

**USDA-ARS / USWBSI
FY04 Final Performance Report
July 15, 2005**

Cover Page

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Year:	FY2004 (approx. May 04 – April 05)
FY04 ARS Agreement ID:	59-0790-4-129
FY04 ARS Agreement Title:	Diagnostic Services for DON.
FY04 ARS Award Amount:	\$ 84,729

USWBSI Individual Project(s)

USWBSI Research Area*	Project Title	ARS Adjusted Award Amount
FSTU	Diagnostic Services for DON.	\$ 84,729
	Total ARS Award Amount	\$ 84,729

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 DON.*

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

The objective of this project is to provide mycotoxin diagnostic services, especially for deoxynivalenol (DON), for Fusarium Head Blight (scab) research projects conducted mainly in Minnesota, including projects from several departments and experiment stations of the University of Minnesota and the USDA Cereal Disease Laboratory.

From 05/01/2003 to 04/30/04, the project analyzed 10,101 samples submitted by 13 scab research projects. They included 5,802 regular mature grain samples (4-20 g) and 4,299 small size samples such as grain samples (< 4 g), single kernels, single spikelets, single heads, small stems, leaf fragments and fungal cultures. The target toxins included DON, 15-Acetyl-DON (15-ADON), 3-Acetyl-DON (3-ADON), nivalenol (NIV), and zearalenone (Zea).

2. What were the most significant accomplishments?

The “Diagnostic Services for DON” project provided mycotoxin analyses to eight Fusarium Head Blight research groups in several departments and experimental stations of the University of Minnesota and in the Cereal Disease Laboratory of USDA/ARS. The project also provided mycotoxin analyses to scientists in Kansas, Michigan and Indiana States. The mycotoxins analyzed included deoxynivalenol (DON) as well as 3-acetyl deoxynivalenol (3-ADON), 15-acetyldeoxynivalenol (15-ADON), nivalenol (NIV), and zearalenone (ZON). From May, 2004 to April, 2005, the project analyzed 10,747 research samples including mature barley and wheat samples, green house samples such as single head, single spikelet and single kernels, and small plant fragments such as wheat nodes.

Impact:

By analyzing mycotoxins, the project provided support to barley and wheat breeding programs to develop resistant varieties, and to researches aiming at developing effective and economical sound disease controls, and provided a tool to study disease mechanisms.

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.

Smith, K. P.; Evans, C. K.; Dill-Macky, R.; Gustus, C.; Xie, W.; Dong, Y. “Host Genetic Effect on Deoxynivalenol Accumulation in Fusarium Head Blight of Barley” *Phytopathology*, **2004**, 94(7), 766-771.