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Project ID: 0506-DO-026

FY04 ARS Agreement #: 59-0790-4-129

Research Area: FSTU

Duration of Award: 1 Year

Project Title: Diagnostic Services for DON.

PROJECT 1 ABSTRACT
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The goal of this project is to provide rapid, cost-effective and accurate mycotoxin analyses, especially for deoxynivalenol (DON), for Fusarium Head Blight (scab) research projects conducted in several departments and experiment stations of the University of Minnesota and the Cereal Disease Laboratory of USDA/ARS. Mycotoxin analyses would also be available to researchers outside Minnesota as needed. The analytical data provided by the service is necessary for breeding (traditional and molecular) projects aimed at the development of wheat and barley germplasm with improved resistance to the disease. The service will also be used for epidemiology, genetics and molecular studies of the host, pathogen, and host-pathogen interaction aimed at improving our understanding of the biology of the disease as well as the development of disease control practices. A total of about 11,000 samples will be analyzed for DON and other mycotoxins such as 3-acetyl-DON (3-ADON), 15-acetyl-DON (15-ADON), nivalenol (NIV) and zearalenone (Zea) by the project in the 2005/2006-crop year (from 05/01/2005 to 4/30/2006). FHB researchers will not be charged for the analysis.

The project will use gas chromatography/mass spectrometry (GC/MS) to provide quick and accurate measurement of DON and related mycotoxins in samples of harvested grains as well as individual kernels, spikelets, heads, small leaf and stem fragments at different disease development stages. The single kernel analysis is being used to determine toxin development in the early stages of infection and in the understanding of resistance mechanisms in barley.