DETECTION OF NEW PATHOGENS IN AUSTRALIAN COTTON

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Why are disease surveys important?

Surveys are conducted by pathologists to monitor the distribution and importance of key endemic pests and record the presence or absence of new or exotic diseases. DAFF Qld has identified new strains of the pathogens that cause Fusarium and Verticillium wilt, two boll rots and reniform nematode. The impact of these findings on cotton production varies. Early detection is important so that management strategies can be implicated as soon as possible.

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What new pathogens have been detected?

- In 2005 a new strain of Fov in the Macintyre valley was detected. Using molecular techniques a new strain of the pathogen was determined (VCG 01113).
- Lasiodiplodia boll rot caused by *Lasiodiplodia threobromae* has been a common boll rot over the last three seasons in Queensland, however it has not been observed in NSW.
- In 2010 discolouration of cotton fibres within unopen bolls and seed rot were observed in the Burdekin. *Nematospora coryli* was isolated from discoloured tissue. This is the first record of this pathogen in cotton in Australia.
- In 2012 stunted plants were observed in Theodore. Roots were poorly developed and the tap root was covered with numerous swellings. Plant samples were collected and *Rotylenchulus reniformis* (reniform nematode) was diagnosed.
- Severe Verticillium wilt was reported in the Namoi Valley during the 2011/12 season. Analysis of the pathogen using molecular technique determined that the isolate was NOT an exotic strain. However the *Verticillium dahliae* isolate belonged to VCG 2A, a new strain of this pathogen in Australian cotton.

What impact will these new pests, diseases and strains of pathogens have on the Australian cotton industry?

- The new strain of Fov has not spread and is still limited to one field, hence no impact on Australian cotton production.
- Boll rots cause economic losses wherever cotton is grown. The extent of loss varies and is dependent upon local climate. The average incidence of boll rots in the 2013-14 season was 1.5% for Qld, of which *Lasiodiplodia* contributed.
- Seed rot was only observed in one crop in the Burdekin. If sucking insects are managed, *Nematospora coryli* should not be a problem for Australian cotton production.
- An intensive soil survey of post-harvest cotton of all farms in the Theodore region has determined that reniform nematode is widespread. Losses of 30 – 40% of yield were recorded in some fields. This nematode has the potential to cause significant losses to cotton production in this region.
- It is not known if the new strain of Verticillium is more virulent than the commonly known VCG in Australian cotton, however there was significant yield loss in the field where VCG 2A was detected. Research is underway to determine potential impact of this new strain on Australian cotton.

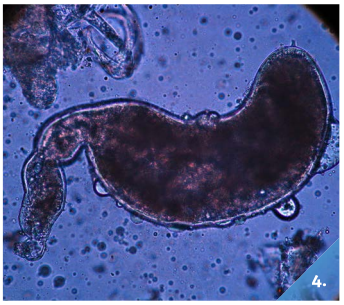

FIGURE 1. Lasiodiplodia boll rot (Photo Linda Smith)

FIGURE 2. Seed rot caused by *Nematospora coryli* (Photo L. Smith)

FIGURE 3. Defoliation caused by *Verticillium dahliae* (VCG 2A) (Photo Linda Smith)

FIGURE 4. Female reniform nematode excised from cotton root (Photo Jenny Cobon)