

## Short communications

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### The occurrence of crown rot caused by *Phytophthora cactorum* in the apple rootstock MM 104

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In The Netherlands, *Phytophthora cactorum* (Leb. et Cohn) Schroet. was first isolated from the collars of apple trees by ten Houten (1953). This pathogen was already known as the cause of collar or crown rot of apple trees (Baines, 1939). *Phytophthora syringae* Kleb. is also known to cause a collar rot of apple and pear (Roosje, 1962). The difference between collar rot and crown rot is that the former develops in the lower parts of the trunk just above the soil surface and the latter in the main roots and on the trunk just below the surface. On the other hand, Mulder (1968) recently gave the first European report of a rot of the primary root of the apple seedling, caused by *Phytophthora cactorum*.

McIntosh and MacSwan (1966) described the occurrence of collar rot in a planting of apple trees propagated on M II and MM 104 rootstocks: "First, superficial browning suggestive of infection by *Phytophthora cactorum* was found in many trees at the junctions of roots and stems where the bark is slightly furrowed". This means that they saw a crown rot. We have found the same symptoms for the first time in The Netherlands in the MM 104 rootstock in the experimental orchard at Kraggenburg in the Noordoostpolder.

In the spring of 1968, in a planting of five apple varieties on the rootstocks MM 104, MM 106, MM 109, MM 110, MM 111, M IV, and M VII, many trees on MM 104 were seen to be in bad condition. They had fewer leaves, and these turned yellow and then leaf drop took place. Five to ten trees of each apple variety on this rootstock had been planted, and by January 1969 all trees of the varieties 'Cox's Orange Pippin', 'James Grieve', and 'Lombartsdalville', as well as a single planted tree of 'Stark Earliest', all on MM 104 rootstock, were dead. Only the five 'Golden Delicious' trees on MM 104 were healthy and showed no symptoms. At first, waterlogging was thought to be responsible, as reported by Wirth et al. (1967) for MM 104 in a rootstock trial situated in the Swiss experimental orchard at Wädenswil, but after several attempts we succeeded in isolating the fungus *Phytophthora cactorum* from the bark of the proximal portion of the thick roots of our trees. The proximal portion of the roots and the adjoining stem below the soil surface were brown, indicating the presence of the fungus.

McIntosh and MacSwan (1966) consider it improbable that winter temperatures were a prime factor and they think that the factors governing the rate at which bark is colonized by this pathogen are complex. In all three cases – in Switzerland, Canada and The Netherlands – an excess of water seems to play an important role. At Wädenswil, Wirth and his coworkers (1967) did not succeed in isolating a pathogen, and considered waterlogging to be the sole cause. In Canada, irrigation by sprinklers had been used in the plantation.

In the Noordoostpolder of The Netherlands the level of the groundwater occasionally lies close to the soil surface in some winters as it did in the winter of 1967/1968. The normal growth of the five 'Golden Delicious' trees on MM 104 at Kraggenburg is presumably to be attributed to their position near a windbreak of poplars. Since poplars withdraw large amounts of water from the ground, the soil along the windbreak is relatively dry.

### Samenvatting

*Het voorkomen van "crown rot", veroorzaakt door *Phytophthora cactorum*, in de appelonderstam MM 104*

In het voorjaar van 1968 vertoonde een aantal bomen op het onderstammen proefveld te Kraggenburg (N.O.P.) een slechte bladstand. Vóór januari 1969 waren alle bomen van de appelrassen 'Cox's Orange Pippin', 'James Grieve' en 'Lombartscaville' en één enkel geplante 'Stark Earliest', alle geënt op onderstam MM 104, afgestorven. Slechts de vijf bomen van het ras 'Golden Delicious' op MM 104 vertoonden een normale stand. Uit de aangetaste wortels kon *Phytophthora cactorum* geïsoleerd worden. Vermoedelijk heeft het pathogeen door een hoge grondwaterstand gedurende de winter 1967/1968 de kans gekregen de onderstam MM 104 te infecteren. Doordat de vijf 'Golden Delicious' bomen op MM 104 aan het windscherm grensden, waar het relatief droger is, zijn deze waarschijnlijk aan infectie ontsnapt.

### References

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