USDA-ARS / USWBSI
FY04 Final Performance Report
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Cover Page

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Year:	**FY2004** (approx. May 04 – April 05)
FY04 ARS Agreement ID:	**59-0790-4-095**
FY04 ARS Agreement Title:	**Diagnostic Services for Vomitoxin (DON) in Wheat.**
FY04 ARS Award Amount:	**$ 82,566**

USWBSI Individual Project(s)

USWBSI Research Area*	Project Title	ARS Adjusted Award Amount
FSTU	Diagnostic Services for Vomitoxin (DON) in Wheat.	$ 82,566
	Total ARS Award Amount	**$ 82,566**

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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' is an important fungal disease of cereal crops, including wheat and barley. Under certain environmental conditions and stress, the *Fusarium* mold or fungus can produce mycotoxins, including deoxynivalenol (DON) or vomitoxin, in cereals. Guidelines in the usage of cereals contaminated with vomitoxin exist for animal feeds and human foods. Elevated vomitoxin levels in wheat and barley may render the cereals as unacceptable for processing into foods or feeds.

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

2. What were the most significant accomplishments?

The laboratory completed vomitoxin analyses on over 7000 (n= 7256) ground feed samples. The samples were submitted from 26 scientists in nine states, including North and South Dakota, Nebraska, Kansas, Montana, Colorado, Missouri, Wisconsin, and Arkansas. The laboratory also provides a multiple *Fusarium* mycotoxin screen for requested samples and uses the screen in 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.

<u>Accomplishments</u>

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

The basic service of vomitoxin analysis is necessary for the plant researcher trying to control *Fusarium* head blight and vomitoxin contamination of grains. This knowledge of vomitoxin production in research plots of plant scientists is important in the evaluation of methods aimed at mitigating FHB and vomitoxin in cereal crops, whether the research deals with the effectiveness of fungicides or the resistance of cereal cultivars.

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 carried on through the USWBSI plant scientists' research to ultimately provide the plant breeders and consumers with cereals grains that are potentially more resistant to Fusarium and not contaminated with vomitoxin.

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 you grant. Please reference each item using an accepted journal format. If you need more space, continue the list on the next page.