

**USDA-ARS/
U.S. Wheat and Barley Scab Initiative
FY14 Final Performance Report
July 15, 2015**

Cover Page

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| PI: | Richard Mason |
| Institution: | University of Arkansas |
| Address: | Dept. of Crop, Soil and Environmental Sciences 115 Plant Sciences Bldg. Fayetteville, AR 72701 |
| E-mail: | esten@uark.edu |
| Phone: | 479-575-5725 |
| Fax: | |
| Fiscal Year: | FY14 |
| USDA-ARS Agreement ID: | 59-0206-4-030 |
| USDA-ARS Agreement Title: | Management of FHB of wheat in Arkansas. |
| FY14 USDA-ARS Award Amount: | \$ 16,392 |

USWBSI Individual Project(s)

| USWBSI Research Category* | Project Title | ARS Award Amount |
|----------------------------------|---|-------------------------|
| MGMT | Integrated Management of FHB in Arkansas. | \$ 8,743 |
| MGMT | Uniform Fungicide Trial in Arkansas. | \$ 7,649 |
| | FY14 Total ARS Award Amount | \$ 16,392 |



Principal Investigator

7/14/15

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 FHB in Arkansas.*

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

FHB has been difficult to manage using only one management practice. A collaborative project across several states investigated the effects of combining moderately resistant cultivars with the most effective fungicide to achieve a higher level of control than with either management practice individually

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:

Analysis of data across several locations and years determined that the effects of cultivar resistance and fungicide efficacy were additive.

Impact:

Knowing that the effects of resistance and fungicide are additive simplifies management recommendations for FHB and DON, makes it easier to explain FHB management to growers, and eliminates the need to evaluate each cultivar with each fungicide to determine the effects on FHB and DON.

Project 2: *Uniform Fungicide Trial in Arkansas.*

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

Fungicides are an important component for managing FHB, but even the best fungicides are only partially effective. This project evaluates new fungicides that have shown efficacy against FHB in preliminary tests and evaluates different application timings for the most effective fungicides. These evaluations are done across multiple states and market classes of wheat to validate the results.

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:

Prosaro® and Caramba® fungicides were identified as the most effective fungicides. Applications of Prosaro or Caramba at flowering or a few days after flowering were found to give similar levels of efficacy. Strobilurin fungicides were found to increase DON levels in grain. Different generic formulation of tebuconazole had significantly different levels of suppression in the Arkansas test.

Impact:

Prosaro and Caramba are now used to manage FHB across the US. Growers are cautioned to use strobilurin fungicides after heading because of the risk of higher DON levels. The window for timely application of Prosaro and Caramba is wider than originally believed, and this makes it easier to apply the fungicides in a timely manner. If generic tebuconazole formulations performed similarly to the Arkansas results across other locations, recommendations will be made to use particular generic formulations and not others.

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?

FY14 (approx. May 14 – May 15)

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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.

Mason R.E. *, Miller R.G. †, Bond R.D., Milus, E.A., Kelly J.P. 2014. Arkansas Wheat Cultivar Performance Tests 2013-2014. Arkansas Agriculture Experiment Station Research Series 619.