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Project Title: FHB forecasting and environmental effects on inoculum in Eastern South Dakota.

PROJECT 1 ABSTRACT
(1 Page Limit)

The overall goals of the proposed research are: to continue epidemiological studies on Fusarium head blight (FHB) of spring wheat including inoculum and environmental monitoring in relation to disease levels in Eastern South Dakota as well as contribute to cooperative epidemiological studies across the wheat growing regions of the US; to investigate biological and ecological parameters of FHB inoculum, especially perithecial development in situ; and to elucidate and refine FHB risk assessment models for spring wheat in Eastern SD.

The project will consist of several component objectives: 1) to study the influence of crop residues and weather on FHB inoculum and disease; 2) to develop risk assessment and forecast models pertinent to spring wheat disease management; and 3) to examine reproductive (perithecial) development under controlled and field conditions using local isolates of the causal agent. Objective 1 will be achieved using field experiments conducted in collaboration with researchers at Agriculture and Agri-food Canada, North Dakota State University, Ohio State University, Pennsylvania State University, and Purdue University. The study should provide information concerning FHB inoculum source/load and disease development over a range of environments in both spring and winter wheat crops. Objective 2 will be achieved through the monitoring of inoculum levels, weather and disease over several locations in the spring wheat growing areas of South Dakota. Data from objectives 1 and 2 will be analyzed and incorporated into numerous risk-assessment/disease forecasting models. The result should be an effective risk advisory for local producers and managers as well as significant contribution to the national (or regional) forecasting efforts. Objective 3 will be achieved using controlled environment experiments as well as field studies. The experiments should contribute further understanding of the pathogen biology and ecology.