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Cereal Rust Report Season 2009

Stripe Rust Pathotype Survey 2009 Year End Summary

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The stripe rust pathotype survey for 2009 is nearing completion with approximately 550 samples received from regional wheat growing regions. At the time of writing, 85% of samples have been identified and the results reported to individual co-operators. Amongst the remaining isolates are those which recently arrived, require further examination due to mixtures of pathotypes or with unusual results that require re-testing. It is anticipated that the remaining isolates will be completed in time for final reporting at the end of February 2010. This will be the last stripe rust pathotype report for the current season, with a final report to be circulated in early 2010.

Pathotype Identification

Wheat stripe rust pathotypes identified in Australia in 2009 are indicated in Table 1. Points to note:

- Six samples were received from Western Australia, and half of these were from inoculated trial sites. Pathotype 134 E16 A+ was recovered.
- Three pathotypes predominated in eastern Australia. The 'Jackie' pathotype continued to be the most frequent, although the 'WA Yr17' pathotype increased significantly from 15% in 2008 to over 30% in 2009.
- The increased frequency of the 'WA Yr17' pathotype was predicted, based on previous experience with emerging pathotypes, and the expected response of wheats likely to be affected by this pathotype assisted decisions with fungicide control options.
- The 'Jackie Yr27' pathotype has not been detected at the time of writing. Wheats carrying Yr27 have performed very well to stripe rust in 2009.

Pathotype Distribution

The data in Table 1 indicates that the majority of stripe rust activity was in NSW, with early epidemic conditions in the north and a later surge in the south. Other observations of interest:

- The 'Jackie' pathotype dominated early but the 'WA Yr17' pathotype clearly staged a comeback in late spring, particularly in southern NSW.
- The 'WA Yr17' pathotype was noticeably under represented in Queensland, despite its presence from the early phases of the epidemic.
- In contrast, the 'WA Yr17' pathotype was more frequent in South Australia at 50% of isolates. A large proportion (30%) of these isolates was recovered from variety Mace.

Pathogen Isolates of Particular Interest

Tobruk Triticale

Twenty seven samples received from Tobruk triticale have yielded only the 'Jackie' pathotype. Experiments designed to test the possibility that the pathogen has adapted to Tobruk have so far failed to show evidence to support the hypothesis. Tobruk is clearly very susceptible to head infection. Sowing intentions for long season triticales in 2010 will need to consider alternative varieties, such as Endeavor.

Yr4 group (Bolac, Lincoln)

Stripe rust samples received from Lincoln (11) and Bolac (5) in 2009 are carefully examined for any suggestion of pathogen change with respect to Yr4. To date all three pathotypes noted above have been recovered from these samples. Several samples also appear to have an additional pathotype mixed together and these are being closely studied to separate the component pathotypes. This work is

tedious and will require some effort to finalise before we report the outcome. However my sense at the moment is that we do not have evidence for a new pathotype, but more likely there may be an old pathotype mixed in these samples. The outcomes of this work will be reported in 2010.

Conclusion

It has been another very busy year for the stripe rust pathogen team, and I particularly acknowledge Keshab Kandel, Karly Dyussebayeva and Paul Kavanaugh for their technical support, and Beate Wildner for assistance with the design and distribution of the Cereal Rust Reports. Finally, and importantly, thank you to all co-operators who have forwarded samples for analysis; we trust the reporting of results has provided understanding of your own crops and the Cereal Rust Report series have added a wider industry perspective.

Table 1. Pathotype determinations across regions and time periods in 2009. Note that this is preliminary data (early December 2009) with more samples awaiting analysis.

Region	'Jackie' Pathotype			'WA' Pathotype			'WA Yr17' Pathotype		
	Jun - Jul	Aug - Sep	Oct - Nov	Jun - Jul	Aug - Sep	Oct - Nov	Jun - Jul	Aug - Sep	Oct - Nov
Qld	8	26	2	2	5		3	3	1
nNSW	29	41	1	6	9		7	30	6
sNSW	1	79	35	1	7	3	4	36	24
Vic		7	18		3	2			9
SA		15	8					11	11
Totals	38	168	64	9	24	5	14	80	51
	270 (60%)			38 (8%)			145 (32%)		

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