

VIRUSES

General Information

Characteristic symptoms of viruses include ringspots, mosaic patterns, yellowing, streaking, deformed growth, stunting, necrotic lesions and veination. Symptoms may be masked during warmer temperatures. However, once a plant is infected, there is no cure. Viruses can be transmitted by insects, nematodes and cultural practices. Most plant species are susceptible to at least one virus, and some plants are susceptible to many.

Tospovirus (Impatiens Necrotic Spot Virus INSV, Tobacco Spotted Wilt Virus TSWV and others)

One of the most widespread viruses found in greenhouses is Impatiens Necrotic Spot Virus (INSV). Tomato Spotted Wilt Virus and INSV were once thought to be two strains of the same virus. They are now recognized as two distinct viruses. Both are only transmitted by thrips.

Damage symptoms

Infected plants often have a localized necrotic brown, yellow or red spot surrounding the point where the virus entered the plant. These lesions may be found on leaves, stems and flowers and may gradually enlarge as the virus spreads. Blackened stems are also characteristic on infected impatiens plants. Other symptoms that have been reported on flower crops include: vein necrosis, vein clearing, wilt, ringspots, stem cankers, white necrotic spots, chlorotic mottle, leaf-base necrosis, necrotic or chlorotic line patterns, leaf bronzing and stunting. Some of these symptoms are also common for other ornamental diseases. Some infected plants, such as Christmas cactus, are symptomless.

Host plants

Over 300 plant species are listed as susceptible to tospoviruses, including: ageratum, calendula, cyclamen, dahlia, gerbera, gladiolus, impatiens and others. Many weed species are also susceptible, though they may not show symptoms.

Disease characteristics

Tospoviruses enter plants via small wounds in plant cells caused by thrips feeding. Once the virus invades the cells, it begins to multiply and spread within the plant. The exact tospovirus species can only be determined by diagnostic testing. The occurrence of tospoviruses in greenhouses increases as the population of its primary vector, western flower thrips increases (see page 16-17).

Management of viruses

Like other plant diseases, viruses should be managed by prevention.

- ✓ Grow plants from virus-free stock.
- ✓ Space plants apart on benches so they don't touch. Rubbing facilitates wounding which serves as an entry point for virus and encourages movement of thrips from plant to plant.
- ✓ Control the insect vector, especially thrips, to reduce virus spread.
- ✓ Grow indicator plants to detect viruses early. Remove them if they become infected.
- ✓ Carefully prepare greenhouses before plants are growing.
- ✓ Consider installing thrips-proof screening to reduce the chance of thrips entering from outside.
- ✓ Remove weeds from greenhouses as they serve as a reservoir for thrips and viruses.
- ✓ Check symptomatic plants for virus infection by sending samples to a diagnostic laboratory or testing tissue with test kits.



Characteristic symptoms of tospovirus infection.
Note: stunting (red arrow)



Western flower thrips adult, a primary vector of tospoviruses.



Tospovirus on impatiens.



Tospovirus on cineraria.