ULTRASTRUCTURE OF BANANA ROOTS INFECTED BY THE BURROWING NEMATODE RADOPHOLUS SIMILIS.

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The burrowing nematode Radopholus similis (Rs) (Cobb) Thorne is an important root pathogen of banana plants. The infection reduced plant vigour as well as bunch size and weight. Although it is known that the nematode population is low in some banana cultivars, defense to Rs is poorly documented. Histological and ultrastructural investigations were undertaken on in vitro plantlets for studying the infection process at the cellular level, both on susceptible and resistant banana cultivars (cv).

In the susceptible cv, the nematodes penetrated the plant after degradation of the root surface. Pathogen ingress within host tissues was characterized by the occurrence of large tunnels, resulting in heavy host cell wall alterations. Host cells close to the nematode displayed various cytoplasm modifications seen in the cortex and the vascular bundle. Hypertrophied cells close to the endodermis were also observed.

Root penetration appeared to be less important in the resistant cv. Nematodes were only found to be localized in the root cortex. Plant cell damages were less important and hypertrophic cells were not observed in infected roots. However, numerous cells, both in the cortex and the vascular bundle, were seen to accumulate electron-dense compounds in the vacuole, early after root inoculation. These compounds that are blue-stained by the toluidine blue could be from phenolic origin.

In light of our data, resistance of banana root to Rs may result from :

- a limitation mechanism to root penetration by Rs,
- a reinforcement of host cell walls during Rs ingress in root tissues,
- and/or the production of phenolic compounds.

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