Root Biomass, Water-Use Efficiency and Performance of Wheat-Rye Translocations in 'Pavon'. (C01-waines174349-Poster)

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Abstract:

Positive performance is reported for centric translocations of chromosome 1 of rye in bread wheat. Objectives were to determine the effects of short arm translocations of rye chromosome one (1RS) derived from Kavkaz winter wheat, in Pavon spring wheat background, on root biomass, water use efficiency and agronomic performance. Pavon and its translocations were evaluated in glasshouse pot experiments in 1997 and 1998 and in field experiments in 1999 and 2000 under well-watered and droughted treatments. The 1RS translocations in Pavon delayed maturity, reduced plant height in some cases and increased root biomass. Association between root biomass and grain yield was significant under droughted and under well-watered conditions. The 1RS translocations increased grain yield and grain weight, especially under well-watered field conditions. The overall mean grain yield was 4.066 t/ha for Pavon, 4.895 t/ha for 1RS.1AL, 4.503 t/ha for 1RS.1BL, and 4.632 t/ha for 1RS.1DL. The 1RS translocations, in general, were more tolerant to field environmental stresses than Pavon. These results encourage the development and use of the 1RS.1AL and 1RS.1DL translocations in wheat breeding programs.

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Presentation Information:

Presentation Date: Wednesday, November 13, 2002
Presentation Time: 4:00-6:00 pm
Poster Board Number: 840

Keywords:
Root biomass, Wheat-rye translocations, Grain yield, Drought tolerance