

**USDA-ARS/
U.S. Wheat and Barley Scab Initiative
FY07 Final Performance Report (approx. May 07 – April 08)
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Cover Page

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Fiscal Year:	2007
USDA-ARS Agreement ID:	59-0790-6-065
USDA-ARS Agreement Title:	Integrated Management of FHB in Spring and Winter Wheat in North Dakota.
FY07 ARS Award Amount:	\$ 16,462

USWBSI Individual Project(s)

USWBSI Research Area*	Project Title	ARS Adjusted Award Amount
CBCC	Integrated Management of FHB in Wheat and Barley.	\$16,462
	Total Award Amount	\$ 16,462

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
 IIR – Integrated/Interdisciplinary Research
 PGG – Pathogen Genetics & Genomics
 VDUN – Variety Development & Uniform Nurseries

Project 1: *Integrated Management of FHB in Wheat and Barley.*

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

Currently no single factor can control FHB in wheat and barley, so an integrated disease management approach is needed. How the crop is planted (plant density and row spacing) may play a role in the development of FHB and therefore could be a component of an integrated control program. Experiments were conducted during the 2007 growing season in Fargo, Prosper and Minot North Dakota to evaluate the influence of row spacing and plant density, when combined with fungicides and resistant cultivars on FHB severity in wheat and barley and on yield and crop quality.

**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:

Methodology for establishing small plots where differing row spacing and plant populations could be tested were developed and implemented in 2007. The 2007 growing season was dry and hot during flowering, so FHB did not develop in any of the experiments. However, we were able to quantify the influence of seeding rates and row spacings on yield in the absence of disease. Reduced seeding rates and increased row spacings were found to slightly reduce yields this season. These data give us a baseline by which we can compare yield responses to management practices in a relatively dry year to those when FHB is prevalent.

Impact:

The impact of this activity has been in the development of data that quantify the effects of the various practices evaluated on yield so that as additional data are developed over additional environments, integrated crop and disease management recommendations can be extrapolated with more confidence.

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?:

The scientific community now has information on the possible effects of management practices on yield. Particularly, that row spacing and plant populations can be altered significantly with only minimal yield reductions, thereby offering an additional tool that can be used to reduce disease build up.

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. Response of Winter Wheat Genotypes to Fungicide Applied at Flowering in Eastern North Dakota. Poster presentation at the North American Wheat Workers meeting, Saskatoon, Canada, March 2007.

Ransom, J.K., M.P. McMullen and S. Meyer. 2007. Effect of fungicides on FHB control and yield of winter wheat cultivars in North Dakota. Proceedings of the 2007 National Head Blight Forum, p. 130. Poster and published abstract.

Ransom, J.K., and M. McMullen. 2008. Yield and disease control on hard winter wheat cultivars with foliar fungicides. *Agronomy Journal* 100: (in press)