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Cereal Rust Report
Season 2005

Wheat Variety Responses to Stripe Rust

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The stripe rust epidemic in 2005 was arguably the most intensive yet experienced in Australia. Although data are not available at present, it is expected that chemical control costs will exceed $100 million. Factors contributing to the epidemic included a relatively early disease onset, an extended cool moist spring, and the continued use of several varieties that are very susceptible.

The pathogen survey for 2005 is currently being completed, although 40% of accessions have now been determined. Amongst the isolates identified to date, the over whelming majority have been pathotype 134 E16 A+ (the WA pathotype). There has therefore been no variation detected to date in the pathogen population and so it is expected that variety responses to stripe rust will remain essentially unchanged for 2006.

A teleconference was held amongst state based pathologists and breeders to re-assess the variety responses to a set of wheats that are expected to be grown and/or recommended for 2006. Data collected from state trials and NVT sites were collated and discussed. Participants included Queensland (Emma Colson, John Sheppard), NSW (Gordon Murray, Andrew Milgate, Peter Martin, Frank McRae), Victoria (Grant Hollaway), South Australia (Hugh Wallwork, Hayden Kuchel), Western Australia (Robert Loughman) and PBI Cobbitty (Colin Wellings, Harbans Bariana).

The accompanying tables present disease response and resistance genotypes. The scale used in these response categories is based on the assessment scale for stripe rust described and illustrated in Cereal Rust Report Volume 2, Issue 2 (Sept. 2004):

Score	Response
1	VR
2	R
3	R-MR
4	MR
5	MR-MS
6	MS
7	MS-S
8	S
9	VS

The response categories of VR and R require some explanation. Where effective major gene resistance is known to occur in a variety, the response is given as R. Where the variety shows a high level of resistance with no visible symptoms, the response is

designated VR and this may well be the result of unknown major genes and gene combinations; VR is a rare response to the current pathotype.

The tables also include resistance genotypes when present in a variety. This is the first time that this information has been circulated in the format of a Cereal Rust Report, and again some explanation is required. Resistance genes *Yr6, Yr7, Yr9* and *YrA* are ineffective against the WA pathotype, but will protect against the VPM pathotype (104 E137 A- Yr17+). In contrast, resistance gene *Yr17* will protect against the WA pathotype, but not against the VPM pathotype. Resistance genes *Yr27* and *Yr33* will protect against both pathotypes.

We trust this information will be of assistance in selecting varieties and retaining seed for the 2006 season.

Table 1. Disease response and stripe rust resistance genotype among varieties tested with the WA pathotype (134 E16 A+)

Variety	YR Genes	WA pathotype
Arrivato (durum)		R
Bowie	*Yr17*	R
Braewood	*Yr17*	R
Brennan	*Yr7*	R
Camm	*Yr17*	R
Carinya (SUN 421T)	*Yr17*	R
Dennis		R
Ellison	*Yr17*	R
GBA Hunter		R
GBA Ruby	*Yr27*	R
GBA Shenton		R
Marombi	*Yr17*	R
QAL2000	*Yr17*	R
QALBis	*Yr17*	R
Rubric		R
Rudd	*Yr17*	R
Strzelecki	*Yr33*	R
Sunbri	*Yr17*	R
Sunlin	*Yr17*	R
Sunstate	*Yr7, Yr17*	R
Sunvale	*Yr17*	R
Trident	*Yr17*	R
Ventura	*Yr17*	R
Sentinel (LR 1075)		R
Young (VQ 0326)	*Yr17**	R, MS
EGA Bellaroi (durum)		R-MR
EGA Gregory	*Yr33*	R-MR
EGA Hume	*Yr33*	R-MR
Kalka		R-MR
Kamilaroi (durum)	*Yr6*	R-MR
Wilgoyne	*Yr7*	R-MR
Wollaroi (durum)	*Yr6*	R-MR, MR-MS
Declic		MR
Kukri	*Yr7*	MR
Mackellar		MR
Mira	*YrA Yr27**	MR
Pugsley	*Yr17**	MR
Tamaroi (durum)		MR
Tennant	*Yr9*	MR
Yallaroi (durum)		MR

* These varieties are mixed for the presence of the gene.

Table 1. … continued

Variety	YR Genes	WA pathotype
Blade		MR-MS
Currawong		MR-MS
EGA Wedgetail	*Yr7*	MR-MS
Frame		MR-MS
Giles		MR-MS
Goldmark	*Yr6*	MR-MS
H46	*Yr17*	MR-MS
Janz		MR-MS
Kelalac	*YrA*	MR-MS
Kennedy	*Yr7*	MR-MS
Lang		MR-MS
Ouyen		MR-MS
Pardalote		MR-MS
Petrel		MR-MS
Rosella	*YrA*	MR-MS
Snipe		MR-MS
Sunbrook	*Yr6*	MR-MS
Sunco		MR-MS
SW Odiel	*Yr9**	MR-MS
Thornbill		MR-MS
Yitpi		MR-MS
AGT Scythe (RAC 1055)		MS
Annuello		MS
Babbler		MS
Baxter	*YrA*	MS
Bullaring (WAWHT2589)		MS
CLF Janz		MS
Datatine		MS
EGA Eagle Rock		MS
EGA Wentworth		MS
EGA Wylie		MS
GBA Sapphire		MS
Goroke		MS
Hartog	*Yr6, Yr7*	MS
Leichhardt	*Yr7*	MS
Meering		MS
Perenjori		MS
Tammarin Rock (2499)		MS
Whistler	*Yr7*	MS
Wylah		MS
Anlace		MS-S
Bowerbird	*Yr7*	MS-S
Calingiri	*Yr7*	MS-S
Carnamah		MS-S
Chara	*Yr7*	MS-S
CLF Stilletto		MS-S
Cunningham		MS-S
Diamondbird	*Yr7*	MS-S
Drysdale		MS-S
EGA 2248		MS-S
EGA Castle Rock		MS-S
EGA Jitarning		MS-S
Lorikeet	*Yr7*	MS-S
Machete		MS-S
Mitre	*Yr6*	MS-S
Petrie		MS-S
Rees		MS-S
Silverstar	*Yr7*	MS-S
Spear		MS-S
Stiletto	*Yr6*	MS-S
Sunsoft 98	*YrA*	MS-S
Wyalkatchem		MS-S

Table 1. … continued

Variety	YR Genes	WA pathotype
Cadoux		S
Cascades		S
EGA Bonnie Rock		S
Eradu		S
GBA Combat		S
H Mercury		S
Krickauff		S
Tincurrin		S
Ajana		VS
Brookton		VS
BT-Schomburgk		VS
Cunderdin		VS
H45	*Yr7*	VS
Harrismith		VS
Kalannie		VS
Nyabing		VS
Schomburgk		VS
Westonia	*Yr7*	VS

Table 2. Disease response and stripe rust resistance genotype among varieties tested with the VPM pathotype (104 E137 A- Yr17+)

Variety	YR Genes	VPM Pathotype
Sunstate	*Yr7, Yr17*	R-MR
Braewood	*Yr17*	MR
Carinya (SUN 421T)	*Yr17*	MR
Rudd	*Yr17*	MR
Sunbri	*Yr17*	MR
Sunvale	*Yr17*	MR
Ventura	*Yr17*	MR
Bowie	*Yr17*	MR-MS
Ellison	*Yr17*	MR-MS
Marombi	*Yr17*	MR-MS
QALBis	*Yr17*	MR-MS
Sunlin	*Yr17*	MR-MS
H46	*Yr17*	MS
Pugsley	*Yr17*	MS-S
Camm	*Yr17*	S
Trident	*Yr17*	S
QAL2000	*Yr17*	VS

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Cereal rust samples may be collected and posted in paper envelopes to the following address:

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GRDC Grains Research & Development Corporation