

**U.S. Wheat and Barley Scab Initiative
Annual Progress Report
September 18, 2000**

Cover Page

PI:	Arvydas Grybauskas
Institution:	University of Maryland
Address:	NRSL Rm. 2125 F Plant Science College Park, MD 20742
Email:	ag31@umail.umd.edu
Phone:	301-405-1602
Fax:	301-314-9308
Year:	FY2000
Grant Number:	59-0790-9-039
Grant Title:	Fusarium Head Blight Research
Amount Granted:	\$4,878.00

Project

Program Area	Objective	Requested Amount
Chemical & Biological Control	Identify safe, effective fungicides for FHB through evaluation across of wheat and/or barley varieties grown in relevant environments.	\$5,000.00
	Requested Total	\$5,000.00

Principal Investigator

Date

Project 1: Identify safe, effective fungicides for FHB through evaluation across of wheat and/or barley varieties grown in relevant environments.

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. Please provide a comparison of the actual accomplishments with the objectives established.

A field fungicide trial was established in Maryland on a soft red winter wheat 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 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* has not yet been completed.

3. What were the reasons established objectives were not met? If applicable. N/A.

4. What were the most significant accomplishments this past year? Metconazole is the most effective fungicide tested to date and if these results can be repeated consistently in different regions and conditions, it may prove to be a commercially effective management tool.

Year: 2000

Progress Report

PI: Arvydas Grybauskas

Grant: 59-0790-9-039

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.