

## The occurrence of *Phytophthora citricola* Sawada sensu Waterhouse (syn. *P. cactorum* (Leb. et Cohn) Schroet. var. *applanata* Chest.) in ornamentals in the Netherlands

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In arboriculture in the Netherlands *Phytophthora cinnamomi* Rands has been known for a long time as an important pathogen of conifers and ericaceous plants. Moreover many species of various other families can be attacked. The fungus penetrates the roots of the plant and causes rootrot and subsequent wilting and death of the plant. *Phytophthora cactorum* (Leb. et Cohn) Schroet. also had been found at Boskoop on Rhododendrons; but the symptoms, die-back or crown-rot of one or several branches, differ from those caused by *P. cinnamomi*.

Hoitink and Schmitthenner (1969) reported another *Phytophthora* sp. in wilted Rhododendron plants; they identified it as *P. citricola*. This fungus has not previously been associated with Rhododendron wilt; only Kröber (1959) reported a die-back of branches of Rhododendrons caused by this species.

In August 1968 we found several *Cytisus praecox* plants suffering from rootrot. The symptoms were the same as those caused by *P. cinnamomi*. A *Phytophthora* sp. was isolated from the base of the stem with a growth pattern in culture different from that of *P. cinnamomi*. The species was identified as *P. citricola*, which was confirmed by the Centraal Bureau voor Schimmelcultures (CBS) at Baarn. In 1970 *P. citricola* was isolated from *Rhododendron* 'Catawbiense Boursault', *R.* 'Catawbiense Grandiflorum', and *Azalea indica* (*Rhododendron simsii*). The symptoms were the same as those caused by *P. cinnamomi* (Rattink, 1971).

Inoculation trials on *Chamaecyparis lawsoniana* 'Ellwoodii' and *Rhododendron* 'Catawbiense Boursault' with naturally and artificially infested soil in the years 1970 and 1971 were not successful (Steekeenburg, 1972).

In 1972 plants of *Chamaecyparis lawsoniana* 'Ellwoodii' were inoculated with *P. citricola*, by placing a piece of agar with mycelium against the base of the stem, which was either left intact or wounded superficially. The inoculum was kept moist by covering the agar disc with wet cotton wool and plastic foil for some days. A number of wounded *Chamaecyparis* plants showed wilt symptoms after 3-4 weeks. From these wilted plants the fungus was reisolated.

*P. citricola* was isolated for the first time by Sawada (1927) from *Citrus sinensis*. Chester (1932) described *P. cactorum* var. *applanata*. Later on *P. citricola* has been

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found in several countries on various crops, viz. *Hibiscus* spp. (James and Plakidas, 1952), hops (Royle, 1968), lilac and elder (Henry and Stellfox, 1966), almond, pistachionut and *Chrysanthemum maximum* (Kouyeas and Chitzanidis, 1969), tomato plants (Salerno and Calabretta, 1960) and other crops listed by Waterhouse (1957). In the Netherlands *P. citricola* has been recorded by the Plant Protection Service (Van Kesteren, personal communication): three times from *Malus* sp., and once from a *Rhododendron* sp.

Although only few plants attacked by *P. citricola* have been found up to now, the fungus must be considered as a threat to ornamentals in the Netherlands.

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### Samenvatting

*Het voorkomen van Phytophthora citricola Sawada sensu Waterhouse (syn. P. cactorum (Leb. et Cohn) Schroet. var. applanata Chest.) bij siergewassen in Nederland*

Sinds 1968 is *P. citricola* uit verschillende boomkwekerijgewassen geïsoleerd. *Cytisus praecox*, *Azalea indica* en *Chamaecyparis lawsoniana* 'Ellwoodii' zijn nog niet eerder vermeld als waardplant. Eerder werd *P. citricola* in Nederland wel geïsoleerd uit appel (3 ×) en *Rhododendron* (1 ×).

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