Effect of Sumai 3 Chromosomes on Scab Resistance and Deoxynivalenol Accumulation within Wheat Spikes. (C01-kolb175246-Poster)

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Abstract:

Two sets of substitution lines were developed by crossing individual monosomic lines of Chinese Spring (recipient) with scab resistant cultivar Sumai 3 (donor). The disomic substitution lines were separated from selfed BC4F2 plants. Chromosome specific SSR markers were used to verify substitution lines for specific chromosomes. Based on these markers chromosome substitutions occurred in 36 lines. Six lines were segregating for the alleles from the two parents or were homozygous for the allele from Chinese Spring. The objective was to use the substitution lines to evaluate the effect of individual Sumai 3 chromosomes on Type II scab resistance and deoxynivalenol (DON) accumulation in kernels. Significant differences in Type II resistance and DON levels among substitution lines were detected in greenhouse experiments. Positive chromosome substitution effects on Type II resistance were found on chromosomes 2B, 3B, 6B, and 7A from Sumai 3. Chromosomes 3B and 7A also reduced DON accumulation, while chromosomes 1B, 2D, and 4D from Sumai 3 increased DON concentration. Chromosome 7A from Sumai 3 had the largest effect on resistance to scab spread and DON accumulation.

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