EVALUATION OF SOUTH DAKOTA WINTER WHEAT FOR FUSARIUM HEAD BLIGHT RESISTANCE

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ABSTRACT

Fusarium head blight (FHB) is an important wheat disease in the U.S. We investigated genetic diversity of FHB resistance in advanced winter wheat. A total of 84 hard winter wheat genotypes representing the Advanced Yield Trial (AYT) and Crop Performance Testing (CPT) were artificially inoculated in a mist-irrigated field in 2003 and 2004. Forty-four genotypes, including 22 from the CPT, were also evaluated in a greenhouse in 2003. Genotypes varied significantly ($P < 0.01$) for flowering date, disease index (DI) and percent Fusarium damaged kernel (FDK) in both years. No correlation was found between DI and FDK, except in the AYT in 2003. DI and FDK varied significantly ($P < 0.01$) in the CPT in both years and showed significant genotype-by-year interaction ($P < 0.05$), which emphasizes the importance of multi environment and year screening. Genotypes also varied significantly ($P < 0.01$) for DI in the greenhouse. No correlation was observed for DI between the greenhouse and the field. DON content ranged from 17.0 ppm to 56.0 ppm in 2004, indicating lack of resistance to DON accumulation in these genotypes. Nivalenol accumulation was low (< 0.05 ppm) in all genotypes. DON content was correlated ($r = 0.6$ and 0.5, $P < 0.05$) with both FDK and DI, respectively. This indicates that the DI and FDK should be recorded separately to assess FHB resistance.