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**Research Area:** EEDF          **Duration of Award:** 1 Year

**Project Title:** FHB Forecasting and Model Validation for Spring and Winter Wheat in South Dakota.

## PROJECT 2 ABSTRACT
(1 Page Limit)

Fusarium head blight (FHB) of wheat continues to occur at epidemic levels in locations throughout the Northern Great Plains and the Midwest United States. Forecasting models and delivery systems have been developed through the USWBSI. The overall success of these systems is still under scrutiny but each has had successes and failures on a local basis. There is a need to further enhance the effectiveness of FHB forecasting for spring and winter wheat grown in the region. Research is proposed that will aid in the development and validation of accurate FHB risk advisory/forecasting model systems. Uniform protocols conducted in five states (SD, ND, IN, OH, and PA) will be directed at one multi-component objective: determining the effect of inoculum abundance, host resistance, fungicide, and weather on Fusarium head blight, with a regional emphasis on spring wheat. A second objective is to investigate the interaction between local inoculum abundance and environment on the disease severity in locally adapted winter wheat. An additional objective is to collect data for continued development and validation of FHB forecast models for both wheat classes grown in SD.

Plots will be established to investigate the relationship between environment with low and high levels of inoculum from crop residues on the development of FHB under field environments. Additional factors to be examined for spring wheat include: fungicide vs. no fungicide and susceptible vs. moderately resistant cultivar. The hypothesis is that each of these factors will interact with weather to influence the severity of FHB and that the disease limiting effects of low inoculum, fungicide application, and/or resistant cultivar will be mediated by a highly conducive disease environment, or will be more evident when environments are less favorable for disease. Additional research is proposed to investigate the accuracy and effectiveness of current wheat FHB models for both winter and spring wheat in South Dakota. Disease, inoculum, and weather data will be collected at numerous sites. This data set will be compared to predictive model output for the same region. The results will be utilized to validate, or to highlight weaknesses of current models.