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

PI:	Arvydas Grybauskas
Institution:	University of Maryland
Address:	Dept. of Plant Science and Landscape Architecture 2102 Plant Sci. Bldg. 036 College Park, MD 20742-4452
E-mail:	arvydas@umd.edu
Phone:	301-405-1602
Fax:	301-314-9308
Fiscal Year:	2007
USDA-ARS Agreement ID:	59-0790-4-103
USDA-ARS Agreement Title:	Integrated Management of Fusarium Head Blight in Maryland.
FY07 ARS Award Amount:	$ 15,366

USWBSI Individual Project(s)

USWBSI Research Area*	Project Title	ARS Adjusted Award Amount
CBCC	Integrated Management of Fusarium Head Blight in Maryland.	$15,366
	Total Award Amount	**$ 15,366**

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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: *Integrated Management of Fusarium Head Blight in Maryland.*

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

The search for management tactics that can protect producers from the losses in yield and mycotoxin contamination associated with Fusarium head blight has taken great strides forward with the development of cultivars with some resistance and new triazole fungicides. However, neither tactic alone has proved to be adequate in seasons highly favorable for disease development. Furthermore, some of the more highly resistant cultivars have had lower yield potentials than highly adapted but susceptible cultivars and thus lose favor after a season with low disease development. The effectiveness of fungicides has also been inadequate under certain conditions especially if relied upon as a sole management tactic. An integrated approach primarily testing the combination of cultivars that have a modicum of resistance with the best fungicide under various debris management / rotation schemes is being tested and demonstrated in this project. We are also using the web-based forecasting system to help producers determine the "real-time" risk of disease development to help determine if the fungicide application is warranted that season.

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 environmental conditions were not favorable for a serious epidemic of Fusarium head blight in Maryland in 2007. Our program included in the project a trial that was inoculated and mist-irrigated that produced disease conditions and provided an excellent proof of concept and demonstration of the effectiveness of a combination of moderate resistance with a moderately effective fungicide. In particular, under moderate disease conditions, resistance and fungicides reduced deoxynivalenol in an additive manner. The results from uninoculated trials provided data to the forecasting project.

Impact:

These results establish that the combination of tactics can reduce mycotoxin accumulation to a greater extent than either tactic used alone. It also helps to establish a strategy that a high yield potential cultivar with a only a moderate level of resistance may be effectively managed with fungicides in seasons favorable for disease development without the yield drag cost associated with a cultivar having a higher level of resistance. This is a critical step in gaining grower acceptance particularly within the region and encourages the selection of cultivars with relatively minor levels of resistance.

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?:

We now have data and regional demonstration of the effectiveness of integration of management practices on DON reduction.

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. 2007. Fusarium head blight of small grains. Southern Association of Seed Certification and Technology. April 12, 2007, Annapolis, MD.

Grybauskas, A.P. and E. Reed. 2008. MD Field Crop Disease Management Research Update. NJ-DelMarVa-Pa Plant Pathologist Assoc., March 3, 2008, Newark, De.

Grybauskas, A.P. 2007. Field crop disease management trials in Maryland. APS Potomac division annual meeting, Extension/Industry session, March 21-23, 2007, Blacksburg, VA. Fungicide issues in field crops in 2008. A. Grybauskas. Queen Anne's County Agronomy Day, Centreville MD, March 7, 2008.

Field crop disease management for 2008. A. Grybauskas. Montgomery and Howard County Agronomy Update, Derwood MD, February 27, 2008.

Have you heard this one: prices are up protect your investments? A. Grybauskas. Maryland Pesticide Conference, Denton MD, February 7, 2008.

Have you heard this one: prices are up protect your investments? A. Grybauskas. Maryland Pesticide Conference, Frederick MD, February 5, 2008.

Wheat disease prospects after the drought of 07 & Soybean rust status. A. Grybauskas. Queen Anne County Small Grain Meeting, August 27, 2007, Centreville, MD.

Small grain diseases in 2007 and Soybean Rust status. A. Grybauskas. Wye Grains Twilight Tour, May 24, 2007, Queenstown, MD.

Field Crop Disease Management Update. A. Grybauskas. Harford County Mid-Winter Meeting, Rocks, MD, February 22, 2007.

Disease Management update. A. Grybauskas, Montgomery County Winter Agronomy meeting, Derwood, MD, February 21, 2007.

Disease Management update. A. Grybauskas, Cecil County Winter meeting, Rising Sun, MD, February 20, 2007.

Wheat Scab and Soybean rust – current research and outlook. A. Grybauskas. Maryland Crop Improvement Association 100th Anniversary meeting, Ruthsburg, MD, February 8, 2007.

Field Crop Disease Management Update. A. Grybauskas. Dorchester County Winter Program, Hurlock, MD, January 25, 2007.