USDA-ARS/
U.S. Wheat and Barley Scab Initiative
FY10 Final Performance Report
July 15, 2011

Cover Page

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Fiscal Year:	FY10
USDA-ARS Agreement ID:	59-0206-9-088
USDA-ARS Agreement Title:	Integrated Managment Studies to Improve Overall Management of FHB and DON in Wisconsin.
FY10 USDA-ARS Award Amount:	$ 14,634

USWBSI Individual Project(s)

USWBSI Research Category*	Project Title	ARS Award Amount
MGMT	Integrated Management Studies to Improve Overall Management of FHB and DON in Wisconsin.	$ 14634
	Total ARS Award Amount	**$ 14,634**

7/8/2011

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
DUR-CP – Durum Coordinated Project
HWW-CP – Hard Winter Wheat 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 Studies to Improve Overall Management of FHB and DON in Wisconsin.*

1. What major problem or issue is being resolved relevant to Fusarium head blight (scab) and how are you resolving it?

Currently, the major issue facing growers in Wisconsin about the risk of Fusarium head blight (FHB) has been the effect of crop rotation in combination with environmental conditions favorable for disease development. We have seen FHB incidence be variable across WI the past several years. Another major issue we have been working on is making sure that our prediction information is available for an extended period of time for the state. For example, it is not uncommon for flowering to occur over a three to almost four week period in Wisconsin. Specifically, in areas closest to Lake Michigan, an area that represents a larger wheat production area in the state, flowering is often later than in other major production areas. As such, we have made sure to provide updates regarding risk through the "Fusarium Head Blight Prediction Center" and our "Soy Report" blog over a longer period.

In terms of our research, we continue to conduct trials under the integrated management coordinated project. In 2010-2011, we continued our trials at the Lancaster Agricultural Research Station, where we are examining varieties and fungicides under non-inoculated conditions. These plots will be harvested shortly and data combined with our previous years studies. What we have seen, however, is that wheat variety has an effect of the development of FHB and that foliar fungicide response has been variable, especially for mycotoxin levels. We will also be harvesting our first year of the integrated management trial at the Arlington Agricultural Research Station that, while similar to the trial at Lancaster, has an additional block where we inoculated with *Fusarium graminearum*. This trial will also be harvested shortly, but visually, it did appear that our inoculations did take, which is important since overall conditions for FHB development at this site were low for FHB development in 2011. Lastly, we continue our research to examine the effect of crop rotation and foliar fungicide on development of FHB. This trial has great interest for us since it matches with current rotations the producers in Wisconsin use. In particular, we are most interested in examining response in situations where the previous crop was corn harvested for silage. Preliminary results from 2009-2010 trial indicated that there were effects of rotation and a variety by fungicide effect on DON levels. The highest levels of DON were found when wheat followed corn for grain. Also, there was evidence of reductions in DON with the application of Prosaro for several varieties, especially those considered susceptible. A similar result was found for grain yield although response to the fungicide on yield was did not completely match with DON levels. Results will be examined in combination with the 2010-2011 data that should be available shortly.

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:

1) Improved communication for delivering FHB risk information via the Fusarium Head Blight Prediction Center and The Soy Report blog.
2) Improved information regarding the risk of FHB over a longer period of the growing season to account for the variation in flowering dates around the state.
3) New data available regarding the risk and response of different management tactics for FHB.

Impact:

1) Growers and consultants continue to increase their willingness to sign up to the real-time reporting on FHB risk information via the USWBSI website and we continue to increase the number of members of our email listserv for The Soy Report blog.
2) Phone calls,emails, and personal communication from consultants and growers about the risk of FHB have indicated that they are using the Fusarium Head Blight Prediction to monitor the risk of FHB and doing follow-up scouting to match with the predictions made during flowering.
3) There is an improved working knowledge of the risk factors associated with FHB, in particular crop rotation. More growers are integrating this component into their overall management program for wheat diseases.
4) FHB is focal point of our Winter Wheat meetings. Research results from this grant impacted 50,000 acres (based on survey information) from these meetings alon e and countless acres from our other outreach vehicles (USWBSI website and The Soy Report blog).

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.

Publications:

Esker, P., N. Koval, K. Lackermann, S. Conley, J. Gaska, and M. Martinka. 2010. Integrated pest management for Fusarium head blight in Wisconsin. Proc. of the 2010 National Fusarium Head Blight Forum, Page 80.

Presentations (June 2010 to June 2011):

March 2011: Winter Wheat Workshops – The Timeline of Decisions for Wheat Management, Locations included Whitewater, Marshfield, and Kewaunee, WI. Total attendance = 108.

February 2011: Western Wisconsin Crops Update – Managing Winter Wheat to Produce High Quality Grain, Locations included Arcadia and Sparta, WI. Total attendance = 50.

January 2011: Wisconsin Crop Management Conference – Pairing Genetics and Fungicides in Wheat Production. Madison, WI. Total attendance = 125.

November 2010: Pest Management Update Program – Portion of talk focused on wheat disease management. Locations included: Chippewa Falls, Marshfield, Green Bay, Fond du Lac, Arlington, Belmond, Sparta, and Janesville, WI. Total attendance = 545.

July 2010: Diagnostic Training Center – Troubleshooting Clininc, Identification – Causes of Reduction in Wheat Yield. Arlington, WI. Total attendance = 48.

June 2010: Evening Walk – Winter Wheat Variety Trial, Wheat Diseases and Variety Selection. Chilton, WI. Total attendance = 15.

Articles (June 2010-June 2011):

1. Esker, P. 2011. Fusarium head blight risk - June 13, 2011. Wisconsin Crop Manager 18(14): 55.
2. Esker, P. 2011. Fusarium head blight risk - June 6, 2011. Wisconsin Crop Manager 18(13): 52.
3. Esker, P. 2011. Fusarium head blight - foliar fungicides. Wisconsin Crop Manager 18(12): 47.
4. Esker, P. 2011. Lancaster and Janesville winter wheat May 31, 2011. Wisconsin Crop Manager 18(12): 47.
5. Esker, P. 2011. Chilton and Arlington winter wheat May 30, 2011. Wisconsin Crop Manager 18(12): 46.
6. Conley, S., P. Esker, and J. Gaska. 2010. Top 7 recommendations for winter wheat establishment in 2010. Wisconsin Crop Manager 17(25): 108-111.
7. Esker, P. 2010. Fusarium head blight update – 9 June 2010. Wisconsin Crop Manager 17(13): 61.
8. Postings on FHB on The Soy Report Blog related to FHB (June 2010 – June 2011): 9