

BIOSECURITY SA – Plant Health

Exotic Plant Pest Hotline: **1800 084 881** (available 24 hours)

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BIOSECURITY SA  
PIRSA

## Fusarium wilt of tomato

### Race 3 of *Fusarium oxysporum* f.sp. *lycopersici*

Fusarium wilt of tomato, caused by *Fusarium oxysporum* f.sp. *lycopersici* is a devastating disease in major tomato- growing regions worldwide and has been reported in at least 32 countries. Three races of *Fusarium oxysporum* f.sp. *lycopersici* have been reported. They are distinguished by their virulence to tomato cultivars that contain single resistance genes. Race 1 was initially described in 1886, and Race 2 was first reported in 1945. Race 3 was observed in Australia in 1978. It is found in the Shire Council of Bowen and the localities Bluewater (Townsville City Council), Brandon (Burdekin Shire Council), Gumlu and Guthalungra (Whitsunday Region) and Farnfield (Isis Shire Council) in Queensland.

Entry into South Australia, of tomato plants grown in the above places is prohibited. Tomato plants from other parts of Queensland must bear proof that they originated outside the listed areas.

#### Symptoms

First symptoms are yellowing of the foliage, beginning with the lower leaves and working upward. Yellowing often begins on one side of the vine. Infected leaves later show downward curling, followed by browning and drying. The top of the vine wilts during the day and recovers at night, but wilting becomes progressively worse until the entire vine is permanently wilted. Vascular browning can be seen in infected stems and large leaf petioles. Affected plants and their root systems are stunted. The degree of stunting depends upon time of root infection. Plants infected when they are young will be more severely stunted than plants infected at a later stage.

#### Conditions for Disease Development

The pathogen is soil borne and persists for many years in the soil without a host. Most infections originate from the fungus associated with infected tomato debris. Root- knot nematode infection makes Fusarium wilt-resistant varieties more susceptible to the fungus because of physiological changes in the root. Disease development is favoured by warm temperatures (for example, 27–28 °C), dry weather, and acidic soil (pH 5–5.6). Rapidly growing, highly succulent tomato plants exposed to fertilization with ammonium nitrate are especially susceptible to the disease. The fungus can be disseminated by infected seed or by transplants grown in infested soil. The fungus can be introduced into a field on contaminated equipment, training stakes, packing crates or shoes. Soil particles from infested fields may be blown into disease-free fields.

## Control

Use clean equipment to avoid infesting new fields. Prevent the introduction of infested soil into production fields via contaminated tools, hands, clothing or shoes of farm workers. Disinfect areas where transplants are grown. Greenhouse structures, crates, benches, tools and flats should be cleaned regularly. Use sterilized soil, if available. Locate seedbeds or seedling production areas away from infested fields.



Look for yellowing of the foliage, beginning with the lower leaves and working upward (left photo). Yellowing often begins on one side of the vine (top photo). The top of the vine wilts during the day and recovers at night. Vascular browning extends up the stem (middle photo) and into large petioles (right photo).

Photos courtesy by AVRDC – The World Vegetable Centre

**If you see anything unusual, call the  
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