USDA-ARS/
U.S. Wheat and Barley Scab Initiative
FY07 Final Performance Report (approx. May 07 – April 08)
July 15, 2008

Cover Page

PI:	Scott Halley
Institution:	North Dakota State University
Address:	Langdon Research Extension Center 9280 107th Ave NE Langdon, ND 58249
E-mail:	Scott.Halley@ndsu.edu
Phone:	701-256-2582
Fax:	701-256-2580
Fiscal Year:	2007
USDA-ARS Agreement ID:	59-0790-3-079
USDA-ARS Agreement Title:	Aerial and Ground Spray Application Technology for Enhanced Fungicide Efficacy for Control of FHB.
FY07 ARS Award Amount:	$ 19,512

USWBSI Individual Project(s)

USWBSI Research Area*	Project Title	ARS Adjusted Award Amount
CBCC	Spray Application Technology Evaluations for Enhanced Fungicide Efficacy.	$19,512
	Total Award Amount	**$ 19,512**

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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: *Spray Application Technology Evaluations for Enhanced Fungicide Efficacy.*

1. What major problem or issue is being resolved and how are you resolving it?
Fungicide is applied to small grains for control of Fusarium head blight (FHB) using ground application equipment that has two distinct delivery methods. One system, a hydraulic delivery system, has shown to be a good spray delivery method which has been studied and reported. The second system is an air-spray system which uses a high velocity air system to carry the spray to the target. The parameters tested include air delivery speed, drop size and orifice delivery angle relative to the orientation of the grain head. This research project is studying the most efficacious delivery parameter combinations with the air delivery system. The studies are designed to test the results with a factorial arrangement and replication so each individual parameter is evaluated with all other parameter options or combinations. This project will determine barley and hard red spring wheat grain head coverage, fungicide efficacy for reducing effects of FHB on head disease and deoxynivalenol accumulation in the grain and yield and other grain quality parameters.

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: The first year of the studies showed that several delivery parameter options could effectively improve fungicide efficacy but all options were not equal. Two additional years of study on barley and hard red spring wheat are planned.

Impact: Small grain producers will improve economic return and the public will have a safer product to consume.

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?:

When the additional two years of study is complete growers who use an air delivery system will be able to maximize effectiveness of fungicide application at minimal cost and the consumer will have a better and safer product.

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.

A poster was presented at the USWBSI forum in Kansas City, Missouri and at the North Dakota State Barley Show in Osnabrock, North Dakota.

A presentation was also given to the public at the North Dakota State Barley Show and at the Lake Region Roundup Devils Lake, North Dakota. Estimated participants at the two forums were 300-400.

Publications:

Aerial Application of Fungicide for the Suppression of Fusarium Head Blight in Small Grains. Publication No. AE-1327. May 2007. Hofman, V., S. Halley, G. Van Ee, C. Hollingsworth, M. McMullen, and B. Ruden. North Dakota State University Extension Service, Fargo, ND

Fungicide Deposition Measurement by Spray Volume, Drop Size, and Sprayer System in Cereal Grains. Halley S., G. Van Ee, V. Hofman, S. Panigrahi, H. Gu. 2008. American Society of Agricultural and Biological Engineers, Applied Engineering in Agriculture Vol. 24(1): 15-21.