Volume 6
Issue 9
18 December 2008

The University of Sydney

PBI

Plant Breeding Institute
Cereal Rust Laboratory

Cereal Rust Report
Season 2008

Stripe Rust Survey 2008
December Report

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The stripe rust epidemic in 2008 was the most extensive in the 30 year history of this disease in Australia. Although the survey is not complete, this end of year report serves to highlight the major trends in pathogen variation that was observed throughout the season, and reported in eight Cereal Rust Reports for 2008. A final detailed report will be circulated in 2009.

Pathotype variation

The major pathotypes and their essential features are presented in Table 1. These features are important in understanding the variation that can be experienced in variety response during the growing season. For example, the widespread occurrence of the 'Jackie' pathotype in 2008 allowed *Yr17* wheats to perform well, although a mid season resurgence of the 'WA Yr17' pathotype caused problems in certain *Yr17* varieties.

Pathotype distribution

Rust samples received in the current season totalled 828 and at the time of writing nearly 90% have been completed for pathotype analysis. Although the survey is not quite complete, the current data serves to indicate a broad appreciation of the variability in pathotype distribution at the end of 2008 (see Table 2).

Clearly the epidemic was focused in NSW and southern Queensland. The dominant 'Jackie' pathotype was common in southern NSW, with the original 'WA' pathotype and its derivative, the 'WA Yr17' pathotype, also recovered frequently across eastern Australia.

The new 'Jackie Yr27' pathotype, reported in Cereal Rust Report Volume 7, Issue 8 (5 November 2008), has now been identified from two locations:

1. the original report o Rutherglen (NE Victoria) on Merinda wheat;
2. a second isolate on variety GBA Ruby from Gunnedah (northern NSW).

Barley grass was noted to be severely affected by stripe rust, and this has not been observed for several seasons. Isolates from barley grass have been the specialized form of stripe rust on barley grass (BGYR, first observed in 1998) and also some wheat pathotypes. The latter will require further follow up work to confirm pathogenicity on barley grass clones.

Review of Variety Response to Stripe Rust

The disease rating for stripe rust against current Australian commercial wheat varieties is under review. The process will continue to be based on national consensus using currently available field data compared to historical ratings. The effort to collect data in this season is enormous and we are fortunate to have the co-operation of the National Variety Testing scheme (Alan Bedggood and Neale Sutton) who are hosting the data acquisition and accreditation process.

The final outcomes from this review will be broadcast in late January 2009.

Acknowledgements

The stripe rust survey of 2008 posed a serious challenge to the technical capacity of the Cereal Rust Laboratory (Plant Breeding Institute Cobbitty, The University of Sydney). To meet the challenge of processing record samples and the personal reporting of results of each sample to co-operators as the data became available required an enormous effort. Mr Keshab Kandel took the major technical responsibility for the work, and he was ably assisted by Ms Karly Dyussembayeva; various members of the technical support team at PBI also assisted from time to time. The outcome of this effort was the management of high sample numbers, rapid report turn around and the 90% completion of survey results in the current calendar year.

Finally, a sincere thank you to co-operators who provided rust samples and also feedback that allowed a continuing flow of information during the unfolding developments of the 2008 epidemic.

Table 1. Pathotypes of wheat stripe rust detected in Australia in 2008. Note that the reaction of pathotypes to the major resistance genes indicates disease response when this gene is present in susceptible wheat.

Pathotype	Year of First Occurrence	Reaction on Major Resistance Gene		
		Yr17	*YrJ*	*Yr27*
WA pathotype 134 E16 A+	2002	R	R	R
'WA Yr17' pathotype 134 E16 A+ Yr17+	2006	S	R	R
'Jackie' pathotype 134 E16 A+ J+	2007	R	S	R
'WA Yr27' pathotype 134 E16 A+ J+ Yr27+	2008	R	S	S

Table 2. Distribution of wheat stripe rust pathotypes and barley grass stripe rust (BGYR) in Australia in 2008. Data current at 18th December 2008.

Pathotype	QLD	nNSW	sNSW	VIC	SA	WA	Tas	Total
'WA'	38	67	37	6	6	6		160
'WA Yr17'	20	30	47	4	1		1	103
'Jackie'	58	98	222	51	18		1	448
'Jackie Yr27'		1		1				2
BGYR	1	8	6					15
Total samples received	129	235	348	68	29	7	3	728

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Rusted plant samples can be mailed in paper envelopes; do not use plastic wrapping or plastic lined packages. Direct samples to:

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The Australian Cereal Rust Control Program is supported by growers through the Grains Research & Development Corporation.

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