

**USDA-ARS/  
U.S. Wheat and Barley Scab Initiative  
FY05 Final Performance Report (approx. May 05 – April 06)  
July 14, 2006**

**Cover Page**

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<b>Fiscal Year:</b>	<b>2005</b>
<b>FY05 ARS Agreement ID:</b>	<b>59-0790-4-095</b>
<b>Agreement Title:</b>	<b>Diagnostic Services for Vomitoxin (DON) in Wheat.</b>
<b>FY05 ARS Award Amount:</b>	<b>\$ 86,561</b>

**USWBSI Individual Project(s)**

<b>USWBSI Research Area*</b>	<b>Project Title</b>	<b>ARS Adjusted Award Amount</b>
FSTU	Diagnostic Services for Vomitoxin (DON) in Wheat.	\$ 86,561
	<b>Total Award Amount</b>	<b>\$ 86,561</b>

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Principal Investigator

\_\_\_\_\_  
Date

\* BIO – Biotechnology  
CBC – Chemical & Biological Control  
EDM – Epidemiology & Disease Management  
FSTU – Food Safety, Toxicology, & Utilization  
GIE – Germplasm Introduction & Enhancement  
VDUN – Variety Development & Uniform Nurseries

**Project 1:** *Diagnostic Services for Vomitoxin (DON) in Wheat.*

**1. What major problem or issue is being resolved and how are you resolving it?**

*Fusarium* Head Blight (FHB) or ‘scab’ can become a major disease of numerous cereal crops. When environmental conditions of moisture and temperature are optimum for *Fusarium* mold growth and the mold is stressed, mycotoxins or secondary metabolites including deoxynivalenol (DON) or vomitoxin are produced. High vomitoxin concentrations in wheat and barley may exceed recommended guidelines for use and render the cereals as unacceptable for processing into foods or animal feeds.

The primary focus of the U.S. Wheat and Barley Scab Initiative (USWBSI) is to mitigate FHB through various methods. This grant provided vomitoxin analyses of samples for research scientists involved in projects for the USWBSI.

**2. List the most important accomplishment and its impact (how is it being used?).**

**Complete all three sections (repeat sections for each major accomplishment):**

**Accomplishment:** The USWBSI research scientists benefit directly from analytical identification and quantitation of vomitoxin or deoxynivalenol (DON) in their research cereal samples. Knowledge of mycotoxins, specifically vomitoxin, in research plants or cereal grains provides important data for controlling *Fusarium* growth and mycotoxin production in their specific research projects that will ultimately benefit the plant producers and consumers.

The laboratory completed vomitoxin analyses on close to 7000 (n= 6819) ground feed samples. The samples were submitted from 21 scientists in six states, including North and South Dakota, Nebraska, Kansas, Missouri, and Arkansas. The laboratory also provided a multiple *Fusarium* mycotoxin screen on requested samples and used the screen for quality assessment on control pool cereal samples. The laboratory participated in the check sample system to compare analytical data from vomitoxin analyses with laboratories in Michigan, North Dakota, and Minnesota.

**Impact**

The basic service of vomitoxin determination in wheat samples directly benefits USWBSI plant scientists by providing data important in evaluating mitigation methods for *Fusarium* head blight. This information is transferred to plant breeders and producers for cultivation of cereals grains that are potentially more resistant to *Fusarium* and not contaminated with vomitoxin.

**As a result of that accomplishment, what does your particular clientele, the scientific community, and agriculture as a whole have now that they didn’t have before?:**

Knowledge of vomitoxin production in research plots of plant scientists is important for evaluation of methods aimed at mitigating FHB and vomitoxin in cereal crops. This information is a basic component for USWBSI research that provides scientists, breeders and producers with end-result data on the effectiveness of reducing FHB in cereal cultivars.

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**Include below a list of the publications, presentations, peer-reviewed articles, and non-peer reviewed articles written about your work that resulted from all of the projects included in the grant. Please reference each item using an accepted journal format. If you need more space, continue the list on the next page.**

(No direct publications by this PI, but data used by other USWBSI researchers)