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Project Title: Improved and Continued Deployment of Prediction Models for Fusarium Head Blight.

PROJECT 1 ABSTRACT

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This grant submission proposes to continue a Fusarium head blight forecasting system in 23 states, among the largest computerized disease forecasts ever attempted. The goal of this forecasting system is to provide a timely estimate of disease risk that can be used to make management and grain marketing decisions. The history of this forecasting system shows an orderly progression through iterative model improvement; an expansion to a regional system; and now, a new developmental thrust that likely will contribute to future system enhancements. The current state of affairs calls for multidisciplinary team to manage the daily affairs and research associated with the development, and deployment for the forecasting system.

The forecasting system currently consists of disease prediction models with improved accuracy over the first generation of models (accuracy near 80% on test data); a data stream from the Automated Surface Observation System, which is combined with the Rapid Update Cycle and Multi-sensor Precipitation estimates of rainfall to generate predictions for disease risk at a 20km resolution throughout the entire 23-state region; and finally, a web interface that has been thoroughly tested know as the Fusarium Head Blight Prediction Center. These components should continue to provide a reliable FHB risk assessment system in 2006 and beyond.

Certain system improvements are proposed this year to enhance functionality and usability of the forecasting system. New features under development include an increase in resolution of risk maps from 20km to 12km, the integration of risk maps to better summarize disease risk over multiple days, and the use of weather forecasts that may enhance the ability of the system to provide early warnings of disease epidemics. The next generation of disease models will continue to be refined and incorporated in a measured fashion.

Finally, the accuracy of the deployed system in the diverse cropping systems of six states will continue to be assessed. This analysis includes detailed evaluation of the disease models and the weather variables used to drive the system. This proposal addresses the USWBSI goal of implementation of a disease forecasting system and partially fulfills the overarching mission of providing wheat and barley growers with appropriate tools to manage Fusarium head blight.