

Potato Spindle Tuber Viroid (PSTVd) Family Pospiviroidae

What is it?

Potato spindle tuber viroid (PSTVd) is a viroid 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 and potatoes.

What does it look like?

In mature plants, symptoms are usually seen first in the plant top and include leaves turning yellow and having a reddish-purple tinge while the main veins remain bright green. Leaves may also be smaller than normal, bunched together, often down-curved, distorted and brittle. Internodes are shortened so that affected shoots appear stunted. In the most 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 be variable dependent on the severity of the strain.

How does it spread?

PSTVd is easily spread mechanically and can spread from plant to plant through small wounds in the leaf surface as well as when plants are handled, and on equipment such as knives, support string, clips, trolleys and crates. Recent reports indicate no transmission of PSTVd from seed to seedling. It is possible that PSTVd spreads in pollen and that the pollen carried by bees in greenhouse crop 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 can be 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. Quality losses due to abnormal appearance of fruit also occurs.

Where is it present?

PSTVd is known to be present in North, Central and South America and the Caribbean. It is also present in Asia, Africa and Europe, and Australia (restricted distribution).

How can I protect my industry?

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



Fig 1: Potato spindle tuber viroid (Pospiviroid PSTVd). Symptoms in pot-grown tomato plant.

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