USDA-ARS/
U.S. Wheat and Barley Scab Initiative
FY14 Final Performance Report
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Cover Page

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Fiscal Year:	FY14
USDA-ARS Agreement ID:	59-0206-4-036
USDA-ARS Agreement Title:	USWBSI Integrated Management of FHB on Delaware Wheat.
FY14 USDA-ARS Award Amount:	$ 7,240

USWBSI Individual Project(s)

USWBSI Research Category*	Project Title	ARS Award Amount
MGMT	Integrated Management of Delaware Wheat.	$ 7,240
	FY14 Total ARS Award Amount	**$ 7,240**

6/12/15

Principal Investigator Date

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

Project 1: *Integrated Management of Delaware Wheat.*

1. **What major problem or issue is being resolved relevant to Fusarium head blight (scab) and how are you resolving it?**
   The major issues that are being addressed that are relevant to FHB include 1) the benefit of incorporating moderately resistant FHB varieties and 2) increased characterization of the fungicide application window as it relates to suppression of scab. Growers in Delaware and areas of the region suffered significant losses in 2013 as a result of FHB. Initial talks with growers and consultants indicated a lack of understanding in terms of the value and utility of FHB resistant varieties and proper use and application of recommended fungicides. Few growers planted resistant wheat varieties and many scab applications were made at the incorrect time or with inappropriate products. The USWBSI funded project assessing the utility and stability of moderately resistant varieties and fungicide timing has not only provided new information to clientele that will further help reduce DON accumulation and FHB-associated losses, but has served as an extension outreach and teaching platform for the Delaware Extension Plant Pathology Program. In addition, a better understanding of the application window for effective head blight timing is essential in management of FHB, as often growers cannot spray fields at the ideal time as a result of waiting time for custom application, rain, or other factors. The results of the Delaware IM program, in collaboration with others contributing to the IM CP, will address the effectiveness of late fungicide applications for scab, better defining the effectiveness of these products across a range of climates and regions.

2. **List the most important accomplishments and their impact (i.e. how are they being used) to minimize the threat of Fusarium Head Blight or to reduce mycotoxins. Complete both sections; repeat sections for each major accomplishment:**

   Accomplishment (1):
   In 2014, outreach included two extension factsheets, the development of the field crop disease management blog, seven articles on the Weekly Crop Update, and talks on FHB management options at the Delaware Agricultural week, the UD Small Grains meeting, and six local meetings for clientele.

   Impact:

   A survey of 63 grower and consultants and agribusiness professionals from all 3 counties in Delaware and 2 counties in Maryland that attended the Small Grains Management Meeting in 2014 indicated that only 58% plant varieties with resistance to head blight, 21% still utilize a strobilurin at head emergence and 33% use SCABSMART disease forecasting system. As a result of my talk on FHB, 27% indicated that they will apply a triazole fungicide around flowering to manage FHB, 42% will consider planting a variety with moderate resistance to FHB/DON, and 31% will consider planting wheat after soybeans. Only 16% indicated that they will not make any changes, although this may reflect growers and consultants that already were following recommended practices. Each article published on the Weekly Crop

Update was viewed by at least 550 growers, consultants, and agribusiness professionals in the Midatlantic and the Field Crops Disease management blog contributed to an additional 1250 article views per month on average. Blog articles were picked up by national Ag news groups, such as Ag Fax and Farm Press.

Accomplishment (2):
Results of the funded IM project in Delaware demonstrated the utility of moderately resistant varieties and helped demonstrate and clarify the fungicide application window for FHB suppression in wheat.

Impact:

Results of the funded IM project in Delaware have been used to help leverage extension outreach projects including grower demonstrations/surveys to assess best management practices of FHB in Delaware and nearby areas of Maryland. Initial results of the IM coordinated project have been shared at talks across the area to help promote best management practices for FHB and proper use of fungicides for suppressing the disease.

Training of Next Generation Scientists

Instructions: Please answer the following questions as it pertains to the FY14 award period. The term "support" below includes any level of benefit to the student, ranging from full stipend plus tuition to the situation where the student's stipend was paid from other funds, but who learned how to rate scab in a misted nursery paid for by the USWBSI, and anything in between.

1. **Did any graduate students in your research program supported by funding from your USWBSI grant earn their MS degree during the FY14 award period?** No

   If yes, how many?

2. **Did any graduate students in your research program supported by funding from your USWBSI grant earn their Ph.D. degree during the FY14 award period?** No

   If yes, how many?

3. **Have any post docs who worked for you during the FY14 award period and were supported by funding from your USWBSI grant taken faculty positions with universities?** No

   If yes, how many?

4. **Have any post docs who worked for you during the FY14 award period and were supported by funding from your USWBSI grant gone on to take positions with private ag-related companies or federal agencies?** No

   If yes, how many?

Include below a list of all germplasm or cultivars released with full or partial support of the USWBSI during the FY14 award period. List the release notice or publication. Briefly describe the level of FHB resistance. *If not applicable because your grant did NOT include any VDHR-related projects, enter N/A below.*

N/A

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 FY14 grant. Please reference each item using an accepted journal format. If you need more space, continue the list on the next page.

Factsheets:
Fusarium Head Blight Management in Wheat. University of Delaware Cooperative Extension Factsheet. 2014. Available at: http://extension.udel.edu/factsheet/

Blog articles 2014
Field Crop Disease Management Blog : extension.udel.edu/fieldcropdisease/
Spray strategies for optimal small grain head coverage. 11/20/2014
Tombstones are best left in the field and not your bins. 6/2/2014

Weekly Crop Update Articles
Paper on FHB Timing Window Published. 4/2/15
Head blight forecast and tips for fungicides (if needed). 4/15/14
Remember to sign up for scab alerts. 4/15/14
What can you expect with a FHB fungicide application? 5/8/14
Fungicide Resistance in *Fusarium graminearum*. 5/25/15
Tombstones are best left in the field and not your bins. 5/28/14
Understanding mycotoxin testing in small grains. 6/13/14