



PBI

Plant Breeding Institute
Cereal Rust Laboratory

Cereal Rust Report Season 2008

Stripe Rust Pathotypes Detected Early in Season 2008

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Mild early winter conditions in eastern Australia and the early detection of stripe rust in commercial fields has resulted in an unusually high number of stripe rust samples submitted to the PBI Cereal Rust Laboratory. The first sample was received in mid May from off-type plants in a field of Tobruk triticale at Young, southern NSW. The pathotype was shown to be 134 E16 A+ J+, *ie* the 'Jackie' pathotype (for details see Cereal Rust Report Volume 6, Number 2, June 2008).

Current Situation

A further 14 samples were received to the end of June and at the time of writing it was expected that there would be approximately 60 for July. The sample numbers received in May and June in eastern Australia over recent seasons is indicated in Table 1. For comparison, the most extensive stripe rust epidemic in eastern Australia was in 1984, with early samples received from mid May and a final sample tally of 530. These figures are only indicative and are not an accurate measure of relative epidemic severity across seasons. However, these observations suggest that the early occurrence and magnitude of sample numbers in the current season is unusual, and could potentially lead to a serious epidemic in spring.

Table 1: Stripe samples received from commercial fields in eastern Australia, 2003 – 2008

Year	Stripe Rust Samples Received at PBI Rust Lab		
	June	July	Season Total
2003	-	-	431
2004	-	-	475
2005	3	25	393
2006	-	-	149
2007	-	2	338
2008	14	60	??

Recent Pathotype Determinations

Among a limited number of early samples processed, the following pathotypes have been determined:

1. 'WA' pathotype, code 134 E16 A+
Samples from cultivars Wylah (Dubbo, NSW) and Wedgetail (Cumnock and Warren, NSW) were the 'WA' pathotype.
2. 'WA Yr17' pathotype, code 134 E16 A+ Yr17+
Samples from cultivar Marombi at Cumnock and Young (NSW) have yielded the *Yr17* virulent pathotype. To date, no further samples have been received from cultivars expected to be vulnerable to this pathotype, *ie* Pugsley, Ventura, Sunstate, Derrimut, Trident, QAL2000 etc. (see Cereal Rust Report Volume 5, Number 4, December 2007).
3. 'Jackie' pathotype, code 134 E16 A+ J+
Stripe rust collected from triticale cultivars Tobruk (Young and Manildra, NSW), Breakwell (Young, NSW) and Jackie (Goulburn, NSW) have all yielded the 'Jackie' pathotype. Rust samples from Wedgetail wheat crops at Cowra and Tumut (NSW) have also been determined as the 'Jackie' pathotype, confirming results from last year when this pathotype was often recovered from wheat as well as triticale.

It is too early to gauge relative frequencies of these pathotypes, although it is clear that all three are currently present in a range of crops in NSW south from Warren-Dubbo. Samples received that are currently under study range from southern Queensland to northern Victoria; no samples to date have been received from South Australia or Western Australia.

Variety Responses

The expected wheat and triticale variety responses to these pathotypes was circulated as Cereal Rust Report Volume 5, Numbers 4 and 5, December 2007. Recent field observations and reports have raised concerns for the following varieties:

1. EGA Gregory
This variety is currently rated as R-MR and is expected to show good levels of adult plant resistance. Observations of hot spot stripe rust development in fields, particularly on lower leaves, has raised concerns that a new pathotype maybe emerging. However, all stripe rust samples are tested routinely on Gregory and there is currently no evidence for pathotype change. Adult plant resistance should be expected to provide protection, especially on flag and flag-1 leaves.
2. Ventura
Although no samples have been received to date, there has been some reporting of seedling infection in Ventura crops seeded in early May. Ventura, and other potentially vulnerable *Yr17* carrying wheats (see above), should be monitored carefully. Any serious hot spot activity in these crops should be considered as being infected by the 'WA Yr17' pathotype, and management strategies implemented accordingly. Stripe rust samples from these crops will be important to confirm pathotype identity and monitor for any potential change in the pathogen population.
3. GBA Ruby
Stripe rust samples from Ruby crops in the Riverina (northern Victoria, southern NSW) are currently under test. It is possible that a pathotype with virulence for the resistance gene *Yr27* may be involved, although there is currently no data to confirm this hypothesis. Several samples received from Ruby crops in Victoria late in 2007 failed to be established for pathotype tests.

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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:

Australian Cereal Rust Survey
Plant Breeding Institute
Private Bag 11, Camden NSW 2570

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

