Alien Addition Lines of Durum Wheat: Prospects for Breeding for Scab Resistance. (C01-jauhar163509-Poster)

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Abstract:

Fusarium head blight (FHB) or scab is a ravaging disease of wheat that causes enormous losses to growers in the Northern Plains area of the U.S. There is no reliable source of FHB resistance in durum wheat. We found that a diploid wheatgrass (Lophopyrum elongatum (Host) A. Love) is a promising source of resistance. This grass shows a mean infection of 3.8% compared to about 60% to 90% in most durum cultivars. By crossing durum wheat with L. elongatum, followed by a series of backcrosses and selfings, we obtained alien addition lines of durum. Some monosomic addition lines with 2n=28+1 showed 17-23% infection, but were not stable because the unpaired alien chromosome was lost in subsequent generations. By screening 300 hybrid derivatives having 2n=29 to 31 chromosomes and with low infection (33% or less) we obtained six plants with 2n=28+2 chromosomes, of which we confirmed one to be a disomic addition with a pair of grass chromosomes. This line had an average infection of 9.6% two weeks after inoculation. We are studying this disomic addition line further, exploring the possibility of breeding for scab resistance by transferring alien chromosome segments into the durum genome.

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Presentation Information:

Presentation Date: Wednesday, November 13, 2002 Presentation Time: 4:00-6:00 pm Poster Board Number: 830

Keywords:

Durum wheat, Fusarium head blight, Alien chromatin, Disomic addition line