

## Fusarium wilt (exotic races)

Compiled by Linda Smith (DAFF Queensland)

### What is Fusarium wilt?

Fusarium wilt, caused by the soil-borne fungal pathogen *Fusarium oxysporum* f. sp. *vasinfectum* (*Fov*), is almost impossible to eradicate following introduction and can result in fields becoming unsuitable for cotton production.

A number of strains are present in Australia, however, if new exotic strains (races) were introduced, new management strategies and resistant varieties would be required. In addition, some exotic races are more damaging, particularly in association with nematode pests.

### What does it look like?

External plant symptoms include stunted growth, wilted leaves followed by yellowing or browning and eventual death from the top of the plant. Internal symptoms of a continuous brown discolouration of stem tissues can be seen when stems are cut lengthways. This is most apparent in the lower stem and upper taproot.

Certain exotic strains only cause symptoms when plants are also infected with a Root knot nematode (also absent from Australia). In these cases, galls are usually present on lateral roots.

It is not possible to determine what strain of pathogen is affecting a plant (endemic or exotic) based on plant symptoms alone. Therefore, it is important to have all new outbreaks of Fusarium wilt checked out by a pathologist.

### What can it be confused with?

Symptoms of Fusarium wilt and Verticillium wilt are similar. When the stem is cut lengthways, vascular discolouration exhibits flecking of the inner tissues in Verticillium wilt, rather than continuous browning associated with Fusarium wilt infected plants.



Cotton roots infected with Race 1 *Fov* and Root knot nematode; galls produced by nematodes feeding can be seen on roots

Chris Anderson, i&NSW



Cotton stem vascular discolouration as a result of Fusarium wilt infection

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Cross-section of a cotton stem infected with Race 1 *Fov* and Root knot nematodes, showing vascular discolouration and galls

Chris Anderson, i&NSW







When the stem is cut diagonally, Verticillium wilt infected plants show dark brown to black streaks through the centre.

### What should I look for?

Watch out for leaf wilt and death of plant tops, and confirm the presence of Fusarium wilt by cutting the stem and looking for continuous vascular browning. Seek professional advice if you are unsure.

### How does it spread?

There is no commercially viable way to eradicate this pathogen from infested soil. Spores are effectively spread over long distances in infected soil attached to boots, vehicles and farm equipment, and in water (irrigation and overland flows). It can also be transferred in infected plant material, including seed.

### Where is it now?

This pathogen has been recorded in every cotton-growing region in the world. However, the distribution of eight known races (genotypes) of *Fov* varies.

### How can I protect my farm from Fusarium wilt?

Check your farm frequently for the presence of unusual symptoms. Make sure you are familiar with common cotton pests so you can tell if you see something different. Have all new outbreaks of Fusarium wilt analysed by a pathologist to determine what strain of pathogen is present.

**If you see anything unusual, call the Exotic Plant Pest Hotline**



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Vascular discolouration in the roots of infected cotton plants

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Damage to a cotton field due to the presence of the Fusarium wilt/Root knot nematode complex

Jack Kelly Clark, UC Statewide IPM Program



Infection with Fusarium wilt is characterised by the presence of vascular discolouration

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