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Project Title: Effects of Spring Wheat Flowering Phenology on Fusarium Head Blight Resistance.

PROJECT 1 ABSTRACT

(1 Page Limit)

Integrated management of Fusarium head blight incorporates host considerations (genetic resistance) and pathogen management (fungicide or other targeted control) along with an understanding of how these factors interact in the environment. In general, there is small overlap in susceptibility period of the host and allowable period in which to apply targeted controls. Several environmental models are currently employed for FHB management. The wheat scab risk models developed through collaboration of scientists in several states working under the USWBSI umbrella are applied widely across the U.S. (www.wheatcab.psu.edu). The application of these models requires the user to input a flowering date to obtain a relative risk assessment which is delivered graphically. These models have been developed systematically using disease and environmental data from numerous sources over a number of years. However, the use of a single flowering date in the risk estimation modeling is highly artificial when compared to the phenology and development of wheat plants. Through the inclusion of additional host factors into the FHB risk assessment models, scientists should be able to more accurately model risk under a broader range of host conditions and improve the utility of models. The research proposed will create thermal-time and genotype based models of spring wheat flowering phenology which could be incorporated into mechanistic models of FHB risk. Additionally, genotypic variation in flowering period will be examined on a small scale and provide a basis for further investigation into genetic mechanisms for manipulation of FHB risk within a host populations as the risk is influenced by flowering period.