

Cereal rust survey status report, early July 2021

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Professor Robert Park, Dr Davinder Singh

The University of Sydney, Faculty of Science, School of Environmental Sciences, Sydney Institute of Agriculture, Plant Breeding Institute

Email: robert.park@sydney.edu.au

Ph: 02 9351 8806

So far this year, we have received samples of stripe rust on wheat (3), leaf rust on wheat (2), crown rust on oat (1) and stem rust on oat (3). Brief details are provided below on each rust pathogen.

Wheat stripe rust

The first sample of wheat stripe rust was collected on May 25th from Blayney NSW from a crop of DS Bennett. In the 40 years that stripe rust has been present in eastern Australia, stripe rust has managed to survive the summer period and reappear every year- either in winter or spring, anytime between mid-May to the end of September. Over that period of time, a general rule has been that earlier detection has resulted in more disease. The “average” date that stripe rust has first been detected in a wheat crop in eastern Australia over the past 40 years is July 13th, so detecting it so early this year is a concern. In 2008, 2009 and 2010 for example, stripe rust was first detected in early- to mid- June. Stripe rust was widespread and severe in some crops in all of these years in eastern Australia, and the early onset then was due to the stripe rust vulnerability of early sown triticales.

The sample from Blayney was identified as pathotype 198 E16 A+ J+ T+ 17+. As reported last year (Cereal Rust Update **17(4)**; downloadable from our website <https://www.sydney.edu.au/science/our-research/research-areas/life-and-environmental->

[sciences/cereal-rust-research.html](https://www.sydney.edu.au/science/our-research/research-areas/life-and-environmental-sciences/cereal-rust-research.html)), this pathotype was first detected near Wagga Wagga in late August 2018, and was subsequently isolated from Victoria and Tasmania that year. In 2019, it was once again isolated from these states and also from Queensland and was in fact the most common pathotype of the wheat stripe rust pathogen isolated from eastern Australia in that year. In 2020 it was once again the dominant stripe rust pathotype in eastern Australia (67% of all isolates), being isolated from all mainland eastern states. We demonstrated that this pathotype is genetically distinct from all other wheat stripe rust pathotypes in Australia, and that it was transported to Australia from Europe or South America in 2018 or before. It has resulted in a number of cultivars of wheat (both common and durum) and triticale becoming more susceptible to stripe rust. Information on cultivar response can be found in Cereal Rust Update **17(3)**.

A second sample of stripe rust was received from a crop of DS Bennett from North Star on 20 June 2021. The collector indicated that the “rust was spread across the paddock with a hot spot 20% leaf coverage on 20% of leaf in hotspot”. A third sample was collected from DS Bennett at

Canowindra on 26 June. These two samples are currently being processed.

Wheat leaf rust

Two samples of leaf rust were received in late April from Illabo wheat in northern NSW and Manning wheat in southern NSW. Both samples comprised pathotype 104-1,3,4,5,7,9,10,12 +Lr37, which since season 2017 has been the dominant pathotype of leaf rust isolated from virtually all wheat growing regions of Australia.

Once again, the responses of current wheat cultivars to leaf rust, including this pathotype, can be found in our Cereal Rust Report **17**(3).

Oat crown rust

A single sample of crown rust was collected at Purlough between Dubbo and Narrabri, on May 18th. The collector indicated that the crop of Eurabbie oat had quite bad crown rust over three paddocks". As is often the case, multiple pathotypes of crown rust were isolated from the sample, viz. 0001-0, 0005-6,10, and 0071-0. All three have been present in eastern Australia for many years. While these pathotypes have broad virulence, they are unable to infect oat cultivars with the resistance genes *Pc50* (Volta), *Pc68* (Graza 68, Moola), or *Pc91* (Aladdin, Drover). Virulence for these cultivars has however been very common in eastern Australia since 2012.

Oat stem rust

Three samples of oat stem rust have been received to date, two from eastern Australia and one from WA. The eastern Australian samples were collected from Joel South off a crop of Bannister oat (13th April) and Gunnedah off a crop of Aladdin oat (13th May). The sample from WA was collected from wild oats at Salmon Gums on 28th April. Both of the samples from eastern Australia were identified as pathotype 41 +Pg9, 13, a. This pathotype has been the most dominant pathotype of oat stem rust for many years throughout east Australia. The third sample from western Australia was found to be heavily contaminated and is currently being processed.

Pathotype distribution determines varietal response

Long-term nation-wide annual surveys of the virulence of the cereal attacking rust pathogens have been critical in understanding and predicting the responses of cereal varieties to rust diseases and providing direction for resistance breeding. For example, the separation of the eastern and western Australian cereal belts, the common movement of rusts from west to east, and the less common movement of rusts from east to west, have resulted in some pathotypes (and hence virulences) being restricted to eastern Australia. For this reason, monitoring the occurrence, frequency and distribution of pathotypes of the cereal rust pathogens is foundational in genetic approaches to control these diseases. Please send rusted cereal samples using the details below.

General Enquiries

Matthew Williams
matthew.williams@sydney.edu.au
T 02 9351 8808

Rusted Plant Samples

Can be mailed in paper envelopes; **do not use plastic wrapping or plastic lined packages**. The sample submission guide and submission form can be downloaded from our website: [Australian Cereal Rust Survey](#)

Fill in the submission form and direct rust samples to:

University of Sydney
Australian Rust Survey
Reply Paid 88076
Narellan NSW 2567

Or contact us for some of our free reply- paid sample envelopes

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