

Plant species found infected by *Tomato spotted wilt virus* and *Impatiens necrotic spot virus* at the Dutch Plant Protection Service since 1989

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Tomato spotted wilt virus (TSWV) and *Impatiens necrotic spot virus* (INSV) belong to the genus *Tospovirus*. *Frankliniella occidentalis* is the main vector of both viruses, although other thrips species are also known to transmit TSWV. Both TSWV and INSV share a wide host range, inducing a wide range of symptoms:

- chlorotic and necrotic lesions on leaves, fruits and flowers;
- ringspots on leaves, fruits and flowers;
- necrosis on stems;
- top necrosis;
- growth reductions;
- malformations.

Management options include removal of infected plants and vector control.

In the Netherlands TSWV has been reported occasionally since 1931. However, since the introduction of *F. occidentalis* in the eighties of the last century the number of findings increased substantially. Since 1989 the virus has been detected in 120 different plant species submitted for diagnosis at the Dutch Plant Protection Service (PPS). INSV has been detected in 70 different crops since 1989. Tables 1 and 2 list the plant species in which TSWV and INSV have been identified at the PPS in Wageningen. Note that some of the listed species originated from abroad. Moreover, the lists do not provide complete overviews of the host ranges of these viruses.



Necrosis on stem and leaves of *Gloriosa rothschildiana* caused by TSWV (photo PD)



Stem necrosis on *Begonia* caused by INSV (photo PD)



Chlorosis on basil (*Ocimum basilicum*) caused by TSWV (photo PD)



Irregular yellow and green lesions on tomato fruits (*Lycopersicon esculentum*) caused by TSWV (photo PD)



Necrotic lesions on flowers of *Anthurium* caused by TSWV (photo PD)

Table 1: List of plant species in which *Tomato spotted wilt virus* has been detected*

Ornamentals

Achimenes sp.
Adenium obesum
Aeschynanthus parvifolius
Aeschynanthus speciosus
Ajania pacificum
Alstroemeria sp.
Anemone sp.
Anthurium andreanum
Anthurium scherzerianum
Ardisia sp.
Aster amellus
Aster ericoides
Aster novi - belgii
Begonia sp.
Bouvardia sp.
Bromelia achmea
Campanula isophylla
Centaurea montana
Cestrum aurantiarum
Cestrum nocturnum
Cestrum purpureum
Cestrum rubrum
Chrysanthemum morifolium
Chrysanthemum frutescens
Cirsium japonicum
Clematis sp.
Clivia sp.
Codonanthe grassifolia
Columnea hirta
Columnea hostag
Columnea kwensis
Columnea 'Sanne'
Columnea 'Schonbrun'
Cyclamen sp.
Dahlia sp.
Dieffenbachia sp.
Dimorphotheca pluvialis
Eucharis sp.
Euryops sp.
Eustoma russellianum

Fatsia japonica 'Variegata'
Felicia amelloides
Felicia fruticosa
Ficus benjamina
Ficus elastica
Gaillardia sp.
Gerbera jamesonii
Gladiolus sp.
Gloriosa rothschildiana
Gloxinia sylvatica
Hippeastrum hybride
Hoya australis
Hoya bella
Hoya carnosa
Hoya linearis
Impatiens walleriana
Impatiens sp.
Iris ensata
Iris hollandica
Kalanchoe blossfeldiana
Kalanchoe daigremontiana
Kalanchoe synsepala
Kalanchoe thyrsiflora
Kohleria sp.
Ligularia cristata
Limonium sp.
Limonium sinuatum
Lobelia erinus
Lobelia valida
Lysimachia congestiflora 'Lyssi'
Lysimachia consisti
Lysimachia nummularia
Maranta tricolor
Micronetta sp.
Oncidium sp.
Osteospermum sp.
Oxypetalum sp.
Pachypodium lamerei
Pelargonium peltatum
Peperomia fraseri
Peperomia rotundifolia

Phalaenopsis sp.
Philodendron tuxla
Primula acaulis
Ranunculus sp.
Rudbeckia nitida
Schizanthus sp.
Senecio cruentus 'Candy'
Sinningia sp.
Solanum rantonettii
Spathiphyllum sp.
Stephanotis floribunda
Streptosolum jamesonii
Zantedeschia aethiopica

Horticultural and agricultural crops

Apium graveolens var. *dulce*
Capsicum annuum
Cichorium endiva
Cichorium intybus
Lactuca sativa
Lycopersicon esculentum
Ocimum basilicum
Phaseolus vulgaris
Solanum melongena
Solanum tuberosum
Spinacia oleracea
Vigna sinensis

Weeds

Cardamine hirsuta
Cirsium arvense
Galinsoga ciliata
Polygonum lapathifolium
 spp. *lapathifolium*
Solanum nigrum
Sonchus oleraceus

* infected plants originate both in the Netherlands and abroad

Table 2: List of plant species in which *Impatiens necrotic spot virus* has been detected*

<i>Adenium obesum</i>	<i>Diascia</i> sp.	<i>Peperomia rotundifolia</i>
<i>Aeschynanthus</i>	<i>Dischidia</i> sp.	<i>Phalaenopsis</i> sp.
<i>Ageratum houstonianum</i>	<i>Echeveria</i> sp.	<i>Phlox</i> sp.
<i>Alstroemeria</i> sp.	<i>Eustoma russellianum</i>	<i>Primula obconica</i>
<i>Anemone</i> 'Mona Lisa'	<i>Fatshedera japonica</i>	<i>Ranunculus</i> sp.
<i>Anthirinium major</i>	<i>Ficus elastica</i>	<i>Saintpaulia</i> sp.
<i>Anthurium scherzerianum</i>	<i>Freesia</i> sp.	<i>Saxifraga stolonifera</i>
<i>Aphelandra</i> sp.	<i>Gentiana</i> sp.	<i>Schefflera</i>
<i>Arabidopsis</i> sp.	<i>Gladiolus</i> sp.	<i>Schizanthus</i>
<i>Ardisia</i> sp.	<i>Hippeastrum</i> sp.	<i>Senecio cruentus</i>
<i>Begonia x cucullata</i>	<i>Helianthus annuus</i>	<i>Sinningia</i> sp.
<i>Begonia elatior</i>	<i>Hoya carnosa</i>	<i>Solanum bulbocastanum</i>
<i>Begonia leathermania</i>	<i>Impatiens</i> sp.	<i>Solanum fendleri</i>
<i>Begonia semperflorens</i>	<i>Iris hollandica</i>	<i>Solanum mochiquense</i>
<i>Begonia tuberhybrida</i>	<i>Kalanchoe blossfeldiana</i>	<i>Solanum muricatum</i>
<i>Bouvardia</i> sp.	<i>Kalanchoe farinacea</i>	<i>Solanum oplocense</i>
<i>Bromelia achmea</i>	<i>Kalanchoe nitroformis</i>	<i>Spathiphyllum</i> sp.
<i>Browallia</i> sp.	<i>kalanchoe thyrsiflora</i>	<i>Spinacia oleracea</i>
<i>Calceolaria</i> sp.	<i>Kohleria</i> sp.	<i>Stellaria media</i>
<i>Capsicum annuum</i>	<i>Limonium sinuatum</i>	<i>Stephanotis</i> sp.
<i>Cardamine hirsuta</i>	<i>Lobelia</i> 'Richardii'	<i>Streptocarpus</i> sp.
<i>Clivia</i> sp.	<i>Lysimachia congestiflora</i> 'Lyssi'	<i>Trachelium</i> sp.
<i>Curcuma longa</i>	<i>Nemesia strumosa</i>	<i>Zantedeschia albomaculata</i>
<i>Cyclamen</i> sp.	<i>Nepenthus coccinea</i>	<i>Zantedeschia odorata</i>

* infected plants originate both in the Netherlands and abroad