

Cereal Rust Report

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New wheat leaf rust pathotype detected in northern New South Wales

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A new pathotype of the wheat leaf rust pathogen, *Puccinia triticina*, was detected in northern NSW from samples collected in early August 2013. The new pathotype, 76-3,5,7,9,10,12,13 +Lr37, is considered to be a single-step mutational derivative of an existing pathotype, 76-3,5,7,9,10,12 +Lr37, with added virulence for *Lr24*. This is the second mutation to virulence for *Lr24* seen in Australia, and the first pathotype to combine virulence for genes *Lr13* and *Lr37* with virulence for *Lr24*. Tests are currently underway to assess the full impact of this new pathotype on cultivars carrying the gene combination *Lr24* and *Lr37* (Carinya, EGA Jaegar, Espada, QAL2000, QALBis, and Sunvex) and *Lr13* and *Lr24* (GBA Combat, Giles, Merinda, Naparoo and Petrie).

Three samples of leaf rust from crops of the cultivar Naparoo collected from northern NSW (Gragin and Graman) on 8th August 2013, were forwarded to the Plant Breeding Institute for pathotype analysis. Two additional samples were collected from crops of Naparoo in the same district on the 12th August and another on the 19th August.

All 6 samples were initially identified as pathotype 76-3,5,7,9,10,12,13 +Lr37. Given that this pathotype had not previously been recorded, a further test was undertaken in which comparisons were made with 6 standard *P. triticina* pathotypes from the PBI rust collection, across a range of Australian wheat genotypes that included 11 cultivars previously identified as carrying the resistance gene combination *Lr13* and *Lr24* (Cereal Rust Update 7(2) 2 March 2009, Cereal Rust Update 10(1) 12 April 2012; GBA Combat, Giles, Merinda, Naparoo and Petrie) and *Lr24* and *Lr37* (Carinya, EGA Jaegar, Espada, QAL2000, QALBis, and Sunvex).

These tests confirmed the identity of the new pathotype and indicated that several of these 11 wheat cultivars are seedling susceptible to the new pathotype. Further tests are currently underway to

assess the vulnerability of all current Australian wheat cultivars to the new pathotype.

Origin of the new pathotype

Pathotype 76-3,5,7,9,10,12,13 +Lr37 is considered to have originated via single-step mutational acquisition of virulence for the resistance gene *Lr24*, in an existing pathotype, 76-3,5,7,9,10,12 +Lr37. The postulated derivation of this pathotype, and of other pathotypes in this lineage, is shown in Figure 1. The founding (parent) pathotype in this lineage, pt. 76-3,5,7,9,10 +Lr37, is regarded as an exotic introduction, being first detected in Australia from Inverleigh (Vic) in late July 2006. Since then, it has become widespread throughout Victoria, southern and northern NSW, South Australia and Tasmania.

Conclusion

Growers of the 11 cultivars listed above as carrying the resistance gene combinations *Lr13* and *Lr24* or *Lr37* and *Lr24* should monitor crops closely, and forward samples of any leaf rust detected to the Plant Breeding Institute for pathotype analysis. It is likely that we will not know the full impact of this new

pathotype until we have undertaken more exhaustive greenhouse seedling tests, and adult plant field tests.

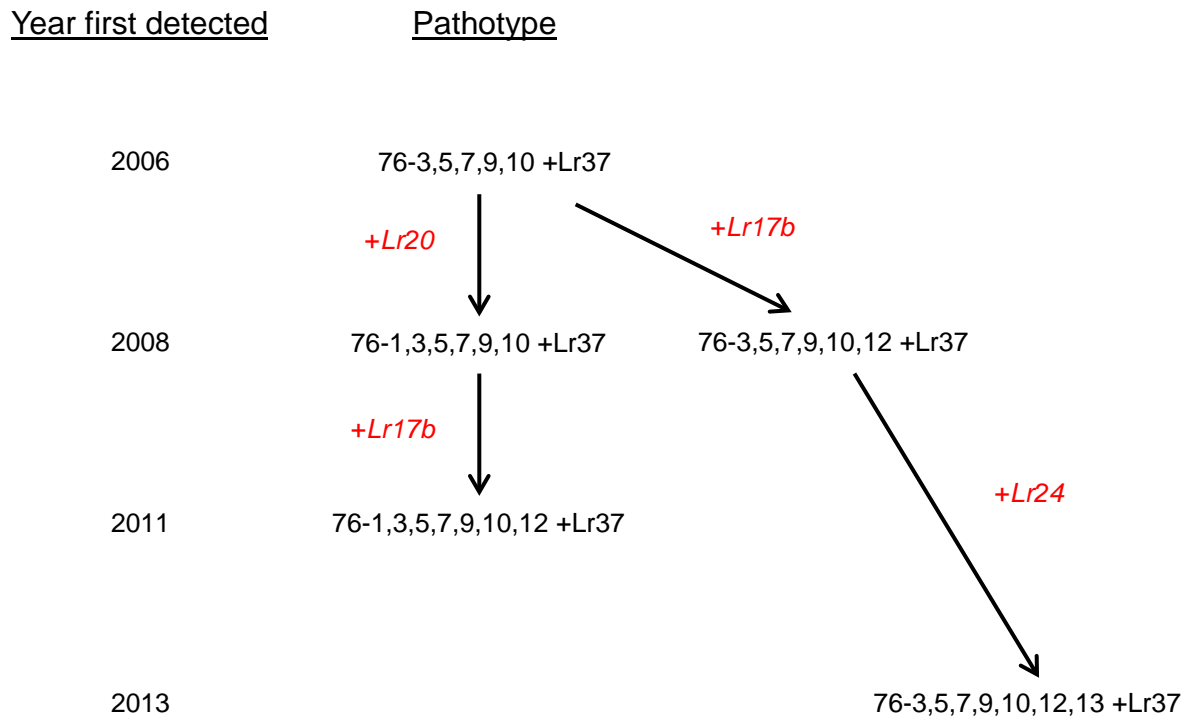


Figure 1: Derivation of three new pathotype of the wheat leaf rust pathogen *Puccinia triticina* via single- step mutation from a common ancestor, first detected in Victoria in 2006.

GENERAL ENQUIRIES

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 Narellan NSW 2567

 107 Cobbitty Road
 Cobbitty NSW 2570
 T 02-9351 8800 (Reception)
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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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