

**USDA-ARS/
U.S. Wheat and Barley Scab Initiative
FY08 Final Performance Report (approx. May 08 – April 09)
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Cover Page

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Fiscal Year:	2008
USDA-ARS Agreement ID:	59-0790-4-103
USDA-ARS Agreement Title:	Fusarium Head Blight Uniform Fungicide Trial in Maryland.
FY08 USDA-ARS Award Amount:	\$ 8,719

USWBSI Individual Project(s)

USWBSI Research Category*	Project Title	ARS Adjusted Award Amount
MGMT	Integrated Management of Fusarium Head Blight in Maryland.	\$8,719
	Total Award Amount	\$ 8,719

Principal Investigator

Date

* MGMT – FHB Management
FSTU – Food Safety, Toxicology, & Utilization of Mycotoxin-contaminated Grain
GDER – Gene Discovery & Engineering Resistance
PBG – Pathogen Biology & Genetics
BAR-CP – Barley Coordinated Project
HWW-CP – Hard Winter Wheat Coordinated Project
VDHR – Variety Development & Uniform Nurseries – Sub categories are below:
 SPR – Spring Wheat Region
 NWW – Northern Winter Wheat Region
 SWW – Southern Sinter Wheat Region

(Form FPR08)

Project 1: *Integrated Management of Fusarium Head Blight in Maryland.*

1. What major problem or issue is being resolved relevant to Fusarium head blight (scab) 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 the registration of two 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 other highly adapted but susceptible cultivars and thus lose favor among producers after seasons with low disease development. The effectiveness of the best available fungicides has been primarily tested with highly susceptible varieties and conducive environments. Thus their overall contribution to a management package is not adequately understood. An integrated approach primarily testing the combination of cultivars that have a modicum of resistance with the best available fungicide is being tested and demonstrated in this project under various debris management and rotation schemes. 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 (i.e. how is it being used) to minimize the threat of Fusarium head blight or to reduce mycotoxins. Complete both sections (repeat sections for each major accomplishment):

Accomplishment:

The environmental conditions were not favorable for a severe natural epidemic of Fusarium head blight in Maryland in 2008. However, even under low severity conditions, deoxynivalenol levels were reduced by both major components of the integrated management scheme, resistance and fungicides. The decrease in DON however was dependent on cultivar and may be related to the type and level of resistance it expresses. The forecasting program (www.wheatcab.psu.edu) also appeared to adequately provide a negative forecast for scab in Maryland in 2007.

Impact:

These results provided the scientific basis for an Extension program to encourage producers to combine tactics that can reduce mycotoxin accumulation and yield loss due to Fusarium head blight. 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 over highly susceptible cultivars.

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. and Reed, E. 2009. Effect of fungicide applied at flowering on leaf rust and head blight of soft red winter wheat in Maryland, 2008. Plant Disease Management Reports (online). Report 3:CF022. DOI:10.1094/PDMR03. The American Phytopathological Society, St. Paul, MN.
- Grybauskas, A. P. and Reed, E. 2009. Management of foliar and head diseases of soft red winter wheat in Maryland with fungicides, 2008. Plant Disease Management Reports (online). Report 3:CF021. DOI:10.1094/PDMR03. The American Phytopathological Society, St. Paul, MN.
- Grybauskas, A.P. and E. Reed. 2009. DON mycotoxin increases with some fungicide applications in wheat. APS Potomac division annual meeting, March 25-27, 2009, Gettysburg, PA.
- Fungicides in Field Crops 2009, Queen Anne Agronomy Day, Centreville, MD, 6 March 2009.
- Field crop disease management, Cecil County Ag Day, Fair Hill, MD 27 Feb 2009.
- Field crop diseases, Montgomery/Howard County Agronomy Update, Derwood, MD, 25 Feb 2009.
- The role of fungicides in wheat, corn and soybean production, Caroline County Agronomy Day, Denton, MD, 19 Feb 2009.
- An update on diseases of field crops and current disease management issues, Frederick, MD. 11 Feb 2009.
- Integrated management of scab of wheat and other disease issues for 2009, Carroll County Ag roundtable, Westminster, MD, 2 Feb 09.
- Integrated management of scab of wheat and other disease issues for 2009, Maryland Crop Improvement Association 102nd Annual meeting, Ruthsburg, MD, 21 Jan 09.
- Integrated management of scab of wheat; Fungicides without plant disease and you; and yes soybean rust still needs to be kept front and center. Maryland Extension Service Agent In-Service training, Beltsville, MD, Dec 9, 2008.
- Small grain disease management – the risks of wheat after wheat production. Lower Shore Small Grain breakfast meeting, Rockawalkin Community Hall, Hebron MD, Sept 11, 2008.

If your FY08 USDA-ARS Grant contained a VDHR-related project, include below a list all germplasm or cultivars released with full or partial support of the USWBSI. List the release notice or publication. Briefly describe the level of FHB resistance. If this is not applicable (i.e. no VDHR-related project) to your FY08 grant, please insert ‘Not Applicable’ below.

Not Applicable