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Project Title: Environmental Factors Influencing FHB and DON Accumulation in Malting Barley.

PROJECT 3 ABSTRACT

(1 Page Limit)

Research is proposed that continues to investigate 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. This project is part of a larger collaborative effort attempting to model these two factors for wheat and barley in the United States. Specific project objectives for this period of work are to continue: 1) the development of an experimental database containing information on cultural practices, weather, and resulting field disease and mycotoxin levels for barley and 2) identifying variables that are predictive of FHB and DON accumulation in barley in order to establish models and risk advisory systems for management of FHB.

Objective 1 will be addressed by establishing multiple (12+) spring barley sites throughout ND, SD, and MN. 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 by scientists at SDSU for strong relationships between environmental variables and final disease and DON levels.

The objectives of this proposal are directly relevant to the goals and priorities of the USWBSI, and specifically the EEDF RAC, in that the models to be developed out of this effort are intended to be utilized in the integrated management of both disease and DON contamination for barley. Their availability to producers will help reduce the impact of this disease further.