USDA-ARS
U.S. Wheat and Barley Scab Initiative
FY17 Final Performance Report
Due date: July 31, 2018

Cover Page

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Fiscal Year:	2017
USDA-ARS Agreement ID:	59-0206-6-008
USDA-ARS Agreement Title:	Integrated Strategies for Improved Management of FHB and DON in Soft Red Winter Wheat in Alabama.
FY17 USDA-ARS Award Amount:	$ 19,108
Recipient Organization:	Auburn University Contracts and Grants Accounting Department (CGA) 208 M. White Smith Hall Auburn, AL 36849
DUNS Number:	066470972
EIN:	63-6000724
Recipient Identifying Number or Account Number:	361848-304504-2002
Project/Grant Reporting Period:	5/23/17 - 5/22/18
Reporting Period End Date:	05/22/18

USWBSI Individual Project(s)

USWBSI Research Category*	Project Title	ARS Award Amount
MGMT	Integrated Strategies for Management of FHB and DON in SRW Wheat in AL.	$ 19,108
	FY17 Total ARS Award Amount	$ 19,108

Kira L. Bowen — 23 July 2018

Principal Investigator — Date

* MGMT – FHB Management
FST – Food Safety & Toxicology
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
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

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Project 1: *Integrated Strategies for Management of FHB and DON in SRW Wheat in AL.*

1. What are the major goals and objectives of the project?

The objectives of this project were:
i) To evaluate the integrated effects of fungicide and genetic resistance on FHB and DON in SRWW grown in AL;
ii) to evaluate regionally adapted SRWW cultivars for which FHB reactions are lacking; and
iii) to evaluate late and multiple tebuconazole applications for control of FHB.

2. What was accomplished under these goals? *Address items 1-4) below for each goal or objective.*

1) major activities
Replicated field plots were located at three sites in Alabama for the 2017 harvest (south at Gulf Coast unit (GC), east-central at Plant Breeding Unit (PB), and central in Prattville (PV)). The 2017 studies at southern (GC) and east-central (PB) sites had 2 cultivars and 4 cultivars, respectively, with recommended fungicides and delayed tebuconazole applications. The central site had a single cultivar with similar fungicide applications. These field trials addressed all objectives of this project.

2) specific objectives
see above (#1).

3) significant results
At GC, two field studies were done—one following fallow and the other following corn. Individual fields were approx.. 500 m apart. Overall, scab intensity (i.e., visual assessments in field) were low. Scab intensity and FHB severity index on 'AGS 2035' was slightly higher in wheat after corn than in wheat after fallow; statistical comparisons have not been done because these were distinct trials. 'Jamestown' had lower scab intensity than 'AGS 2035', which concurs with variety characteristics noted by UGA. FHB severity index values on Jamestown are unreliable, as these samples were collected in rainy weather and became moldy prior to doing the rating. No differences were noted due to fungicide treatments.

Conflicting information has been distributed about one of the varieties included at PB—specifically Pioneer 26R41 is rated as "Good" against Fusarium head blight by Univ. Georgia and as "susceptible" by North Carolina State Univ. evaluators. Unfortunately, in 2017 due to poor stand establishment in the east-central AL study, the Pioneer 26R41 plots were mowed prior to flowering. In addition, no plots were mechicanically harvested due to heavy weed infestation in 2017. However, Prosaro at 8.2 fl. oz applied at FS 10.51, Prosaro then, 4 days later, Caramba at 14 fl oz, and Proline at 5.7 fl oz then Folicur at 4 fl oz, reduced FHB intensity compared to the non-treated controls (inoculated and non-inoculated) as well as Caramba followed by Folicur. Compared to the inoculated controls, FHB index was also reduced by these same three treatments; only the Prosaro then Caramba treatment reduced FHB index compared to the non-treated, non-inoculated control.

At the PV site, only trace amounts of FHB were noted; no significant differences in any measured variables were found due to fungicide treatment.

4) key outcomes or other achievements

Despite very low levels of FHB at all sites, there was some confirmation that the two-application protocol (fungicide at FS 10.51 followed four days later by a second fungicide application) can provide improved control of FHB. This was specifically seen at the PB study where the FHB index was substantially lower with Prosaro followed by Caramba than Prosaro alone.

AL Experiment Station Personnel involved with these trials become more familiar with FHB and its management. Graduate student assistants learned about wheat diseases.

3. What opportunities for training and professional development has the project provided?

Graduate and undergraduate students were trained to use fungicide spray equipment and to help with wheat disease assessments; these students also aided in determining yield components of the harvested wheat.

4. How have the results been disseminated to communities of interest?

PI published results from 2017 southern trials in *Plant Disease Management Reports.* PI also presented results to the AL Wheat and Feed Grain Committee, a leadership group of growers. Summary reports of results are shared with station personnel as well as Extension Specialist at Auburn University.

Training of Next Generation Scientists

Instructions: Please answer the following questions as it pertains to the FY17 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 FY17 award period?**
   Yes.

   If yes, how many?
   One.

2. **Did any graduate students in your research program supported by funding from your USWBSI grant earn their Ph.D. degree during the FY17 award period?**
   No

   If yes, how many?

3. **Have any post docs who worked for you during the FY17 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 FY17 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?

Release of Germplasm/Cultivars

Instructions: In the table below, list all germplasm and/or cultivars released with full or partial support through the USWBSI during the FY17 award period. All columns must be completed for each listed germplasm/cultivar. Use the key below the table for Grain Class abbreviations. *Leave blank if you have nothing to report or if your grant did NOT include any VDHR-related projects.*

Name of Germplasm/Cultivar	**Grain Class**	**FHB Resistance** (S, MS, MR, R, where R represents your most resistant check)	**FHB Rating** (0-9)	**Year Released**

Add rows if needed.

NOTE: List the associated release notice or publication under the appropriate sub-section in the 'Publications' section of the FPR.

Abbreviations for Grain Classes

Barley - BAR
Durum - DUR
Hard Red Winter - HRW
Hard White Winter - HWW
Hard Red Spring - HRS
Soft Red Winter - SRW
Soft White Winter - SWW

Publications, Conference Papers, and Presentations

Instructions: Refer to the FY17-FPR_Instructions for detailed instructions for listing publications/presentations about your work that resulted from all of the projects included in the FY17 grant. Only include citations for publications submitted or presentations given during your award period (5/23/17 - 5/22/18). If you did not have any publications or presentations, state 'Nothing to Report' directly above the Journal publications section.

NOTE: Directly below each reference/citation, you must indicate the Status (i.e. published, submitted, etc.) and whether acknowledgement of Federal support was indicated in publication/ presentation.

Journal publications.

Books or other non-periodical, one-time publications.

Other publications, conference papers and presentations.

Bowen, K.L., J. Jones, and M. Pegues. 2018. Evaluation of foliar fungicide treatments for control of diseases of wheat in south Alabama, 2017. Plant Dis. Manag. Reports 12: CF070.
Status: Technical report published.
Acknowledgement of Federal Support: not allowed on these reports.