

## Viroids (Family Pospiviroidae)

### What are they?

The Pospiviroidae are a family of viroids, including the first viroid to be discovered, Potato spindle tuber viroid (PSTVd). Viroids are one of the smallest known pathogens of plants. This factsheet covers Pepper chat fruit viroid (PCFVd), Tomato chlorotic dwarf viroid (TCDVd), Tomato apical stunt viroid (TASVd), Tomato planta macho viroid (TPMVd), Columnea latent viroid (CLVd), Citrus exocort viroid (CEVd) and others.

### What are the main hosts?

Pospiviroids have been found in capsicums, eggplants, tomatoes and potatoes.

### What do they look like?

Symptoms of different Pospiviroids may differ. The fruit size of glasshouse-grown capsicum plants affected by PCFVd was reduced by as much as half the normal size (Fig 1). Plant growth was slightly reduced, and the young leaves of infected plants were slightly smaller and paler than those of healthy plants (Fig 2). Capsicums display only very mild symptoms in response to PSTVd infection. The only visible symptom is a certain 'waviness' or distortion of the leaf margins near the top of infected plants.

### Why are they important?

Losses are associated with reduced plant vigour and health and reduced crop volume and quality.

### How are they transmitted?

There are a variety of ways by which viroids are transmitted. For example, TASVd has been shown to be transmitted mechanically and via seed. It has also been confirmed that bumblebees can transmit TASVd from infected plants to healthy plants during pollination. TPMVd has not been shown to be transmitted by seed but is transmitted mechanically and by aphids. It is also thought that viroids are present in wild plants or ornamentals (but do not show symptoms) and may transfer to crops.



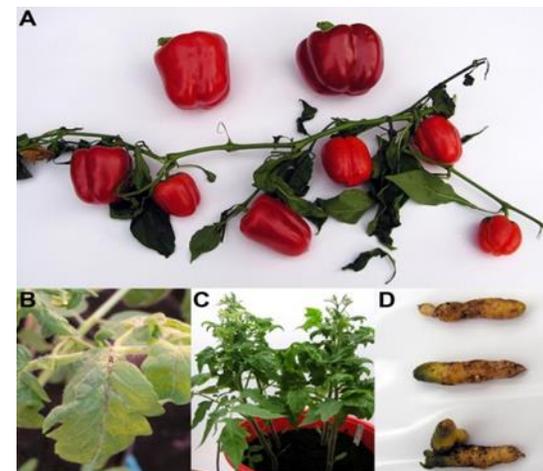
**Fig 1.** A non-infected fruit of capsicum pepper cv. Lamborgini (left) and two small fruits infected by PCFVd (right). Image: National Plant Protection Organization of the Netherlands

### Where are they present?

As a group, Pospiviroids have been found in virtually all major regions throughout the world although not all are present in every region. In many cases they are identified as eradicated or as 'a few occurrences'.

### How can I protect my industry?

Check your production sites 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 2.** PCFVd on capsicum fruit, tomato leaves, potato tubers. Image: Elsevier ©(Verhoeven, 2009)