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FY07 ARS Agreement #: 59-0790-7-078

Research Category: FSTU

Duration of Award: 1 Year

Project Title: Diagnostic Testing Services for Deoxynivalenol in the Eastern United States.

PROJECT 1 ABSTRACT

(1 Page Limit)

Fusarium head blight (FHB), caused by the fungal pathogen *Gibberella zeae* (*Gz*), is a devastating disease of wheat and barley in the U.S. Grain infected with *Gz* is often contaminated with the trichothecene mycotoxin deoxynivalenol (DON), threatening the health of humans and domestic animals. Concerns about DON continue to mount, and there is a growing need to develop and expand diagnostic laboratories for mycotoxins throughout the U.S. Currently, there are no regional diagnostic testing services for DON in the eastern U.S. FHB researchers in the eastern U.S. have often relied on diagnostic labs in the Midwest to provide analytical services for DON. Unfortunately, these labs have been unable to process a large number of DON samples from these regions. Schmale recently acquired a new GC/MS and a new LC/MS to provide mycotoxin testing services for DON. In 2006 and 2007, Schmale processed more than 4,000 FHB samples for trichothecene mycotoxins in seven states, and many of these samples have been associated with USWBSI research projects. The ultimate goal of our research is to reduce DON contamination in wheat and barley. In this one-year USWBSI project, we propose to expand the mycotoxin testing capacity of the USWBSI and provide diagnostic testing services for USWBSI-supported research projects in the eastern U.S. The specific objectives of the proposed research are to: (1) provide analytical services necessary to develop new cultivars of wheat and barley with reduced potential for DON contamination, (2) facilitate DON testing that will improve chemical and cultural practices necessary to reduce DON contamination in wheat and barley, and (3) determine the effects of grain particle size on DON extraction efficiency and recovery. Schmale oversees two hard-funded technicians that manage both the GC/MS and LC/MS, has participated in teleconferences with current USWBSI diagnostic labs, has made preparations for receiving periodic control samples from these labs for DON testing, and is committed to the long-term management of a successful and productive mycotoxin testing lab for the USWBSI. This project will provide DON testing services for up to 6,000 FHB samples from investigators in three states. The project directly addresses the FY08 FSTU priority to 'provide analytical support for DON/trichothecene quantification for the Initiative's stakeholders'. Schmale will meet with stakeholders in VA to discuss new diagnostic technologies for DON and related management strategies for FHB, an effort aligned with the FY08 FSTU priority to 'provide requisite information on DON/trichothecene safety issues to producers, millers, researchers, risk assessors, and regulators'. Results from this project will help leverage future research support from agencies such as NSF, and USDA-CSREES. New analytical technologies for detecting and quantifying mycotoxins in food and feed will be developed and implemented; FY08 priorities for funding programs in these agencies.