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ARS Agreement #: New Agreement (Expiring Agreement # 59-0206-9-078)

Research Category: MGMT

Duration of Award: 1 Year

Project Title: Evaluation of Integrated Management Strategies for Fusarium Head Blight.

PROJECT 1 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 through 2011-2012 seasons. Although levels of Fusarium head blight varied from season to season depending on environmental conditions, 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 applications also improved yield under both crop sequences when disease pressure was high.

The current proposal is continue the concept of integrated management strategies for Fusarium head blight with emphasis on fungicide timing. Rather than fungicide application at a single timing, fungicide applications will be made at 50% anthesis, and two, four and six days after anthesis. The intent is to determine the degree to which genotype resistance and fungicide application timing interact to reduce Fusarium head blight and DON production.

This proposal is directly in line with the priorities and goals of the FHB Management Research Area, i.e. Goal #1 "Validate integrated management strategies for FHB and DON".