

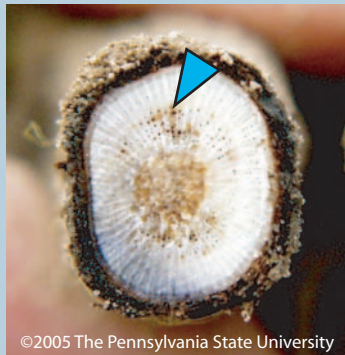
Wood decay fungi are often found growing in declining vines. These fungi can cause extensive internal decay with discoloration of the tissue. Prominent fruiting bodies are often associated with this kind of decay and decline.

\* \* \* \* \*

*Phaeomoniella chlamydospora* is one of the organisms associated with decline on both young and old vines in Pennsylvania and New York. Symptoms of *P. chlamydospora* in cross sections of roots and trunks may include dark flecking in the woody cortex, discoloration surrounding the pith, and production of a dark viscous exudate.

Cross-sections of declining vines show the dark spotting and exudate (arrows) symptomatic of *Phaeomoniella* infection.

Right: 4 year-old declining Merlot vine on 3309C rootstock. New York, August 2001.



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Below: 25 year-old declining Dutchess vine. New York, August 2001.



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### Management strategies to avoid vine decline:

- Plant disease-free stock
- Do not stress vines by over-cropping
- Irrigate new plantings for at least two years and more as needed.
- Avoid pruning cuts more than 1" in diameter
- Remove prunings from the vineyard if they are larger than pencil size in diameter or will take more than 4 months to decay
- Burn or bury prunings
- Maintain an effective weed control program against broadleaf species as they may harbor dagger nematodes which can transmit Tomato Ringspot Virus.
- Do not stack wood or felled timber near the vineyard to avoid introducing wood decay fungi.



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Penn State College of Agricultural Sciences research, extension, and resident education programs are funded in part by Pennsylvania counties, the Commonwealth of Pennsylvania, and the U.S. Department of Agriculture.

This project was funded by the PA Department of Agriculture and the Viticulture Consortium East.

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# Grapevine Decline in Pennsylvania and New York



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## A Guide to Symptoms and Understanding the Disease

The Pennsylvania State University, Department of Plant Pathology, and Cooperative Extension Service, University Park, PA 16802.

Photograph: Vine decline on Baco Noir grapevine. New York, August 2001.



Grape growers in Pennsylvania and New York have become increasingly aware of grapevine decline. Vine decline reduces yields and the availability of high quality fruit from old vines. Growers also have to pay for replacement plants and the labor required for replanting - in addition to losing income during re-establishment. Young and old vines of all cultivars can be affected.

Penn State's Department of Plant Pathology is surveying growers and vineyards to determine the extent of the vine decline problem and to identify its causes. If you observe symptoms of vine decline and would like assistance please call: 814-865-3761.

Vine decline may be caused by insects, drought stress, overcropping, nutrient deficiencies, winter injury, herbicide damage, air pollutants, and viral, bacterial, and fungal diseases. These factors may all contribute to vine decline.

Below: vine decline symptoms on young Cayuga vines. Pennsylvania, July 2000.



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Declining vines may exhibit any of the following symptoms:

- Yield reduction over successive cropping years
- Reduction in canopy growth
- Uneven growth and development of vines & clusters
- Sudden vine collapse in mid- to late summer during high temperatures and drought stress
- High susceptibility to water stress, poor fertility, or to over-cropping
- High proportion of transplant failure
- Plants express disease inconsistently from year to year
- Cane stunting or dieback

Clusters from twenty-five year old healthy (left) and declining (right) Chardonnay. Pennsylvania, July 2001.



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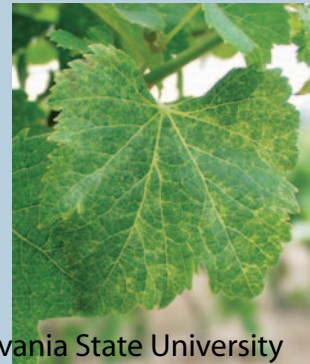
Vine decline in the northeastern United States may be due to viral diseases, such as Tomato Ringspot Virus (TRV) which is transmitted by dagger nematodes. Symptoms include small and distorted leaves, shortened internodes, and stunted vines.

The bacterium *Agrobacterium vitis* can be expressed as crown gall in the cool climates of northeastern United States and other regions. Crown gall forms fleshy galls composed of disorganized vascular tissue. Galls form at the soil line, at graft unions, and on the scion. The galls can completely girdle the trunk resulting in vine decline and/or death.



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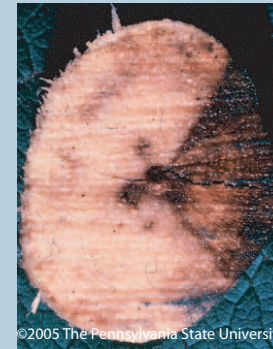
Left: Young Chardonnay grapevine showing crown gall symptoms at the graft union. Pennsylvania, April 2001.



Right: Tomato Ringspot Virus symptoms on Riesling. New York, August 2001.

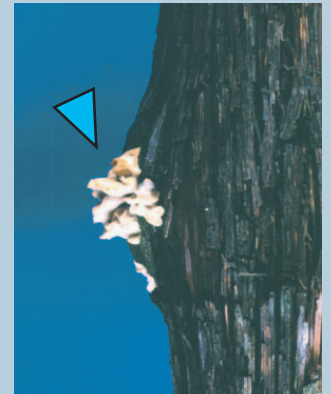
Fungi associated with grapevine decline in Australia, Europe, South Africa, and the United States, often referred to as "Esca," include the following:

- Eutypa lata*
- Phaeoacremonium* spp.
- Phaeomoniella chlamydospora*
- Phellinus (Fomitiporia) punctatus*
- Stereum hirsutum*

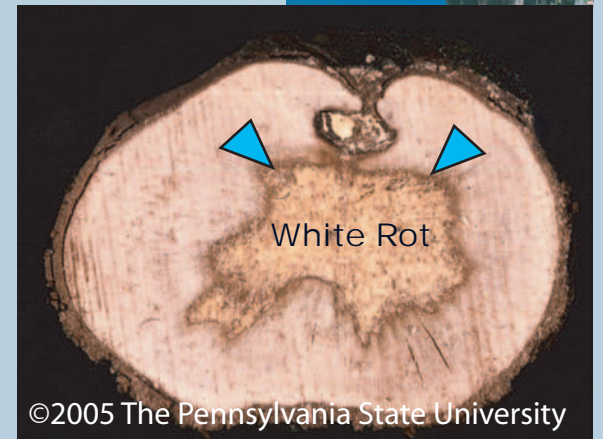


Left: cross-section of a declining vine shows wedge-shaped discoloration symptomatic of infection by *Eutypa lata*.

Right: shelf-like, fruiting bodies of a "white-rotting" fungus (*Stereum hirsutum*) growing on a declining vine. Pennsylvania, April 1999.



Below: cross-section of trunk showing white rot. Pennsylvania, April 1999.



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