DEPARTMENT OF
PRIMARY INDUSTRIES

Vegetable -Matters-of- Facts

Tomato spotted wilt virus

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VegCheque
extension for the vegetable industries

POTATO

Control the virus source

- Plant only certified seed potatoes.
- Control weeds in and around the crop including headlands.
- Plant resistant varieties.
- Inspect the crop for diseased plants and remove them.

Control the virus vector

- Plant crops very early or late in the season to avoid peak thrip populations.
- Ensure old crop residues and volunteer potatoes are removed from the property.
- Monitor the crop for thrips.
- If spraying for thrips aim to control thrips in headlands.

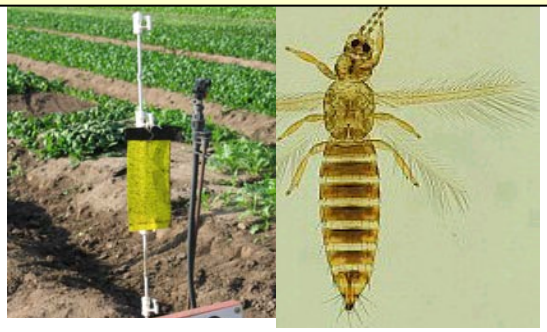

Fig 1. Yellow sticky trap and Western flower thrip

Fig 2. A TSWV infected plant showing symptoms

Fig 3. A potato plant infected with Tomato spotted wilt virus with a healthy plant on the right

Tomato spotted wilt virus (TSWV) occurs throughout Australia, affecting over 500 plant species.

How TSWV spreads

TSWV is transmitted either by planting infected seed tubers or by thrips.

Several species of thrips can transmit TSWV from an infected plant to a healthy plant including the Western Flower thrip (Fig 1), tomato thrip and onion thrip. Virus transmission occurs when a thrip pierces plant cells when feeding.

Thrips can only become infected with the virus in the larval stage if they feed on infected plant material. However, once infected, the thrip is infected for life. Adult thrips cannot pass the virus onto their offspring. Plants can take 14-21 days to display symptoms of infection.

Spread of the virus generally occurs in late spring or early summer.

Monitoring for thrips

- Yellow sticky traps can be used can be purchased from chemical resellers.
- Scout crops for thrips and beneficial arthropods (eg insects and spiders), which control thrips.
- Thrips tend to hide in flowers and are difficult to see. Shaking the crop flowers over a container can dislodge them and allow them to be detected in the crop.

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Symptoms of TSWV

Foliage

Main symptoms are necrotic spotting of leaves, stem necrosis and the death of the top of one or more stems (Figure 2 & 3). These symptoms can be very similar to target spot (or early blight). The whole plant can die.

Tuber

The virus reduces tuber size reducing crop yields and quality. Infected potato tubers will be small and can appear normal or may be distorted compared to tubers grown from healthy plants. Infected tubers may also have hollow, necrotic centres and spots, which can appear as concentric rings through the skin of the tuber (Figure 4).

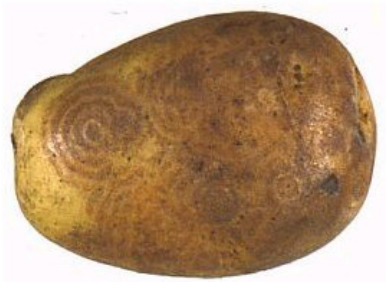

Figure 4. A potato tuber exhibiting symptoms of TSWV

Typical symptoms of TSWV include:

- Irregular dead spots on leaves
- Discoloured veins
- Black or purple stem streaks
- Chlorosis (yellowing), chlorotic blotching, necrotic ring spots and line patterns on leaves
- Leaf distortion and deformation
- Dropping of leaves or shedding of buds
- Dieback and leaf collapse
- Stripes on petals
- Stem browning
- Generalised necrosis
- Overall stunting of the plant

Management of thrips and TSWV

Thrips are poor fliers and rely on wind, plants and equipment to travel throughout a region.

Once plants are infected with TSWV there is no cure, but management and control of the virus can be improved by following a few guidelines.

Strategies to control thrips and the spread of TSWV

- Only plant certified seed potatoes.
- Planting TSWV resistant varieties can reduce the likelihood of virus transmission occurring. Resistant varieties include Russet Burbank, Atlantic and Coliban.
- Plant crops very early or late in a season to avoid exposing young plants to peak thrip populations.
- Control weeds both within and surrounding the crop, including headlands. Thrips feed on and breed in weeds.
- Ensure the property is free of old crop residues and volunteer potatoes.
- Regularly inspect the crop for infected plants, and rogue out diseased plants immediately.
- Indicator plants such as petunias or faba beans can be useful to determine if thrips are infected with TSWV, as they will show symptoms after only several days. Flowers from these plants should be removed so thrips can feed on the leaves and lesions are visible.
- Chemical control of thrips is not an effective control for TSWV if present, as the thrips in their death throes may feed on more plants and will continue to spread the virus.
- If control sprays are to be applied also spray headlands to control thrips on weeds. Also note that Western Flower thrips will be resistant to some chemicals.

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Useful Websites for more information:
http://www.dpi.vic.gov.au >Notes Information Series> horticulture> vegetables>Tomato spotted wilt virus

http://www.agric.wa.gov.au/pls/portal30/docs/FOLDER/IKMP/PW/INS/PP/HORT/FN069_2004.PDF

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