



Cereal Rust Report

Season 2010

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Late winter rust developments: pathotype results and variety responses

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Results from rust samples received in June and July are giving an early indication of pathotypes that can be expected to dominate in an anticipated spring rust epidemic in eastern Australia. The performance of varieties in the early phase of the stripe rust epidemic is generally as expected, although certain varieties are worthy of some specific comments.

Wheat Stripe Rust

Sample numbers have been noticeably less in 2010 compared to the previous season. At mid August in 2009, 130 samples were accessioned compared to 67 in the current year. The most distinct difference between seasons has been the first appearance of stripe rust in southern NSW in June 2010, compared to a northern NSW focus from May in 2009. The more advanced northern crop in 2009 provided greater opportunity for disease spread, compared to a southern origin where cold conditions and a later disease onset may have contributed to reduced inoculum pressure.

The samples identified to date indicate an even frequency of the 'Jackie' and 'WA Yr17' pathotypes. This represents another contrast with previous seasons where the 'WA Yr17' pathotype seemed to arrive much later in the epidemic. The clear implication for 2010 is that varieties carrying the *Yr17* resistance and known to be vulnerable to the 'WA Yr17' pathotype (Barham, Bowie, Camm, Derrimut, Endure, Fang, Hornet, Mace, Marombi, Pugsley, QAL 2000, Sunstate, Ventura, Yenda, Young) may need fungicide intervention, especially where stripe rust begins early. Other *Yr17* varieties considered

intermediate in response to the 'WA Yr17' pathotype will also need to be monitored carefully in the early phases of disease occurrence, as a fungicide application may be beneficial in reducing inoculum pressure. Notable among these varieties is Crusader, which is rated MR-MS, but may show relatively high levels of stripe rust at tillering; a fungicide applied at first disease occurrence would be expected to favourably position this variety for spring.

The resistance gene *Yr33* continues to provide good protection in varieties Gregory and Strzelecki. However, it should be noted that Gregory is slightly heterogeneous for stripe rust resistance and some plants are noticeably more susceptible. An early fungicide on Gregory should be all that is required for protection through late winter. Note also that several varieties are vulnerable to yellow leaf spot and will be at risk in wheat on wheat rotations. Fungicides are available that combine both yellow leaf spot and stripe rust control. In seasons such as 2010, reduction of lower leaf infections from one or both diseases will place crop canopies in a favourable situation to capitalise on anticipated ideal spring conditions.

Wheat Stem Rust

Wheat stem rust has been detected at widely separate locations throughout eastern Australia since April, from Kapinnie on the Eyre Peninsula to Glen Innes in northern NSW (Table 1; Figure 1). Apart from the samples forwarded from Glen Innes, which were identified as pathotype 34-2,12,13, all samples processed so far have been identified as pathotype 34-1,2,7 +Sr38 (Table 1). Samples were also received of wheat stem rust from the Mallee region in South Australia (Jabuk) and from Wonwondah in the Wimmera of Victoria. The former was collected from stubble of variety Halberd, and the latter was collected from a Yitpi stubble regrowth situation north of Horsham. In both cases the infection was well established.

Risk assessment: The early occurrence of the samples received in 2010 and the pathotypes identified to date reflect significant summer survival of wheat stem rust at two and possibly three regions in eastern Australia. A large area traditionally seeded to the stem rust susceptible variety Yitpi in the Mallee coupled with the early occurrence of stem rust suggests that this region is at moderate risk of losses due to stem rust in 2010, and serve to highlight a continuing potential for the development of stem rust in the Wimmera and Mallee regions of Victoria and South Australia. Decisions to prepare for possible fungicide support in varieties known to be vulnerable to stem rust would appear timely at this juncture.

A comparison of the incidence of stem rust over the past 10 years, as estimated by the number of samples we have received for race analysis (Table 2), illustrates this point further. The only other time in the past 10 years when stem rust has been common in eastern Australia early in the cereal cropping cycle was in 2006, a year in which dry conditions prevailed in winter and autumn and subsequent overall stem rust incidence proved to be low. The above average rainfall experienced in parts of eastern Australia throughout winter in 2010 mean that the current situation is of some concern.

Wheat Leaf Rust

As reported in the last Cereal Rust Update, 10 samples of wheat leaf rust have been received to date, from locations throughout eastern Australia including Queensland (e.g. Warwick), NSW (e.g. Dunedoo, Jerilderie, Delegate), and Victoria (e.g. Donald, Lake Bolac). Four of the samples were from crops of Marombi, and the pathotypes identified were either 104-1,2,3,(6),(7),11 +Lr37 or (less frequently) 104-1,2,3,(6),(7),11. Two samples came from crops of Mackellar wheat, one from Delegate being found to comprise pathotypes 10-1,3,9,10,11 and 76-3,5,9,10 +Lr37. Both pathotypes are believed to be exotic incursions into Australia, being first isolated from Victoria at Bairnsdale in October 2004 (10-1,3,9,10,11) and Inverleigh in late July 2006 (76-3,5,9,10 +Lr37). They are now present throughout Victoria, southern and northern NSW, South Australia and Tasmania.

Table 1. Samples of stem rust received from eastern Australia for race analysis, April 1 to August 10 2010

Accession number	Date	Host	Location	State	Pathotype
100012	15-Apr	Triticale	Glen Innes	NSW	34-2,12,13
100013	15-Apr	Triticale	Glen Innes	NSW	34-2,12,13
100014	21-Apr	Triticale	Glen Innes	NSW	34-2,12,13
100020	18-May	Halberd	Jabuk	SA	34-1,2,7 +Sr38
100022	20-May	Yitpi	Wonwondah	Vic	34-1,2,7 +Sr38
100032	3-Jun	Wheat	Horsham	Vic	34-1,2,7 +Sr38
100036	10-Jun	Wheat	Longeranong	Vic	34-1,2,7 +Sr38
100045	6-Jun	Yitpi	Boort	Vic	34-1,2,7 +Sr38
100058	4-Aug	Wheat	Warracknabeal	Vic	Not yet processed
100059	9-Aug	Pugsley	Kapinnie	SA	Not yet processed

Table 2. Number of samples of stem rusted wheat received from eastern Australia for race analysis, April to August, 2000 – 2010

Year	Month					Total
	April	May	June	July	August	
2000	0	1	0	0	2	3
2001	0	0	0	0	0	0
2002	0	0	0	0	0	0
2003	1	0	0	0	0	1
2004	1	0	0	0	0	1
2005	1	0	0	0	0	1
2006	20	2	0	0	0	22
2007	0	0	0	0	0	0
2008	0	0	0	0	0	0
2009	0	0	0	0	1	1
2010	3	2	3	0	2*	11

* up to 09 August 2010

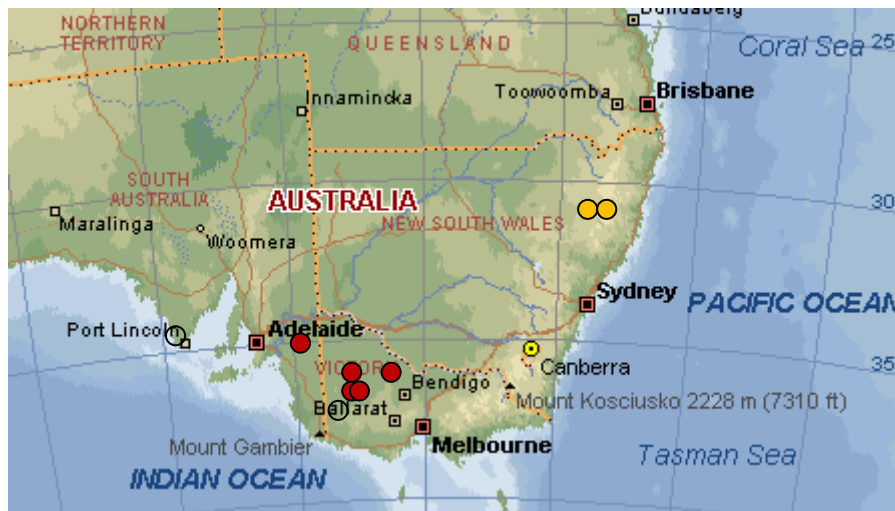


Figure 1. Distribution of reported and identified samples of wheat stem rust in 2010

- Pathotype 34-2,12,13
- Pathotype 34-1,2,7 +Sr38
- Unprocessed

GENERAL ENQUIRIES

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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 4011, Narellan NSW 2567

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