Mapping Aegilops tauschii-Derived Leaf Rust Resistance Genes in Wheat. (A00-poland143251-Oral)

Authors:

- J.A.Poland - *Kansas State University*
- G.L.Brown-Guedira - *USDA-ARS*

Abstract:

New genes for resistance to leaf rust (caused by Puccinia triticina) of wheat (Triticum aestivum L.) are needed to combat the rapid evolution of the pathogen population. Wild relatives of wheat, including the diploid goatgrass Aegilops tauschii (DD, 2n=2x=14), have been an important source of resistance genes. In this study, two genes conferring resistance to leaf rust that differ in race specificity were transferred to wheat from accession TA 1695 of Ae. tauschii. The genes were transferred by backcrossing a T. turgidum (Do1) x Ae. tauschii (TA 1695) amphiploid to the hard winter wheat variety 'Jagger'. Analyses of two BC2F2 populations, each segregating for one of the two transferred genes, indicated that leaf rust resistance in each population was due to a single dominant gene. Molecular analysis determined that one of the transferred genes was linked to wheat microsatellite marker Xgdm35 (12.6cM). This gene is located in the same region of chromosome 2DS and has the same race specificity as the Ae. tauschii-derived gene Lr39, suggesting that accession TA 1695 is also a source of Lr39. The location of the other leaf rust resistance gene transferred from TA 1695 has not yet been determined. However, the broadly effective resistance conferred by this gene should be useful for development of leaf rust-resistant wheat cultivars.

Corresponding Author Information:

Jesse Poland
Kansas State University
1830 College Heights
Manhattan, KS 66502

phone: 785-395-1450 x30
e-mail: gbg@ksu.edu

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