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**Project ID:** 0506-DE-075

**FY04 ARS Agreement #:** 59-0790-1-068

**Research Area:** EDM

**Duration of Award:** 1 Year

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

PROJECT 2 ABSTRACT  
(1 Page Limit)

This grant submission proposes to continue a Fusarium head blight forecasting system in 23 states, the largest computerized disease forecaster 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 a project assistant to manage the daily affairs associated with research, development, and deployment.

The forecasting system now consists of disease prediction models with improved accuracy over the first generation of models (about 80% accuracy on test data); a data stream from the Automated Surface Observation System, which is interpolated hourly by the Rapid Update Cycle model to a 20 km resolution throughout the entire 23-state region; and finally, a web interface that has been thoroughly tested. These components should continue to provide a reliable FHB risk assessment system in 2005 and beyond.

Certain system improvements are proposed this year to enhance functionality and usability. New features under development include a feedback subsystem for user-cooperators who would be invited to share their latest observations about crop conditions. A forms-based interface will be programmed and proofed by a small group of state scientists and extension specialists prior to a public unveiling. In addition, weather forecasts up to seven days into the future will be incorporated into an FHB risk assessment that will be separate and distinct from the current real-time risk assessment. Models of risk assessment continue to be refined and will be incorporated in a measured fashion.

Finally, the accuracy of the deployed system in the diverse cropping systems of several states (up to 10) will continue to be assessed. A separate evaluation of environmental data quality is underway and should conclude during this grant period.

Therefore, 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 FHB.