

## 16.1 Background

***Fusarium* stalk rot, which is mainly caused by the fungi *Fusarium thapsinum* and *Fusarium andiyazi*, is a serious disease that attacks grain sorghum and weeds in all growing regions of Australia. Evidence suggests the *Fusarium* fungus infects the plant early in development but remains dormant until a period of stress (i.e. moisture or desiccation) after flowering. Since no chemical control options are available, management is based on crop nutrition, rotations and variety selection.**

### IMPACT

- There is limited data in Australia on the yield losses caused by *Fusarium* stalk rot.
- Field surveys have demonstrated that *F. thapsinum* and *F. andiyazi* and *M. phaseolina* (charcoal rot) often occur simultaneously, which makes determining the yield loss of each individual pathogens difficult.
- Overseas research (Kansas, USA) estimates average annual losses of 4%, with up to 50% in some areas. Australian yield losses are likely to be similar.
- Yield loss occurs through poor grain fill, or more commonly through plant lodging, which reduces grain quality and affects harvesting.
- Significant yield losses are associated with crop lodging.

Note: These species do not cause *Fusarium* wilt of cotton, *Fusarium* wilt of mungbean head blight of winter cereals, or *Fusarium* cob rot of maize.

### WHERE DAMAGE IS MOST LIKELY

- *Fusarium* stalk rot is prevalent in all sorghum growing regions.
- South east Queensland and northern New South Wales are more prone to infection.
- Stress during late grain fill or after pre-harvest spraying, can lead to rapid development of stalk rot and may result in lodging.
- Crops are at a higher risk during a La Nina summer.

### Did you know?

*Macrophomina phaseolina* (charcoal rot) and a range of *Fusarium* species can cause stalk rot symptoms. In NW NSW, there are around 19 different types of *Fusarium* in sorghum. *Fusarium thapsinum* and *F. andiyazi* are the most common pathogens associated with sorghum stalk rot.

## HOW TO USE RESULTS

- To rank paddocks based on inoculum levels. The sowing of varieties with different resistance classifications can be prioritised accordingly.
- Monitor changes in inoculum during different phases of the cropping sequence.
- Confirm diagnosis in-crop.
- Note: disease risk categories have yet to be developed for this test. Categories based on population density are provided to benchmark levels against rest of industry. Management options will be linked to PREDICTA B results when disease risk categories have been developed.



**Fusarium stalk rot symptoms on sorghum stem slices**

Ch 1. Soil diseases in broadacre crops	6
Ch 2. Sampling for PREDICTA B	20
Ch 3. Cereal cyst nematode	32
Ch 4. Take-all	52
Ch 5. Rhizoctonia root rot	72
Ch 6. Crown rot	94
Ch 7. Root lesion nematode	114
Ch 8. Stem nematode	142
Ch 9. Blacks pot field peas	158
Ch 10. Long fallow disorder	174
Ch 11. Pythium root rot	190
Ch12. Common root rot	204
Ch 13. Eyespot	218
Ch 14. Yellow leaf spot	232
Ch 15. White grain disorder	248
Ch 16. Fusarium stalk rot	262
Ch 17. Charcoal rot	278
Ch 18. Ascochyta blight of chickpea	296
Ch 19. Phytophthora root rot	314
Ch 20. Sclerotinia stem rot	328
Ch 21. Biosecurity is important	346
Ch 22. Decision support	372
Ch 23. Further reading	390