



UNIVERSITY  
OF SOUTHERN  
QUEENSLAND

**Integrated disease management tools to  
manage summer crop diseases in the  
northern region**

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**USQ Centre for Crop Health**

**Study 1:** Fusarium wilt host range. *F. oxysporum* and *F. solani* (Lisa Kelly, QDAF, Tor St.)



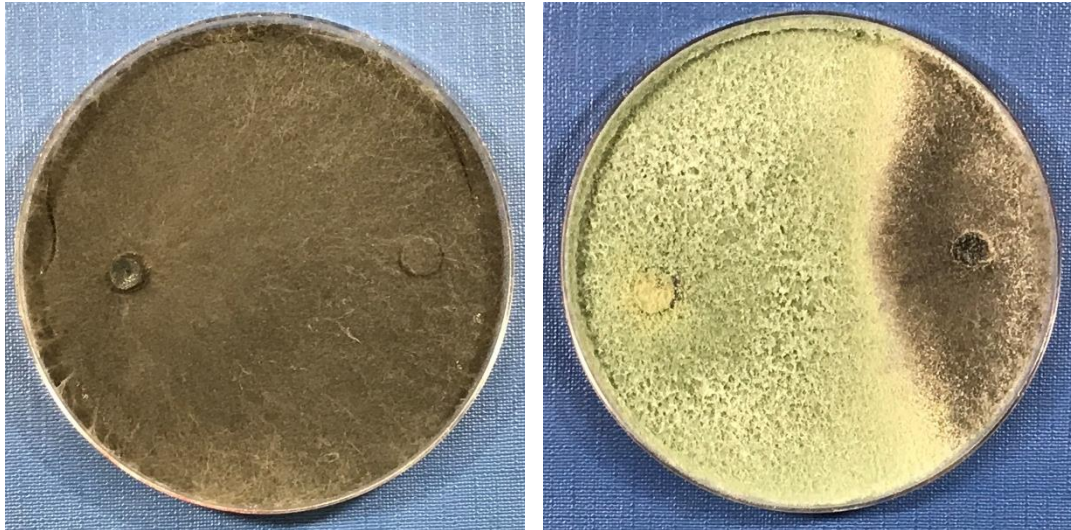
Source: grdc.com.au

**Study 2:** Interaction between the Fusarium wilt pathogen and root lesion nematode on mungbean (Lisa Kelly of QDAF and Dr. Kirsty Owen of USQ)



**Study 3:** Novel sorghum disease management options that incorporate biological and fungicide seed treatments (USQ)

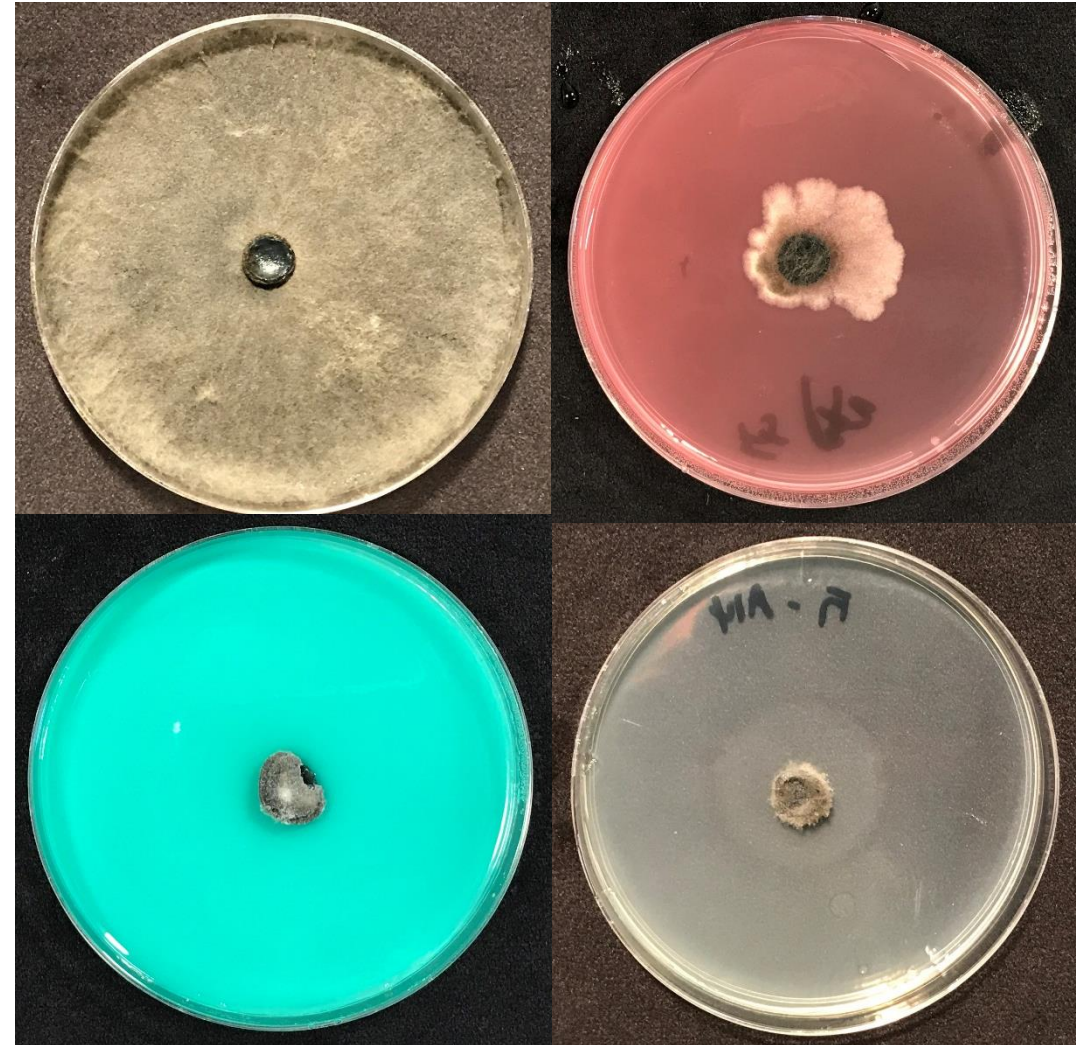
BCA at 7 days



Control

*Trichoderma* sp.

Fungicides, 14d



**Study 4:** Phytoplasma-insect vector dynamics on grain legume crops, including mungbean and peanut. (M. Sharman, QDAF)



Source: [thebeatsheet.com.au](http://thebeatsheet.com.au)

**Study 5:** Developing a molecular tool for rapid detection of phytoplasma (M. Sharman, QDAF)



Source: [pulseaus.com.au](http://pulseaus.com.au)



## Study 6: Validation of the PreDicta B tests for *Macrophomina phaseolina* and *Fusarium thapsinum/andiyazi* in sorghum to make informed disease risk management decisions (USQ)

- 30 sorghum paddocks in CQ
- 30 sorghum paddocks in SQ
- 30 sorghum paddocks in NNSW

NORTHERN REGION

**PREDICTA B**

DNA Soilborne disease tests

# Northern region

SOUTH AUSTRALIAN RESEARCH & DEVELOPMENT INSTITUTE  
**PIRSA**

**Disease Risk**  
The following tests are reported with a disease risk, which indicates the risk of yield loss associated with the level of pathogen DNA detected in the soil. Risk categories should be used as a guide only, as regional and seasonal variation can occur.

- *Pratylenchus thomei*
- Crown rot

TEST	RESULT	DISEASE RISK*			
		Not Detected	Low	Med	High
<i>Pratylenchus thomei</i>	21.8 nematodes/g soil				
Crown Rot	2.50 log(pg DNA/g soil)				

\*Risk categories should be used as a guide only, may be subject to regional and seasonal differences, and may be revised over time.

**Tests under evaluation**  
This year we are introducing a number of new tests as "tests under evaluation". These tests will be reported as relative population densities, rather than a disease risk, as the level of yield loss associated with the pathogen DNA level has yet to be determined. Results can be used to rank levels of inoculum in different paddocks, monitor changes in inoculum during different phases of the cropping sequence and confirm disease diagnosis. Disease risk categories will be developed for some of the tests in the future.

- *Pratylenchus neglectus*
- Crown rot
- Common root rot
- Rhizoctonia root rot
- *Pythium* clade f
- Yellow leaf spot
- White grain disorder
- AMF (long fallow disorder)
- Ascochyta blight of chickpea
- Phytophthora root rot of chickpea
- Charcoal rot
- Fusarium stalk rot
- Sclerotinia stem rot

TEST	RESULT	POPULATION DENSITY**			
		Not Detected	Low	Med	High
<i>Pratylenchus neglectus</i>	<0.1 nematodes/g soil				
Crown Rot ( <i>F. culmonum/graminearum</i> )	<0.5 log(pg DNA/g soil)				
Bipolaris	1.86 log(pg DNA/g soil)				
Rhizoctonia	<0.48 log(pg DNA/g soil)				
<i>Pythium</i> clade f	1.08 log(pg DNA/g soil)				
Yellow leaf spot	1.56 log(KDNA copies/g soil)				
White Grain Disorder	<0.3 log(KDNA copies/g soil)				
AMF (Long fallow disorder)	161.96 KDNA copies/g soil				
Phoma rabiei	1.08 log(KDNA copies/g soil)				
Phytophthora medicaginis	0 log(KDNA copies/g soil)				
Charcoal rot	2.05 log(KDNA copies/g soil)				
Fusarium stalk rot	0.24 log(KDNA copies/g soil)				

\*\*Population densities are based on the distribution of pathogen levels detected in PreDicta samples over several years. These are not disease risk categories.

Government of South Australia  
Primary Industries and Regions SA

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GRDC  
GRAINS RESEARCH & DEVELOPMENT CORPORATION

SAGIT



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