USDA-ARS/
U.S. Wheat and Barley Scab Initiative
FY05 Final Performance Report (May 05 – May 07)
July 16, 2007

Cover Page

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Fiscal Year:	2005
FY05 ARS Agreement ID:	59-0790-5-081
FY05 Agreement Title:	Evaluation of Fungicides to Control of FHB on Soft Red Winter Wheat in Virginia.
FY05 ARS Award Amount:	$ 5,756

USWBSI Individual Project(s)

USWBSI Research Area*	Project Title	ARS Adjusted Award Amount
CBC	Evaluation of Fungicides to Control of FHB on Soft Red Winter Wheat in Virginia.	$ 5,756
	Total Award Amount	**$ 5,756**

Erik L. Stromberg 12 July 2007

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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: *Evaluation of Fungicides to Control of FHB on Soft Red Winter Wheat in Virginia.*

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

The assessment of fungicide applications to control of fusarium head blight in soft red winter wheat in Virginia. Due to government incentives for reduced tillage much of Virginia's winter wheat crop is now planted no-tillage into corn stalk residues. These residues provide the potential for an abundant source of *Fusarium graminearum* and *Gibberella zeae* inoculum to incite fusarium head blight. This presents a real challenge if wet conditions occur during anthesis. Until high levels of resistance to FHB can be incorporated in to adapted high yielding agronomically acceptable cultivars the use of fungicides may be the only way to reduce losses from FHB.

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 soft red winter wheat cultivar Sisson was no-tillage planted in October into a field previously plant with field corn. Prior to plant the stalks were chopped and flailed providing a uniform layer of stalk debris. The field was maintained under high fertility (30 lb N, 80 lb P_2O_5, 100 lb K_2O and 5 lb S per A was broadcast prior to planting). The experimental design was a randomized complete block with four replications. Treatment units were seven 7-in. wide rows, 25 ft long. On 14 Dec at Zadoks' Growth Stage (GS) 10, 0.4 fl. oz. product/A of Finesse herbicide was applied. On 21 Dec 25 lb N was applied. On 16 Feb at GS 20 an application of 50 lbs N per A was applied to the plots. A final application of fertilizer (60 lbs/A N in 15-0-0 formulation) was made on 30 Mar at GS 25. All treatments were made on 12 May (GS59) with a CO_2-pressurized backpack sprayer equipped with a 5-ft boom and four dual Tee-Jet 8001 flat fan nozzles pointed forward and backwards at 45^o to the plane of the ground. The pair of nozzles was spaced 20 in. apart and 18 in. above plants delivering 25 gal/A at 40 psi. On 12 May stripe was first detected in the plots at the time of fungicide application. One hundred head samples per plot were scored for incidence and severity of fusarium head blight. Stripe rust severity was scored at this time as well. Plots were harvested with a Wintersteiger plot combine on 30 Jun. Grain samples were collected for 1000-kernel weight and vomitoxin (DON) content. DON analyses were conducted in Dr. P. Hart's laboratory at Michigan State University. Yield was expressed in bu/A at a standard 13.5% grain moisture.

Impact: All treatments reduced the incidence and severity of FHB compared to the non-treated control and were statistically significant ($P \leq 0.05$). All treatments statistically reduced ($P \leq 0.05$) reduced the FHB Index, but BAS 555 01/F 10 fl. oz./A . All treatments had low levels of vomitoxin (DON), but none were significantly ($P \leq 0.05$) lower than the non-treated control. All treatments statistically significantly ($P \leq 0.05$) reduced stripe rust on the flag and flag-1 leaves and grain yield over the non-treated control. No phytotoxicity was observed for any fungicide treatment.

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?

Information on fungicide efficacy to control FHB as well as stripe rust (*Puccinia striiformis*) was incorporated into the recommendations of the Virginia Pest Management Guide for Field Crops.

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.

Stromberg, E., P. Phipps, A. Grybauskas, and R. Mulrooney. 2007. Pest Management Guide for Field Crops – Diseases and Nematodes: Grain Crops, Soybeans, Forages. pp 75-105. Virginia Cooperative Extension Pub. 450-016.

Stromberg, E.L. 2007 (updated up to 3 times per year). Integrated Disease Management in Small Grains. (pictures, biology, cultivar susceptibility and resistance, cultural and chemical control recommendations - http://www.ppws.vt.edu/stromberg/smallgrain/sgrain.html. This his site receives between 25,000 to 40,000 "hits" per year.

Stromberg, E.L. 2006. Evaluations of fungicides for the control of fusarium head blight (FHB) and stripe rust on wheat in Virginia, 2005. Fungic. Nematic. Tests. 61:FC017. URL: www.apsnet.org/online/fntests/vol61/fc017/htm.