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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Fiscal Year:	**2005**
FY05 ARS Agreement ID:	**59-0790-4-129**
Agreement Title:	**Diagnostic Services for DON.**
FY05 ARS Award Amount:	**$ 85,099**

USWBSI Individual Project(s)

USWBSI Research Area*	Project Title	ARS Adjusted Award Amount
FSTU	Diagnostic Services for DON.	$ 85,099
	Total Award Amount	**$ 85,099**

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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 DON.*

1. **What major problem or issue is being resolved and how are you resolving it?**
   Our laboratory provides mycotoxin diagnostic services for Fusarium Head Blight (scab) research projects conducted mainly in Minnesota as well as in other states as needed.

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: From May 2005 to April 2006, the Mycotoxin Diagnostic Laboratory at the University of Minnesota analyzed 11,608 samples, which is about 5.5% more than the estimate presented in the proposal. The samples were submitted by 14 scab research groups from 6 states including Minnesota, Michigan, Virginia, Indiana, Louisiana and Utah. They included 8,364 regular mature grain samples (6-100 g) and 3,244 small size samples such as single kernels, single spikelets, single heads, small stems, leaf fragments and fungal cultures. The target toxins included DON, 15-Acetyl-DON, 3-Acetyl-DON, nivalenol and zearalenone.

   Impact: By analyzing mycotoxins, the project provided support to barley and wheat breeding programs to develop resistant varieties, and to researchers to study disease mechanisms and to develop effective and economical chemical and biological disease controls.

   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?:

   Mycotoxin data provided to scab researchers by our laboratory give them a means to evaluate the effectiveness of their efforts in fighting Fusarium Head Bligh.

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.

Dong, Yanhong; Steffenson, B. J.; Mirocha, C. J. "Analysis of Ergosterol in Single Kernel and Ground Grain by Gas Chromatography-Mass Spectrometry" *J. Agric. Food Chem.,* **2006,** 54, 4121-4125.

Chen, J.; Griffey, C. A.; Saghai Maroof, M. A.; Stomberg, E. L.; Biyashev, R. M.; Zhao, W.; Chappell, M. R.; Pridgen, T. H.; Dong, Yanhong; Zeng, Z. "Validation of Two Major Quatitative Trait Loci for Fusarium Heat Blight Resistance in Chinese Wheat Line W14" *Plant Breeding,* **2006,** 125, 99-101**.**

Fuentes, R. G.; Michelson, H. R.; Busch, R. H.; Dill-Macky, R.; Evans, C. K.; Thompson, W. G.; Wiersma, J. V.; Xie, W.; Dong, Yanhong; Anderson, J. A. "Resource Allocation and Cultivar Stability in Breeding for Fusarium Head Blight Resistance in Spring Wheat" *Crop Sci.,* **2005,** 45, 1965-1972.

Jiang, Guo-Liang; Dong, Yanhong; Siler, Lee; Ward, R. W. "Resistance to Fungal Spread and DON Accumulation of *Fusarium graminearum* in Wheat" *Proceedings of the 2005 National Fusarium Head Blight Forum,* **2005,** 44.

Yu, J.; Bai, G.; Zhou, W.; Kolb, K.; Dong, Yanhong; Hart, P. "Mapping QTLs for Different Types of Resistance to Fusarium Head Blight in Wangshuibai" *Proceedings of the 2005 National Fusarium Head Blight Forum*, **2005,** 96.