

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

Cover Page

PI:	Charla R. Hollingsworth
Institution:	University of Minnesota
Address:	Department of Plant Pathology Northwest Research and Outreach Center 2900 University Avenue Crookston, MN 56716
E-mail:	holli030@umn.edu
Phone:	218-281-8627
Fax:	218-281-8603
Fiscal Year:	2006
USDA-ARS Agreement ID:	59-0790-3-080
USDA-ARS Agreement Title:	Investigating Fungicide and Application Strategies for Increased FHB Control.
FY06 ARS Award Amount:	\$ 25,350

USWBSI Individual Project(s)

USWBSI Research Area*	Project Title	ARS Award Amount
CBCC	Uniform Fungicide Trials on Wheats and Barley for the Control of FHB in Minnesota, 2006.	\$ 25,350
	Total Award Amount	\$ 25,350

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: *Uniform Fungicide Trials on Wheats and Barley for the Control of FHB in Minnesota, 2006.*

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

Fusarium head blight (FHB) disease development is dependent on environmental conditions prior to, and during the period when wheat and barley are susceptible to infection. Commercially-available wheat varieties have low to moderate levels of disease resistance, while varieties of malting barley and winter wheat are susceptible. This project tested disease management efficacies of four experimental fungicide chemistries for comparisons to the current industry standard (tebuconazole), the previous standard (Tilt), and the nontreated control treatments.

**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:

Weather conditions at both test sites (Crookston, Lamberton) was unseasonable hot and/or dry during the small grain crop growing season. Slight disease pressures resulted even though tests were misted and inoculated with *F. graminearum*. Symptoms of FHB did not develop on hard red winter wheat (HRWW), so disease symptoms were not rated from spikes. Severity and incidence of FHB were at low levels in the hard red spring wheat and spring barley tests. Treatments in most data measurement categories did not separate out as significantly different. Overall, most of the experimental and non-labeled fungicide treatments showed increased levels of FHB suppression over the nontreated control, while no significant differences were identified between the tested fungicides and the current industry standard treatment (tebuconazole). Thousand kernel weights were significantly increased in all three crops from fungicide application.

Impact:

Overall, the Uniform Fungicide Trial effort provided data on how well fungicide products performed during a growing season when FHB disease development was highly variable across the U.S. This information was available from a number of different states, pertaining to several crop species, and resulting from various disease pressures. Cooperating states in the Upper Midwest experienced an unseasonably hot and dry growing season, while tests at other participating trial locations had adequate disease development. A strength of the uniform fungicide trial effort is its multi-state collaboration. This data set enables industry to adjust active ingredient rates and/or formulations to achieve the best disease control outcome, resulting in fewer grain yield and quality losses when fungicides are commercialized.

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?

Producers often inquire about how well the fungicide products under development perform against FHB, and when those products will be commercially available. Many growers in the Red River Valley are poised to grow wheat cultivars with increased resistance to FHB and/or to apply fungicides for better FHB control activity. Data from this research effort has been used in the past to support requests to the EPA for Section 18 Specific Exemption

applications to use tebuconazole fungicide on wheat and barley to support management of FHB.

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.

Hollingsworth, C.R., B. Potter, D.D. Motteberg, and L.M. Atkinson. 2006. FHB Uniform fungicide trial on spring and winter wheats in Minnesota. Page 11. In: Proc 2006 Natl. FHB Form. 10-12 Dec. 2006. Research Triangle Park, NC.

Motteberg, C.D., B. Potter, C.R. Hollingsworth, and L.M. Atkinson. 2007. Efficacy of fungicides in controlling Fusarium head blight on hard red spring wheat in Minnesota, 2006. Plant Disease Management Reports 1:CF020.