Aggressiveness in wheat rusts
-experiences from Australia

- Four clear cases in which an introduced rust genotype has increased rapidly, and undergone a continental sweep by displacing existing genotypes:

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  - Leaf rust race 104 [1984]
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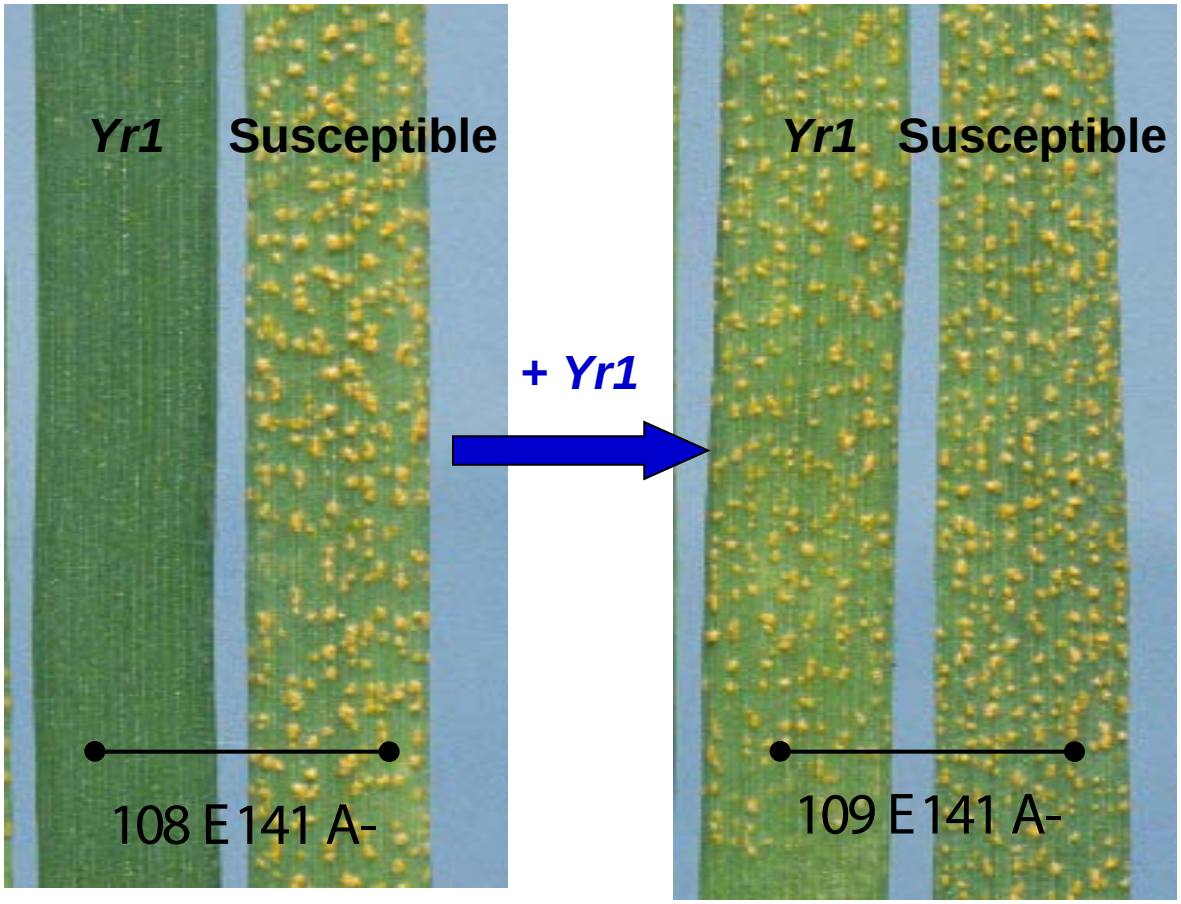
- Evidence available strongly supports the hypothesis that each new genotype was more aggressive

Pathogen aggressiveness and resistance

1. Major gene resistance, eg Yr1



Pathotype: 108 E 141 A- 109 E 141 A-

Pathogen aggressiveness and resistance

2. Minor gene resistance, eg cv. Bowerbird

Bowerbird has uncharacterised APR to stripe rust

Prior to 2002, it was considered MR-MS

Images courtesy of Dr Colin Wellings

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<u>Why????:</u>

- pathogen aggressiveness [erosion of minor gene resistance]?

- minor gene virulence?

- aggressiveness + virulence?

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Pathogen aggressiveness and resistance

2. Minor gene resistance, eg cv. Tobruk triticale

- increased stripe rusting in triticale cv. Tobruk in 2009

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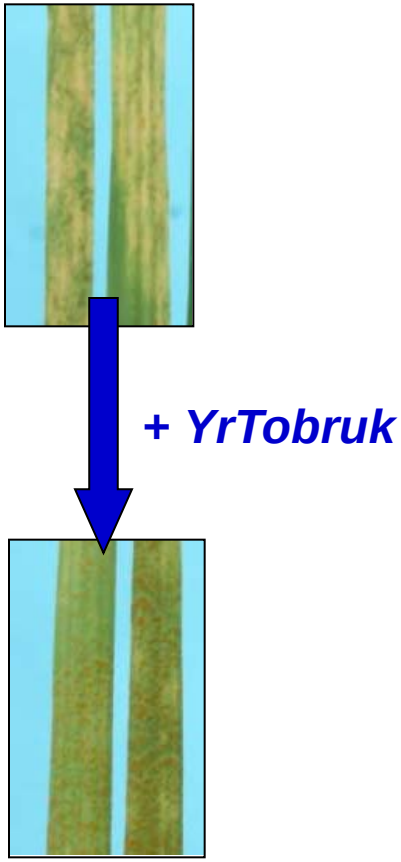
Pathogen aggressiveness and resistance

2. Minor gene resistance, eg cv. Tobruk triticale

- increased stripe rusting in triticale cv. Tobruk in 2009
- due to virulence for an uncharacterised minor gene



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Concluding remarks

- separating the effects of virulence and aggressiveness, while significant for resistance breeding, is not always straightforward

- caution is needed in communicating the concepts of virulence and agressiveness in the agricultural community

- Australian breeders were successful in dealing with three incursions of aggressive rust isolates (two stem rust, one leaf rust), and despite some setbacks, continue to make good progress in relation to the most recent stripe rust incursion

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