

**USDA-ARS/
U.S. Wheat and Barley Scab Initiative
FY09 Final Performance Report
July 15, 2010**

Cover Page

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Fiscal Year:	2009
USDA-ARS Agreement ID:	59-0790-6-065
USDA-ARS Agreement Title:	Integrated Management of FHB in Spring and Winter Wheat in North Dakota.
FY09- USDA-ARS Award Amount:	\$ 21,568

USWBSI Individual Project(s)

USWBSI Research Category*	Project Title	ARS Adjusted Award Amount
MGMT	Developing and Disseminating Integrated Management Practices for Control of FHB in Wheat and Barley.	\$ 17,693
HWW-CP	Screening for FHB Resistance in the NHWWSN.	\$ 3,875
	Total Award Amount	\$ 21,568

Principal Investigator

Date

* MGMT – FHB Management
 FSTU – Food Safety, Toxicology, & Utilization of Mycotoxin-contaminated Grain
 GDER – Gene Discovery & Engineering Resistance
 PBG – Pathogen Biology & Genetics
 BAR-CP – Barley Coordinated Project
 DUR-CP – Durum Coordinated Project
 HWW-CP – Hard Winter Wheat Coordinated Project
 VDHR – Variety Development & Uniform Nurseries – Sub categories are below:
 SPR – Spring Wheat Region
 NWW – Northern Winter Wheat Region
 SWW – Southern Sinter Wheat Region

Project 1: *Developing and Disseminating Integrated Management Practices for Control of FHB in Wheat and Barley.*

1. What major problem or issue is being resolved relevant to Fusarium head blight (scab) and how are you resolving it?

In this project we are addressing two issues. The first is to determine if different spatial arrangements (row spacing and plant densities) of barley or wheat can impact the development of FHB. In these trials, barley and wheat varieties with differing levels of scab resistance are grown in different row spacings and plant populations. Half the plots are treated with fungicide at the appropriate time for FHB control.

The second issue we are addressing is that of the adoption of best FHB management practices by producers. We conducted a formal survey of nearly 5,000 farmers, requesting information on their current FHB management practices, what sources of information they use to learn about FHB control, and other associated demographic data that will help us understand who is adopting what technology and how they learn about it.

2. List the most important accomplishment and its impact (i.e. how is it being used) to minimize the threat of Fusarium head blight or to reduce mycotoxins. Complete both sections (repeat sections for each major accomplishment):

Accomplishment:

Disease pressure was very low again this year, so we did not learn much about disease development with differing spatial arrangements. With regards to the survey, we were able to obtain more than 1,000 completed questionnaires from the more than 5,000 mailed. From these questionnaires, we learned that the adoption of resistant varieties and the application of fungicide for FHB control is quite high. Furthermore, the most important sources of information for farmers are: extension meetings, extension publications, and consultants. These data are still being analyzed for correlations between other farmer traits (farm size, level of education, etc.) and technology adoption levels.

Impact:

We have learned that when extending information on FHB control, traditional methods are still critically important. Furthermore, the role of consultants in this process is extremely important – this is a group that should be targeted when information on new techniques/technologies are available.

Project 2: *Screening for FHB Resistance in the NHWWSN.*

1. What major problem or issue is being resolved relevant to Fusarium head blight (scab) and how are you resolving it?

Winter wheat varieties lack resistance to FHB. We are trying to identify winter wheat lines that are resistant to FHB and that are adapted to ND. In this project we are screening lines developed in Nebraska, Kansas and South Dakota for both resistance to FHB and adaptation to ND.

2. List the most important accomplishment and its impact (i.e. how is it being used) to minimize the threat of Fusarium head blight or to reduce mycotoxins. Complete both sections (repeat sections for each major accomplishment):

Accomplishment:

Due to winter kill and other crop development challenges and the lack of scab in 2009, no data on FHB resistance were collected. However, lines planted in the fall of 2009 established well and survived the winter, so we should have our first good data from ND in 2010.

Impact:

The impact to date has been on the establishment of field techniques, rather than on FHB at the farm level. Establishing this basic groundwork, should allow us to participate effectively in the identification of varieties with resistance to FHB, which will ultimately help growers reduce losses to this disease.

Include below a list all germplasm or cultivars released with full or partial support of the USWBSI. List the release notice or publication. Briefly describe the level of FHB resistance.

No releases of germplasm or cultivars.

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.

Ransom, J.K. 2009. Factors Influencing the Adoption of Scab Control Practices in Small Grains in North Dakota and Minnesota. Abstracts American Society of Agronomy Annual Meeting, Pittsburg, PA, Nov 2009. Online at:
<http://a-c-s.confex.com/crops/2009am/webprogram/Paper52379.html>.

Ransom, J.K. and C. Deplazes. 2009. Factors influencing the adoption of FHB control practices in ND and MN: Results of a survey. In: S. Canty, A. Clark, J. Mundell, E. Walton, D. Ellis and D. Van Sanford (Eds.), Proceedings of the National Fusarium Head Blight Forum; 2009 Dec 7-9; Orlando, FL. Lexington, KY: University of Kentucky. pp. 73.