NORTHERN REGION

PREDICTA B DNA Soilborne disease tests

Yield Loss Risk Categories

Crown Rot

FUSARIUM LEVEL*	SOIL SAMPLE WITH ADDED CEREAL/GRASS STUBBLE	SOIL SAMPLE WITH NO ADDED CEREAL/GRASS STUBBLE	% YIELD LOSS		
	LOG (PG DNA/G SOIL)	LOG (PG DNA/ G SOIL)	DURUM WHEAT	BREAD WHEAT	BARLEY
Below detection	<0.1	<0.1	0-5	0-5	0
Low	0.1-<1.5	0.1-<0.7	0-20	0-10	0-5
Medium	1.5-<2.5	0.7-<1.2	10-50	0-30	0-20
High	≥ 2.5	≥1.2	20-80	15-60	0-30

*Risk categories are a general guide only.

Adding stubble to PREDICTA B soil samples improves crown rot risk assessment. Stubble from cereal crops and grassy weeds up to four years old can be a source of infection.

When stubble is not added to PREDICTA B samples, lower *Fusarium* thresholds are used to assess risk of crown rot to help reduce the risk of a 'failure to warn'.

To calculate crown rot risk, DNA results for *F. pseudograminearum* and *F. culmorum /F. graminearum* (which all cause crown rot), are added together before log transformation.

Risk categories were developed using soil samples with and without added stubble collected from National Variety Trials and NSW DPI trials (DAS00137).

Root Lesion Nematodes

Northern region

Potential wheat yield loss (%) caused by different population densities of the root lesion nematode *Pratylenchus thornei* at planting in the subtropical northern grain region as detected by PREDICTA® B. Estimates of yield loss are given for seasons that are conducive[A], for wheat cultivars ranging from intolerant to tolerant.

Risk category	*P. thornei*/g soil	Yield loss estimates based on variety tolerance		
		Intolerant[C]	Intermediate	Tolerant
BDL[B]	<0.1	0	0	0
Low	0.1–2	0–5	0–2	0
Medium	3-5	5–20	2–10	0
High	>8	20–40	10–20	0

Potential wheat yield loss (%) caused by different population densities of the root lesion nematode *Pratylenchus neglectus* as detected by PREDICTA® B. Estimates of yield loss are given for seasons that are conducive for intolerant wheat cultivars. Data is based on estimates from southern region data.

Risk category	*P. neglectus*/g soil	Yield loss %
BDL[B]	<0.1	0
Low	0.1–24	0–5
Medium	25–100	0–20
High	>100	0–40

[A] Conducive seasons represent around 70% of seasons whereas intermediate and non-conducive represent around 20% and 10% respectively.

[B] BDL: below detection level.

[C] Greater yield losses have been observed in very intolerant varieties such as Strezlecki.

AMF

Crops vary in dependency on AMF and this affects yield loss (Table 1).

Table 1. AMF dependency groups modified from Thompson et al. (1997) and QLD DAF

MYCORRHIZA DEPENDENCY	WINTER CROPS	SUMMER CROPS
Very high	linseed	cotton
High	chickpea, faba bean	sunflower, mungbean, peanuts, navy bean, pigeon pea, maize
Medium		soybean, sorghum and sudan grass
Low	field pea, oats, wheat, triticale	
Very low	barley	panicum, canaryseed grass
Nil, non-host	canola, lupins	

Table 2. Provisional AMF yield loss categories for low phosphorous soil with low to very high AMF. Dependency groups were developed using data from Owen et al. (2010) and Thompson et al. (1997).

AMF LEVEL (TEST A + TEST B) KILO-COPIES AMF DNA/G SOIL VERY HIGH		ESTIMATED YIELD LOSS FOR AMF DEPENDENT CROPS (SOIL P <10 MG/KG SOIL)			
		VERY HIGH	HIGH	MEDIUM	LOW
Below detection	<0.1	>90%	60-80%	40-60%	30%
Low	0.1 to <10	20-90	20-60	10-50	5-30%
Medium	10 to <20	0-45	0-35	0-25	0-15
High	>20	0	0	0	0

Note: P levels may be acceptable in 0 to 10 cm or 0 to 15 cm layers, but marginal at depth. These soils can be AMF responsive.