

Rotbrenner

COMMON NAME	Rotbrenner
SCIENTIFIC NAME	<i>Pseudopezicula tracheiphila</i> (Mull-Thurg) Korf & Zhuang (1986)
SYNONYMS	<i>Phialophora tracheiphila</i>

May 2004

The information contained in this PRR was largely extracted from the Draft Review of Post Entry Quarantine Protocols for the Importation of Grapevine (Vitis) into Australia.

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Background

Symptoms of and severe losses from rotbrenner were well known in Europe during the last century. Although rotbrenner has been identified in viticultural regions of most of most European countries, it is generally confined to certain locally restricted areas. In some regions the disease results in severe losses annually, whereas in others it occurs sporadically or not at all. The disease has also been observed to occur during several succeeding years in certain locations and then not appear for several years.

Part of plant/commodity affected

Leaves, inflorescence.

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Biology

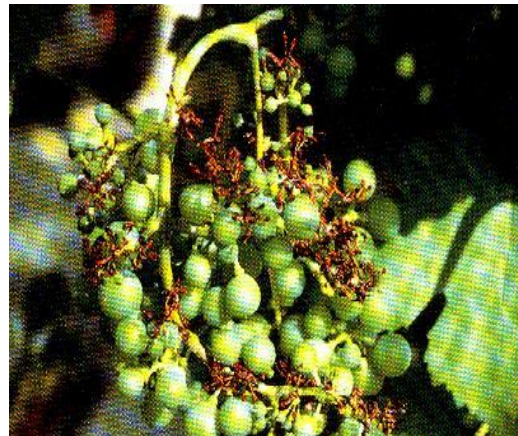
Symptoms

Lesions on leaves are initially yellow on white fruited cultivars and bright red to reddish brown on red and black fruited cultivars (Schüepp, 1988). A reddish brown necrosis then develops in the centre of the lesion, leaving only a thin margin of yellow or red tissue between the necrotic and green areas of the leaf. The lesions are typically confined by the major veins and the edge of the leaf and may be several centimetres wide. Atypical symptoms such as flecked spots or discoloration scattered over the leaf surface often occur late in the season.

The fungus may attack inflorescences before or during bloom, causing them to rot and dry out. Only the pedicels are attacked and the fungus does not seem to invade the rachis (Schüepp, 1988).



Symptoms of rotbrenner on grapevine lines



Dried fruit clusters affected by rotbrenner

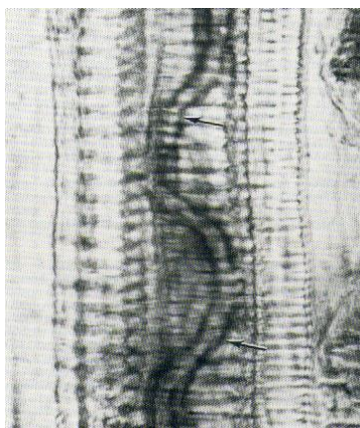
Identification

As with *P. tetraspora* the diagnostic feature of the fungus is the presence of sine-wave pattern of hyphae observed in the xylem vessel elements when affected plant tissues are cleared by boiling in 2% aqueous potassium hydroxide for 2-3 min.

Similar to *P. tetraspora*, *P. tracheiphila* produces short, hyaline and septate conidiophores that carry unicellular, ellipsoid, aseptate and hyaline conidia (2-3 x 1.5-2 µm). Generally the conidiophores are coarser than the vegetative hyphae.

The fungus produces the perfect stage, apothecia, which are erumpent from the leaf tissue and are often associated with the veins. They are minute, up to 0.6 mm in diameter, sessile, gelatinous, whitish to faintly coloured and gregarious. Apothecia contain inoperculate, broadly clavate, eight spored asci (115-145 x 18-28 µm), which show a blue pore in iodine after treatment with aqueous potassium hydroxide. Ascospores are hyaline, ellipsoid (19-27 x 9-14 µm) and are flattened on one

side. During germination ascospores produce a spore like vesicle on one side which is characteristic of the fungus. Paraphyses are branched and curved or slightly deformed at the apex, filiform, septate and hyaline.



Hyphae of P. tracheiphila growing in a sine-wave pattern inside a vessel element



Eight-spored asci of P. tracheiphila

As with *P. tetraspora* the anamorph of *P. tracheiphila* can be produced on 2.5% malt extract agar. Similarly, the apothecia can be observed on sterile grapevine leaves overlaid on malt extract agar. Diagnostic features are similar to those for *P. tetraspora* but *P. tracheiphila* produces eight ascospores in contrast to four ascospores in *P. tetraspora* (Korf *et al.*, 1986).

Life history

Early infection by *P. tracheiphila* may occur on the first to the sixth leaves of young shoots, resulting in minor losses. Later infections may attack leaves up to the 10th or 12th positions on the shoot and can result in severe defoliation (Schüepp, 1988). After an incubation period of two to four weeks, the fungus is able to invade vascular tissues of leaves causing symptom development. The fungus remains latent if it is unable to invade the vessel elements, in which case it can be isolated from green tissues showing no symptoms.

The fungus produces fruiting bodies, apothecia, on infected leaves. Apothecia are formed primarily on fallen leaves in the spring, although they may develop on current season infected leaves in late summer or fall. Depending on the weather conditions ascospores are produced from apothecia throughout the year (Pearson *et al.*, 1991; Reh *et al.*, 1993).

Heavy rainfall and prolonged wetting periods favour infection and lead to severe disease (Schmidheini, 1984). Nutrient deficiency and water stress can make vines susceptible to infection by *P. tracheiphila* (Schüepp, 1976; 1988).

Dispersal

Rotbrenner is spread by water and air borne spores.

Host range and distribution

Host range

Vitis vinifera, *V. labrusca*, *Parthenocissus quinquefolia*, *P. tricuspidata* (Schüepp, 1988).

Distribution

Austria, France, Germany, Hungary, Luxembourg, Switzerland, USA, USSR (Borovskaya & Bogdanova, 1973; Branas, 1975; Carles, 1984; Farkas & Milukas, 1994; Galet, 1977; Schüepp & Siegfried).

Pest risk analysis

The following risk analysis for angular leaf scorch is based on the methodology in Biosecurity Australia's guidelines on Import Risk Analysis for Plants and Plant Products (2001).

Entry potential

Entry potential: Medium

Through infected grapevine planting material.

Establishment potential

Establishment potential: Medium

The fungus has been reported only on some *Vitis* spp. and other Vitaceae hosts.

Spread potential following establishment

Spread potential following establishment: High

As water and air borne spores of the fungus can spread long distances.

Economic impact

Economic impact: High

High levels of infection during bloom can result in 80 – 90% crop loss (Schuepp, 1988).

Conclusions

Overall risk: High

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