

**USDA-ARS/
U.S. Wheat and Barley Scab Initiative
FY06 Final Performance Report (approx. May 06 – April 07)
July 16, 2007**

Cover Page

| | |
|----------------------------------|---|
| PI: | Michelle Mostrom |
| Institution: | North Dakota State University |
| Address: | Dept. of Veterinary Diagnostic Services P.O. Box 5406 1523 Centennial Blvd. Fargo, ND 58105-5406 |
| E-mail: | Michelle.Mostrom@ndsu.nodak.edu |
| Phone: | 701-231-7529 |
| Fax: | 701-231-7514 |
| Fiscal Year: | 2006 |
| USDA-ARS Agreement ID: | 59-0790-4-095 |
| USDA-ARS Agreement Title: | Diagnostic Services for Vomitoxin (DON) in Wheat. |
| FY06 ARS Award Amount: | \$ 68,775 |

USWBSI Individual Project(s)

| USWBSI Research Area * | Project Title | ARS Award Amount |
|-------------------------------|---|-------------------------|
| FSTU-S | Diagnostic Services for Vomitoxin (DON) in Wheat. | \$ 68,775 |
| | Total Award Amount | \$ 68,775 |

Principal Investigator

Date

* CBCC – Chemical, Biological & Cultural Control
EEDF – Etiology, Epidemiology & Disease Forecasting
FSTU – Food Safety, Toxicology, & Utilization of Mycotoxin-contaminated Grain
GET – Genetic Engineering & Transformation
HGR – Host Genetics Resources
HGG – Host Genetics & Genomics
PGG – Pathogen Genetics & Genomics
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 potentially be a financially devastating disease of cereal crops. Under environmental conditions of excessive moisture and alternating warm/cool temperature, *Fusarium* mold can grow and produce mycotoxins or secondary metabolites, including deoxynivalenol (DON) or vomitoxin. High DON concentrations in wheat and barley can exceed recommended guidelines for grain use and render the cereals as unacceptable for processing into foods or animal feeds.

The focus of the U.S. Wheat and Barley Scab Initiative (USWBSI) is to reduce FHB in wheat and barley. This grant provided DON 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 directly benefit from analytical identification and quantitation of DON in their research cereal samples. Knowledge of mycotoxins, specifically vomitoxin, in research plants or cereal grains yields important data for controlling *Fusarium* growth and mycotoxin production in specific research projects that will ultimately benefit the plant producers and consumers.

The laboratory completed vomitoxin analyses on ~ 7600 ground feed samples, plus an additional 500 samples were analyzed for DON in related USWBSI projects. The samples were submitted from 18 scientists in seven states, including North and South Dakota, Nebraska, Kansas, Missouri, Virginia, and Montana. The laboratory also provided multiple *Fusarium* mycotoxin screen on ~100 grain 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:

Vomitoxin or DON analysis in wheat samples is a basic service to USWBSI plant scientists and provides data used for 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 DON.

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

FY06 (approx. May 06 – April 07)
PI: Mostrom, Michelle
USDA-ARS Agreement #: 59-0790-4-095

FY06 Final Performance Report

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 the PI, but data used by other USWBSI researchers.