

## Verticillium wilt (defoliating strains)

Compiled by Linda Smith (DAFF Queensland)

### What is Verticillium wilt?

*Verticillium dahliae* is a widespread soil-borne fungal plant pathogen that causes wilt disease on many important crops and trees, including cotton.

Verticillium wilt is one of the most damaging diseases of cotton worldwide.

On cotton, strains of *V. dahliae* have been classified into two pathotypes: defoliating strains, which are highly virulent and can completely defoliate the plant, and non-defoliating strains, which are mildly virulent and cause wilt and partial or no defoliation.

No defoliating strains have been detected in Australia, but non-defoliating strains of the pathogen are present.

### What does it look like?

Defoliating strains lead to a rapid downcurling of the terminal leaf resulting in severe epinasty (downward bending leaves). Irregular chlorotic areas develop on infected leaves between the main veins and along the margins, which gradually become larger and paler, resulting in a mottled appearance. Light to dark brown vascular discoloration is prominent in the main stem, branches and petioles of diseased plants. As the disease progresses there is a sudden and almost total defoliation and shedding of bolls.

### What can it be confused with?

Symptoms of Verticillium wilt and Fusarium wilt are similar. Verticillium wilt has dark brown to black streaks through the centre of the stem when cut diagonally. When cut lengthways, stems show brown flecking of the inner tissues, rather than continuous browning which is associated with Fusarium wilt infected plants.



Symptoms of Verticillium wilt in cotton begin as patchy yellowing between the veins

Jack Kelly Clark, UC Statewide IPM Program



Brown streaks appear in the xylem of cotton plants with Verticillium wilt (right), in contrast to the unaffected stems (left)

Jack Kelly Clark, UC Statewide IPM Program



Leaf yellowing and necrosis caused by Verticillium wilt

Jack Kelly Clark, UC Statewide IPM Program



### What should I look for?

Watch out for downward bending leaves, and confirm the presence of Verticillium wilt by cutting the stem lengthways and looking for brown flecking of the inner tissues. Seek professional advice if you are unsure.

### How does it spread?

Planting into infected soil is the primary mechanism for new infections. Spores are effectively spread over long distances in infected soil attached to boots, vehicles and farm equipment, and in water (irrigation and overland flows).

### Where is it now?

Defoliating isolates have been reported from China, Iran, Israel, Mexico, Peru, Spain, USA and the former USSR.

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

Check your farm frequently for the presence of new pests and unusual symptoms. Make sure you are familiar with common cotton pests so you can tell if you see something different.

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



Roland J. Stipes, Virginia Polytechnic Institute and State University, Bugwood.org

Verticillium wilt can also infect trees, where it produces similar foliar and vascular symptoms as in cotton



Howard F. Schwartz, Colorado State University, Bugwood.org

Sunflower plants wilting due to infection with Verticillium wilt



Howard F. Schwartz, Colorado State University, Bugwood.org

External stem symptoms of infection in sunflower

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