

## Potato Virus Y

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### Hosts

Potato virus Y (PVY) infects a range of solanaceous crops including potato, capsicum, tomato, tobacco and certain solanaceous weeds, such as blackberry nightshade. PVY rarely infects weeds in the field. Yearly carryover is mainly via potato tubers (seed tubers or volunteers).

### Distribution

There are three main groups of Potato Virus Y strains: PVY<sup>o</sup> (ordinary type) occurs in most potato growing countries worldwide; PVY<sup>c</sup> in eastern Australia, South America, New Zealand, Europe, South Africa and North America; and PVY<sup>n</sup> in North America, New Zealand, Europe, Africa and South America. PVY<sup>NTN</sup> is a new type of strain that causes tuber necrosis (reported in Europe, New Zealand, Middle East, North America and Japan). PVY is not established in Western Australia.

### Symptoms

Symptoms of PVY<sup>o</sup> and PVY<sup>c</sup> can include: leaf mottling or yellowing, leaf deformation, necrotic leaf spots or rings, veinal necrosis, necrotic stem-streaking, leaf drop and premature death of stems. Plants infected with these strains may have bushy growth at the top of the plant with few leaves at the bottom of the stem. However, plants infected with mild strains and tolerant cultivars may develop much milder foliage symptoms without any necrosis, leaf drop or premature death of shoots.

PVY<sup>n</sup> produces milder forms of leaf mottling.

For PVY<sup>o</sup>, PVY<sup>c</sup> and PVY<sup>n</sup>, tubers produced on infected plants appear normal. However, with PVY<sup>NTN</sup> the skin shows irregular brownish-coloured rings, which turn necrotic and sink into the tuber, forming necrotic arcs in the flesh and cracking the skin at the surface.



Symptoms of PVY vary greatly in severity and type, depending on the sensitivity of the potato cultivar and the virulence of the virus strain: (left) leaf mosaic, rugosity (uneven leaf surface), and (right) leaf deformation and stunting/dwarfing (infected plant next to healthy plant).



*Photo: Jo Luck, DPI Knoxfield, Victoria*

**Potato tubers infected with PVY<sup>NTN</sup>**

## Spread

Potato Virus Y is transmitted from infected to healthy plants or tuber sprouts by aphids in a non-persistent manner (aphids pick it up from infected plants and lose it quickly when they probe healthy ones). Many different species of aphids can transmit PVY. The virus is more commonly spread through planting tubers harvested from infected plants. Transmission does not occur via true potato seed.

Virus incidence in seed potato tubers may be high in the absence of seed certification schemes, especially with tolerant cultivars.

## Economic Impact

PVY is an important virus of potatoes as it spreads easily and can decrease yield greatly when the incidence is high, the cultivar sensitive and the strain virulent. Potential losses are even greater when PVY is present in combined infection with other potato viruses. If PVY<sup>o</sup> became established in WA, yield loss in potatoes would be expected to be minor due to control via the seed certification scheme. PVY<sup>o</sup> usually causes only mild mottling in capsicum, tobacco and tomato, so yield losses are minor in them, but PVY<sup>N</sup> causes severe necrosis in tobacco, killing the infected plant.

## Control

Use of insecticides is largely ineffective in the control of PVY because they do not act fast enough to kill aphids quickly and thereby prevent virus spread. Methods of control include:

- planting healthy seed potato tubers derived from certified, pathogen-tested seed stocks;
- not growing new crops in proximity to established crops that might act as an infection source;
- destroying volunteer potatoes which may harbour the virus;
- destroying haulms of seed potato crops before maturity, to prevent late infections spreading to developing tubers; (and)
- growing crops where aphid vector populations are few or absent (higher altitude or windswept coastal areas).

**Samples of leaves or tubers can be sent to AGWEST Plant Laboratories.  
Clearly mark as 'Suspect Potato Virus Y', and tick the appropriate HortGuard box.**



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