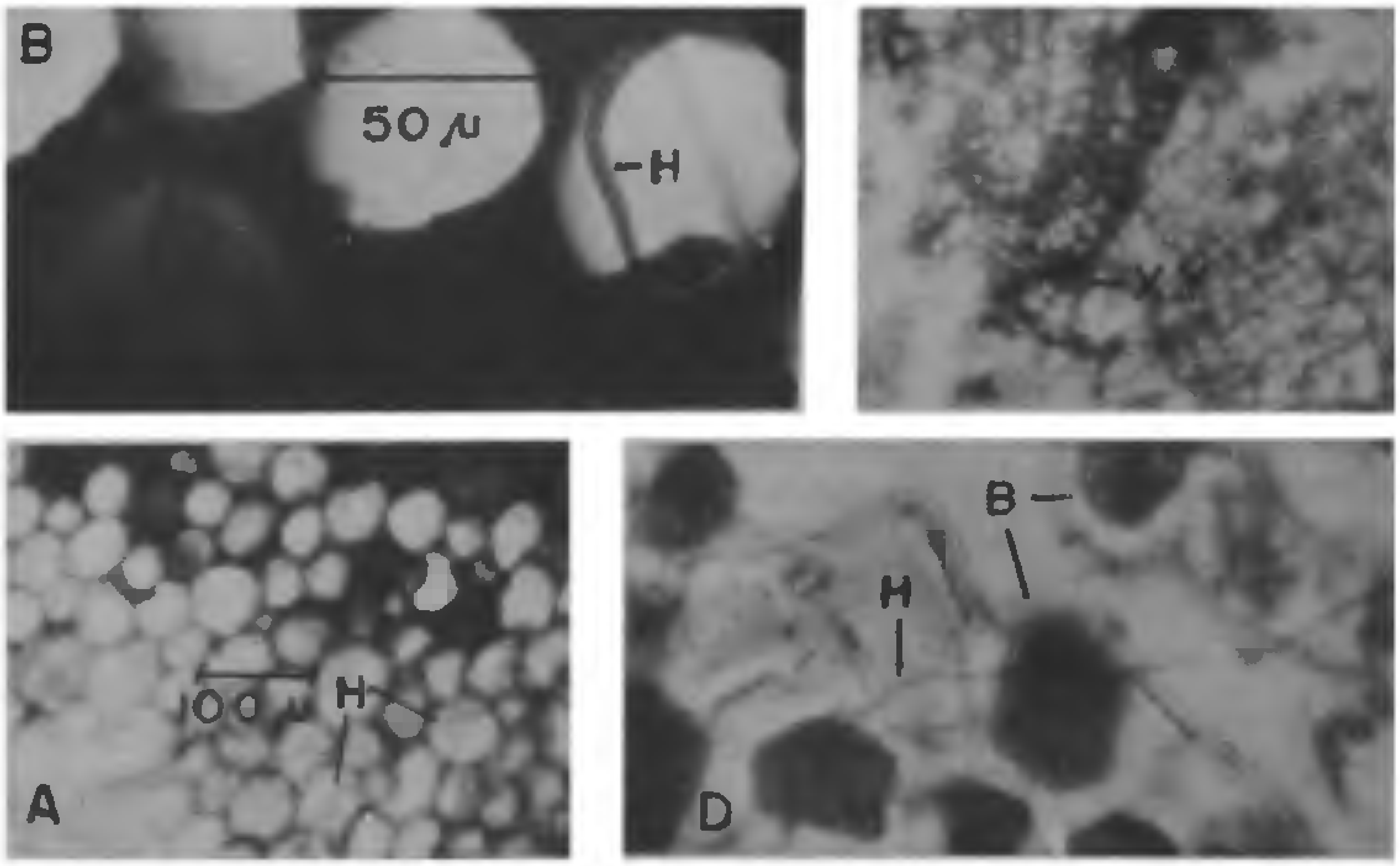

Figure 1A–D. **A.** Infected cortical region showing hyphae (H); **B.** Enlarged view of infected cortical region; **C.** Infection in xylem (XY) tissue of stem, and **D.** Block (B) in xylem vessel of vascular bundle caused by the pathogen.

seedlings were collected and brought to the laboratory for further observations. The symptoms of the disease were mainly confined to the hypocotyl zone. The anatomical observations made on microtome sections revealed the fungus in the cortex and conductive tissue (figure 1a–d).

The infected part of the seedling above ground showed wilting symptoms. The seedling ultimately collapsed because of the damage caused by the fungus. The causal organism was isolated and was identified as *Fusarium moniliforme*.

Fusarium spp. is known to cause wilt disease in some tree species[2-5]. However, no seedling disease had been reported in *D. grandiflora*. The disease reported here causes great damage to seedlings in the field, resulting in higher seedling mortality.

For pathogenicity test, forest soil was collected and sterilized at 15 p.s.i. for 1 h thrice intermittently on three consecutive days. The sterilized soil was placed in sterilized pots (size 8 in × 8 in) and left for two weeks to minimize toxic effects. It was then amended with *F. moniliforme* cultured on Czapeck agar medium for one week (inoculum 300 spores/ml). Seedlings of *Duabanga* were raised separately in a BOD incubator at 30 ± 1°C under continuous illumination (1300–1500 lux). Seedlings with 2–3 cm radicles were planted in the fungus-infested soil in the pots. One set of seedlings was kept as control in soil without the test fungus. The pots were kept at room temperature (26 ± 2°C) and watered with sterilized water on alternate days. The seedlings showed the first sign of wilting on the 25th day after transplantation. The roots and the hypocotyl regions were found to be damaged, and the damage caused the death of the seedlings. Re-isolation of the fungus from the diseased seedlings yielded a culture of *F. moniliforme* identical with the original one.

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ROLE OF PHENOLS IN RESISTANCE TO TOMATO LEAF CURL VIRUS, FUSARIUM WILT AND FRUIT BORER IN *LYCOPERSICON*

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TOMATO (*Lycopersicon esculentum* Mill.) is an important vegetable crop grown throughout the world. However, tomato plants are susceptible to various diseases and pests. Among these, tomato leaf curl virus (TLCV), fusarium wilt (*Fusarium oxysporum* f. *lycopersici*) and the fruit borer (*Heliothis armigera* Hübner) are very serious in most parts of the country. Preformed phenols play a protective role in resistance to certain diseases and pests.

Four cultivated varieties, viz. HS 101, Pusa Ruby, Red Cherry and Manzana, and two accessions of *L. hirsutum* f. *glabratum*, B 6013 and WIR 4172, were taken for the studies. Seedlings were grown in clay pots containing a mixture of soil, sand and FYM in the ratio 1:1:1. The potted plants were fertilized and watered with Hoaglands solution, and grown in insect-proof cages. A random method of composite sampling was adopted, comprising top, middle and lower leaves of 105-day-old plants. Total phenol content was determined following the method of Swain and Hillis[1] using Folin Dennis reagent and is given as micrograms per gram of fresh leaves. Five samples were used in each case and the data were analysed statistically using CRD design.

Table 1 shows the results of screening the four varieties of *L. esculentum* and the two accessions of *L. hirsutum* f. *glabratum* against TLCV, fusarium wilt and fruit borer.

L. hirsutum f. *glabratum* is also resistant to pinworm, horn-worm, spider mite, leaf miner, root rot and TMV, and cold and frost[5]. *L. hirsutum* f. *glabratum* B 6013, a resistant wild species, has high (134.22 μg per g) total phenol compared to the susceptible commercial varieties (24.42 μg/g in Red Cherry to 31.46 μg/g in Pusa Ruby) (table 1). The differences in total phenol content are highly significant. Tomato varieties resistant to early blight[6] (*Alternaria solani*), bacterial wilt[7] (*Pseudomonas solanacearum*) and root knot nematodes (*Meloidogyne* spp[8]) were also shown to have higher phenol content than susceptible varieties. Phenolic substances and their oxidation products, quinones, have been reported to play an important role in resistance of