0203-HI-061 Scab resistant gene deployment into wheat lines via marker assisted selection.

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PROJECT ABSTRACT
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A *Fusarium* head blight resistant quantitative trait loci (QTL) on the 3BS chromosome of *Triticum aestevium* Chinese varieties Sumai 3 ans Ning 7840 has been previously identified. The objective of this project is to utilize microsatellite markers linked to the *Fusarium* head blight resistant QTL to rapidly deploy this QTL into wheat breeding populations. Screening of U.S. winter 179 wheat lines has indicated that only 4.4% contain both *Xgwm493* and *Xgwm533* Sumai 3 alleles at the marker loci associated with the resistance QTL. Microsatellite *Xgwm493* and *Xgwm533* Sumai 3 alleles are associated with 41.6% of the resistance in Sumai3. We propose to screen approximately 2,100 wheat lines from crosses involving Sumai3 derived *Fusarium* head blight resistance. Currently, these wheat lines are included in four soft red winter wheat breeding programs with goals of developing *Fusarium* head blight resistant varieties. Collaborating breeding programs will provide seed of lines and/or populations to the USDA-ARS wheat genotyping laboratory at Manhattan, KS for DNA isolation and marker analysis. Lines will be screened with the microsatellite markers wgm493 and wgm533 for the Sumai3 alleles associated with resistance. Data will then be distributed to the wheat breeding programs. The lines containing the Sumai3 alleles will be advanced in the breeding programs and screened for *Fusarium* head blight resistance in filed nurseries. Developing the lines by traditional breeding methods alone would require disease inoculation and screening for each generation of selection. Utilization of marker assisted selection for screening in each generation of selection is a much more rapid screening method; therefore, resulting in a more expedient method of deploying *Fusarium* head blight resistance into wheat breeding populations and lines. The overall achievement being the production of commercially available wheat varieties resistance to *Fusarium* head blight in a shorter time frame than traditional breeding methods.