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Project Title: Integrated Management of Fusarium Head Blight and Deoxynivalenol across Multiple Locations and Small Grain Classes.

PROJECT 2 ABSTRACT

(1 Page Limit)

The severity of Fusarium head blight (FHB) epidemics in the United States has caused enormous yield and quality losses in both wheat and barley over the last decade. The development of this disease is dependent on host genetics, a range of favorable environmental conditions, the prevalence of the causal fungus and the survival and spread of the causal fungus. Control of this disease has been difficult because of the complex nature of the host/pathogen interaction. Management of FHB and the associated mycotoxin DON have not been achieved by any single control measure. An integrated approach is critical to attaining the best possible control of FHB in any given environment.

As a result of a workshop sponsored by the Chemical, Biological and Cultural Control Research Area in 2006, a protocol for a multi-state project focusing on integrated management strategies for FHB was developed. The research portion of this project would involve multi-state trials evaluating crop sequence, variety selection and fungicide application as an integrated management program for FHB. Timely dissemination of the research results is also a priority of this project.

The University of Missouri cooperated in this multi-state project following the protocol developed by a subcommittee from the workshop participants during the 2006-2007 season. Although the 2007 season was not particularly conducive for the development of FHB or DON in Missouri wheat, data from the Missouri trial did indicate a significant difference in DON levels with varieties and with crop sequence. As expected more susceptible varieties tended to have higher levels of scabby kernels and higher DON levels than varieties with more resistance to FHB. However, all varieties had lower DON levels when planted in soybean residue rather than corn residue. Fungicide application did not seem to have an impact on yield or DON level regardless of variety or crop sequence. The 2007-2008 season was quite favorable for the development of FHB. Differences between crop sequences in both yield and DON levels were significant. Fungicide applications also improved yield under both crop sequences. Again, the 2008-2009 season was quite favorable for the development of FHB and DON. Differences between crop sequences and varieties in both yield and DON levels were significant. Fungicide applications also improved yields on susceptible varieties and in the corn crop sequence. The current proposal is for a fourth year of the trial following the same protocol.