U.S. Wheat and Barley Scab Initiative
FY00 Final Performance Report (approx. May 00 – April 01)
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Cover Page

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Year:	**FY2000 (approx. May 00 – April 01)**
Grant Number:	**59-0790-9-039**
Grant Title:	**Fusarium Head Blight Research**
2000 ARS Award Amount:	**$4,878**

Project

Program Area	Project Title	Requested Amount
Chemical & Biological Control	Uniform fungicide trials to identify safe products that are effective against FHB.	$5,000.00
	Requested Total	$5,000.00[1]

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Principal Investigator Date

[1] Note: The Requested Total and the Award Amount are not equal.

Project 1: Uniform fungicide trials to identify safe products that are effective against FHB.

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

Fusarium head blight (FHB) of wheat can cause significant losses in grain quantity and through the production of various mycotoxins may make the grain completely unusable. Since all current wheat cultivars grown in the Mid-Atlantic are susceptible and inoculum is widely available in previously infested corn debris which is increasingly left on the soil surface via minimum tillage practices, outbreaks are largely determined by environment. The highest known levels of resistance is incomplete and is in an unadapted background. Transfer of those genes into a suitable agronomic background for the marketing class of wheat grown here will take time and may not be adequate under intense epidemic pressure. Fungicides thus must be considered as a management tool for the near future and possibly as part of an integrated approach even when resistance becomes more widely available. We are examining the efficacy of antifungal agents for their potential as Fusarium head blight management tools.

2. What were the most significant accomplishments?

A field fungicide trial was established in Maryland on a soft red winter wheat cultivar, Jackson, that was artificially inoculated with the fungus *Fusarium graminearum*. Inoculum was introduced into the field as infested corn kernels uniformly distributed over the plots except for a check treatment. Inoculum was also directly applied to the flowering crop as a single application of a spore suspension sprayed onto the heads. Mist irrigation was applied to provide a more suitable environment for disease development. Fungicide treatments consisted of a core set that all cooperators in 14 states applied in similar trials and several additional treatments for a total of 20 treatments. All treatments were replicated five times. All materials were applied using a dual spray nozzle technique that directed the spray at an angle toward the grain heads. Several fungicides reduced disease development to levels comparable to the uninoculated control. The uninoculated control was not completely disease-free but was at a level that yield or test weight losses would be difficult to attribute to FHB in small plot trials. The most effective material was metconazole (Caramba) a sterol inhibitor registered in Europe but not in the US. Several other compounds were very close in performance as they were not significantly different from Caramba but were significantly different from the control. These included the sterol inhibitors tebuconazole (Folicur) and propiconazole (Tilt) as well as two strobilurin fungicides, BAS 500 and azoxystrobin (Quadris). The assay for DON a mycotoxin produced by F. graminearum mycotoxin levels equivalent to the uninoculated control were achieved only with Caramba.
Highest mycotoxin levels were found in Strobilurin treated wheat.

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.

Grybauskas, A. P. 2000. Evaluation of fungicides for the management of Fusarium Head Blight in soft red winter wheat. Fungicide and Nematicide Tests 56: (in press).

Grybauskas, A. P. 2000. No-till wheat production research. Extension presentation at the Maryland Commodity Classic, Howard County Fairgrounds, July 26, 2000.

Grybauskas, A. P. 2000. No-till wheat production: the risk of Fusarium Head blight. Extension presentation at the University of Maryland, Wye Research and Education Center Field Day, August 17, 2000.