

Disease ratings: Another management tool for cotton growers

By Greg Salmond, on behalf of the Australian Cotton CRC's National Cotton Extension Team

The Australian Cotton CRC's Fuscom Committee has developed a standard protocol to describe levels of disease resistance of current commercial cotton varieties available to the Australian industry. This is the second year this management tool has been available.

The disease ranking now has more trial data from both seed companies and has been refined for ease of use and increased confidence for growers and consultants.

The purpose of the resistance ranking is to provide the industry with a quantitative measure of the relative resistance or susceptibility of a new or existing cotton cultivar. Resistance rankings have been developed for the cotton diseases Fusarium wilt (F-rank) and Verticillium wilt (V-Rank). Fuscom urges all cotton growers and their consultants to consider these disease rankings before choosing and placing seed orders for varieties they plan to plant this coming season.

Stem cut ratings to assess internal disease symptoms have been used to develop the disease rating system. The level of main stem tissue discoloration exhibited in a variety is rated using the system developed by the research team led by Dr Joe Kochman of the DPI in Toowoomba, investigating Fusarium wilt at trials on the Darling Downs. The photos on this page show the level of stem discoloration from 0 (no disease) to 4 (a very high infection) used to develop the rating system.

To develop the F-rank, the disease ranking is calculated by counting the number of mature plants showing a 0 or 1 rating for brown discoloration in the stem and expressing this figure as a percentage of initial emergence (the



Rating 0

higher the percentage, the lower the Fov incidence). This percentage can then be ranked against the industry standard variety Sicot 189, which is ranked as 100.

Similarly, the V-rank is calculated by dividing the number of plants to survive of a test variety, by the number of plants of the industry standard (Sicala V2) to survive in that same trial, then multiplying by 100.

For both disease rankings, the survival in the test variety is the percentage of plants that have survived to the end of the season with no sign of disease in the stem tissue.

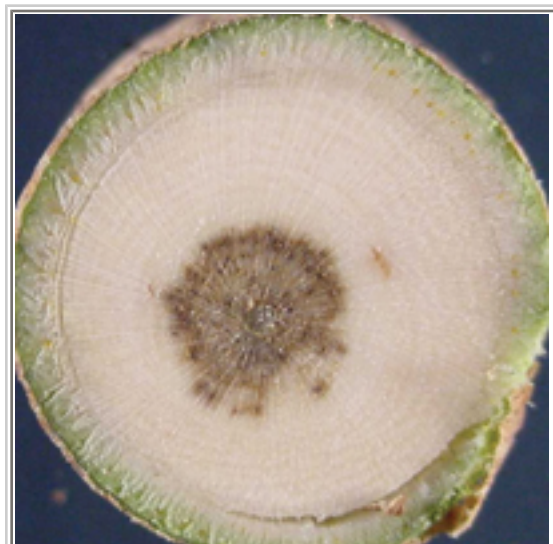
In season 2002–03, the incidence of Fusarium wilt remained high despite the dry growing conditions experienced. There was an increase in the recorded incidence of Verticillium wilt, especially in southern growing regions. This rise in the disease was thought to be due to the increased plantings of varieties that have low resistance levels to Verticillium.

Growers should consult the current variety guides available from Cotton Seed Distributors or Deltapine Australia. Information is also available at the CSD internet site, www.csd.net.au.

Effective on-farm disease management requires a whole of farm approach. Growers should implement basic strategies regardless of whether or not a significant cotton disease problem exists.

Growers' basic on-farm disease management strategies include:

- Conduct your own on-farm disease survey in November and February each season. If you find any suspect or unusual plant growth, have samples identified. "If in doubt — check it out!" Fusarium wilt suspect samples should be sent to DPI Toowoomba or Indooroopilly. Do Not send these samples to ACRI Narrabri.
- Practice on-farm hygiene. "Come clean — go clean."
- Use resistant varieties where possible.
- Provide balanced crop nutrition. A healthy crop



Rating 1



Rating 2

is more able to express its natural resistance to disease.

- Manage crop residues to minimise carryover of pathogens into subsequent crops.

- Develop a sound crop rotation strategy.
Repeated cultivation of cotton can contribute to a rapid increase in disease incidence, especially if susceptible varieties are grown.



Rating 3



Rating 4