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**Project ID: FY11-IM-013**

**FY10 ARS Agreement #: 59-0206-9-050**

**Research Category: MGMT**

**Duration of Award: 1 Year**

**Project Title: Integrated Management of FHB and DON in Wheat and Barley for SD.**

### **PROJECT 1 ABSTRACT**

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Field experiments will be conducted to investigate the effects of variety resistance and fungicide application on FHB and DON accumulation. Three major crops (hard red spring wheat, hard red/white winter wheat and spring barley) will be evaluated in separate experiments in South Dakota. Spring crops will be evaluated at two locations while winter wheat will be evaluated at Brookings location only. The Brookings, SD location has been planted to winter wheat in the fall of 2010 and will be seeded in the spring to HRSW and barley. The location has mist irrigation available and our laboratory produces both conidial and grain-spawn inoculum for this and other research trials. Those efforts can be increased to accommodate the research proposed. A number of additional research locations in Eastern SD are available to the program however a second misted nursery is being established at a new research site and will be the favored location for the additional trials of spring wheat and barley. At each trial location, differential varieties of each crop will be selected to provide the range of host resistance desired in the protocol. Three genotypes of each main crop will be used as indicated. Whole plot treatments include: 1) foliar fungicide applied at stage Feekes 10.51 (Prosaro 6.5 fl oz/A + 0.125% Induce); and 2) untreated. Sub-plot will be varieties as listed in the project description. Varieties used possess different levels of resistance to FHB, and will be randomly assigned within each whole-plot. A single fungicide application will be made as indicated using a sprayer equipped with paired Twinjet nozzles, mounted at an angle (30° from the horizontal) forward and backward and calibrated to deliver at a rate of 10 to 20 gallons per acre. Disease and deoxynivalenol assessments will be conducted and yield and test weight will also be collected. Weather variables will be monitored using suitable datalogging equipment at or near each study site.