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.

IMAGE: JO WHITE

Fusarium stalk rot symptoms on sorghum stem slices