

Potato spindle tuber viroid (PSTVd)

Pospiviroid fusituberis

Crops affected: Capsicum, Tomato

What is it?

Potato spindle tuber viroid (PSTVd) is a member of the Pospiviroidae family. Viroids are extremely simple microorganisms and they are one of the smallest agents known to cause serious diseases in plants. PSTVd is mainly associated with Solanaceae and are particularly destructive to **tomatoes, capsicums**, and potatoes.

What should I look for?

In mature plants, symptoms usually appear first at the top of the plant. The leaves turn yellow and develop a reddish-purple tinge, while the main veins remain bright green (Fig 1 & 2). Leaves may be smaller than normal, bunched together, down-curved, distorted and brittle (Fig 3). Internodes are shortened so that affected shoots appear stunted. In severe cases, dieback may develop along the veins and the leaves die. Spindly shoot growth can occur, flowers may abort and fruit can be dark green, fail to ripen normally and have thicker outer walls.

PSTVd symptoms can vary depending on the severity of the strain. Capsicums display only very mild symptoms in response to PSTVd infection. The only visible symptom is some 'waviness' or distortion of the leaf margins near the top of infected plants.

How is it transmitted?

PSTVd is easily spread mechanically. It can spread from plant to plant through small wounds in the leaf surface, when plants are handled, and on equipment such as knives, support string, clips, trolleys and crates. Seed to seedling transmission has not been reported. It is possible that PSTVd spreads in pollen and that the pollen carried by bees in greenhouse pollination could spread infection within the crop. There is a risk that aphids may spread PSTVd. PSTVd can survive in dried plant sap and leaf debris, so could spread by this means.

Why is it important?

Tomatoes are one of the crops most affected by PSTVd. With severe strains, fruit yield loss can be between 40 and 50% due to fewer fruit. There may be a loss of quality as the fruit may have an abnormal appearance.

Where is it present?

PSTVd is known to be present in parts of Central and South America and the Caribbean. It is present across Asia, Europe, parts of Africa, and Australia. PSTVd has previously been detected in New Zealand but has been eradicated and is now considered absent.

How can I protect my industry?

Check your production site frequently for the presence of new pests and unusual symptoms. Make sure you are familiar with common pests of your industry so you can recognise something different.



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Fig 1. PSTVd symptoms in pot-grown tomato plant. Photo credit: Central Science Laboratory, Harpenden, British Crown, Bugwood.org



Fig 2. Well-established PSTVd infection in the top of a mature tomato plant. Photo credit: (© VegFed, NZ)



Fig 3. PSTVd symptoms on inoculated tomato. Photo credit: NPPO Netherlands