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**Project ID: FY10-BA-002**

**FY10 ARS Agreement #: 59-0206-9-060**

**Research Category: BAR-CP**

**Duration of Award: 1 Year**

**Project Title: Validation and Refinement of DON Models in Barley for the Northern Great Plains.**

### **PROJECT 1 ABSTRACT**

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Research is proposed that investigates the influence of environmental conditions on Fusarium head blight (FHB) severity and mycotoxin contamination in barley. Currently, no predictive systems are in place for barley and the need exists in many locations in the U.S. With the limited options available for chemical control of FHB and the low level of resistance in adapted varieties, additional management tools are needed. Development of predictive modeling systems for FHB and deoxynivalenol (DON) will provide producers with a support tool for fungicide control or grain marketing management decisions.

The ultimate goal is the development of a web-based risk advisory system that utilizes weather in the forecasting of FHB disease severity and DON accumulation for barley. Specific project objectives for this period of work are to continue: 1) contributing to the development of an experimental database containing information on cultural practices, weather, and resulting field disease and mycotoxin levels for barley and 2) model development and refinement for DON accumulation in barley.

Objective 1 will be addressed by establishing multiple (12+) spring barley sites throughout ND and SD. These will be monitored for disease development, plant growth stage, toxin accumulation, and environmental parameters. These locations will contribute to a growing database of information necessary for model development. For objective 2, data from these, and locations from previous years, will be analyzed and screened by scientists at SDSU for strong relationships between environmental variables and DON levels. Predictive models will be refined based on these variables and validated during subsequent growing seasons.