# **Netherlands Plant Protection Service**

Ministry of Agriculture, Nature and Food Quality P.O.Box 9102 6700 HC Wageningen The Netherlands



and food quality

# PEST REPORT

## Potato spindle tuber viroid (PSTVd) on Solanum jasminoides and Brugmansia spp. ornamental plants.

#### Summary

This report concerns new findings of PSTVd on several companies growing ornamental plants of *Solanaceae* in the Netherlands. The PSTVd infections were discovered as part of a specific monitoring survey for viroids in the ornamental plant industry for PSTVd on symptomless ornamental plants. This survey was triggered *inter alia* by several earlier outbreaks of PSTVd and other pospiviroids in Europe in previous years (predominantly on tomato crops), for which no source of infestation could be identified. It is emphasised that PSTVd is not present on potato or tomato crops in the Netherlands, as confirmed by specific surveys.

An earlier finding of PSTVd on ornamental plants of *Solanum jasminoides*, which resulted from the same survey in the ornamental industry, was reported in July. This finding was directly related to imports and infections at the company concerned, and is considered eradicated (for the July 2006 pest report, see information in English on www.minlnv.nl/pd).

The present outbreak concerns ornamental plants of *Solanum jasminoides* and *Brugmansia* spp. The plants do not show symptoms and have been discovered by testing together with back- and forward-tracing during September till November 2006. Infections have been detected at several retail companies producing potted plants for sale to final consumers and one propagation company of *Brugmansia spp*. Eight consignees of possibly contaminated plants are based in other Member States, which received plants in 2005 and the first half of 2006. The authorities in these Member States have been informed. PSTVd is regulated as a harmful organism for the European Community (Annex I A section I). Measures aimed at eradication are ongoing in the Netherlands.

# Pest status: Transient, only on ornamental plants of *S. jasminoides* and *Brugmansia spp.*, under eradication.

## **Phytosanitary measures**

Measures at companies are ongoing in the Netherlands, following a nationwide intensified survey among all *Brugmansia* and *Solanum jasminoides* growers and traders which took place during September and October. Positive tested plants are destroyed. Through a special ministerial decree, movement (including export) of these plants is prohibited in the Netherlands, since the beginning of November. Only in case lots of these plants have been tested negative for PSTVd is it possible to apply for a permit, which allows movement. Import is still possible (including movement from the point of entry to the place of inspection), but all incoming consignments have a testing requirement. The aim is to fully eradicate PSTVd in the Netherlands. Prime focus for initial eradication efforts is placed on propagation companies followed by forward-tracing as infestations are clonally related. Destruction of all infested lots of plants is aimed for by December 2006 to enable the industry to start-up cultivation and trade in the first months of 2007.

## Impact and phytosanitary risk

So far, no impact of PSTVd on *S. jasminoides* and *Brugmansia spp.* has been observed. Viroids such as PSTVd often do not show any symptoms on ornamental plants, in contrast to the severe symptoms that can be observed in tomato and potato. It is presumed that PSTVd might have been present for several years on ornamental plants of *Solanaceae*, because there are probably no symptoms on these plants and no testing has been conducted in previous years. Most likely the pest has also been present on ornamental plants of *Solanaceae* in other countries, including European countries, because surveillance of such plants for the presence of PSTVd is not routinely carried out. The occasional outbreaks of PSTVd on tomato crops in Europe in previous years might be related to the symptomless presence of PSTVd in ornamental plants, although the possibilities for transfer between the different production systems are considered very limited. The main phytosanitary risk of PSTVd concerns tomato and potato cultivations. Moderate loss of marketable potatoes has been reported (CABI Crop Protection Compendium 2005). In the past, some infestations of PSTVd on tomato were detected and eradicated in the

Netherlands (Verhoeven et al. 2004) and in other Member States of the European Community on potato or tomato (see EPPO Reporting Service, 2005, 2004, 2003, 2002).

#### PSTVd is not present in the potato and tomato industry in the Netherlands.

Year round specific surveillance programmes for PSTVd for the potato and tomato industry in the Netherlands are aimed at early detection of outbreaks in potato and tomato cultivation. The Netherlands Plant Protection Service has conducted yearly surveys of all pre-basic seed potato stocks cultivated in the Netherlands for the last 25 years, whereby more than 3,000 samples are annually tested for PSTVd. Also new potato varieties to be registered as officially approved cultivars are tested for PSTVd. Except for one new potato variety originating from abroad no PSTVd infections have been found as part of this surveillance since 1997. This variety has been excluded for cultivation and trade in the Netherlands. Furthermore, possible occurrence of PSTVd in tomato cultivation is monitored by a specific surveillance for visual symptoms on both plantlet and tomato fruit producing companies conducted each year. PSTVd has not been detected in the tomato crop surveillance in the Netherlands, since 2001.

#### Host range in the Netherlands, concurrent infestations

The pest has been detected only on ornamental plants of *S. jasminoides*, *Brugmansia suavolens*, *B. x candida*, *B. cordata* and *B. variegata* in the Netherlands. It should be noted that the identity of the *Brugmansia* spp is uncertain and is only based on information provided by the growers. A limited number of samples from other ornamental *Solanaceae* plants, such as *Cestrum spp.*, *Solanum rantonetti*, *Petunia spp*. tested negative for PSTVd.

## Origin of the findings of PSTVd on S. jasminoides

The origin of PSTVd findings for *S. jasminoides* and *Brugmansia* spp. seems different. Based on nucleotide sequence analysis the findings of *S. jasminoides* at retail companies in the Netherlands appear related to an earlier finding of PSTVd at a company specialised in rooting plantlets, which was reported in July. On October 24<sup>th</sup> 2006, a consignment originating from Kenya of unrooted cuttings including *Solanum jasminoides* was intercepted at a point-of-entry. This consignment appeared infested with PSTVd having the same nucleotide sequence as earlier findings in the Netherlands. It must be noted, however, that the company based in Kenya may have obtained mother plants from other countries, including EU Member States. It is therefore possible that the origin of the PSTVd infections on *S. jasminoides* in the Netherlands is from another country.

#### Origin of the findings of PSTVd on Brugmansia spp.

The findings on *Brugmansia* spp. do not appear to be directly related to those in *S. jasminoides*, based on different nucleotide sequences. Also mother plants of *Brugmansia* spp. tested positive at a propagation company. The origin of the infections at this propagation company is still unclear. *Brugmansia* spp. is also known as *Datura* spp. and individual species are not clearly described. Most marketed plants are hybrids and most cultivars are not officially registered. At other propagation companies in the Netherlands, many cultivars with different origins have tested negative as part of the testing scheme conducted in September and October.

#### Means of movement and dispersal

Vegetative propagation of ornamental plants seems a much more important pathway for PSTVd as compared to contact. This is based on observations whereby retail companies having received infected cultivars of *Brugmansia spp*. from the propagation company, also tested positive for the same cultivar. Whereas at the same retail companies most other varieties of *Brugmansia spp*. tested negative for PSTVd. The risk of spread of PSTVd from ornamental plants of *Solanaceae* to tomato or potato crops, however, is considered very limited in the Netherlands because cultivation of these crops take place in different locations and in separate cultivations systems. Occasional contaminations may have taken place in the past, because PSTVd is presumed to have been present on ornamental plants for a longer period.

#### **Detection and inspection methods**

The viroid infections were detected as part of routine monitoring surveillance carried out by the Netherlands Plant Protection Service. The detection was done by RT-PCR using universal *Pospiviroid* primers (Verhoeven et al., 2004) or real-time RT-PCR using primers for detection of PSTVd and *Tomato chlorotic dwarf viroid* (TCDVd)(Boonham et al., 2004). Definite identification of the viroid isolates was based on sequence analysis of the amplicons after RT-PCR using primers for detection of PSTVd and TCDVd (Shamloul et al. 1997).

# **Reference:**

# NPPO of the Netherlands

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