USDA-ARS | U.S. Wheat and Barley Scab Initiative

# FY22 Performance Progress Report

**Due date:** July 26, 2023

## Cover Page

| | |
|---|---|
| **USDA-ARS Agreement ID:** | 59-0206-2-095 |
| **USDA-ARS Agreement Title:** | Management of Fusarium Head Blight (FHB) and DON in Soft Red Winter Wheat in Alabama |
| **Principle Investigator (PI):** | Kira Bowen |
| **Institution:** | Auburn University |
| **Institution UEI:** | DMQNDJDHTDG4 |
| **Fiscal Year:** | 2022 |
| **FY22 USDA-ARS Award Amount:** | $18,573 |
| **PI Mailing Address:** | Auburn University, Department of Entomology and Plant Pathology<br>209 Rouse Bldg,<br>Auburn, AL 36849 |
| **PI E-mail:** | bowenkl@auburn.edu |
| **PI Phone:** | 334-844-1953 |
| **Period of Performance:** | May 1, 2022 – April 30, 2024 |
| **Reporting Period End Date:** | April 30, 2023 |

## USWBSI Individual Project(s)

| USWBSI Research Category* | Project Title | ARS Award Amount |
|---|---|---|
| MGMT IM-CP | Integrated Strategies for Improved Management of FHB and DON in Soft Red Winter Wheat | $18,573 |
| | **FY22 Total ARS Award Amount** | $18,573 |

I am submitting this report as an: ☒ Annual Report

*I certify to the best of my knowledge and belief that this report is correct and complete for performance of activities for the purposes set forth in the award documents.*

Kira L. Bowen

_____ 25 July 2023 _____

Principal Investigator Signature Date Report Submitted

ǂ BAR-CP – Barley Coordinated Project
DUR-CP – Durum Coordinated Project
EC-HQ – Executive Committee-Headquarters
FST-R – Food Safety & Toxicology (Research)
FST-S – Food Safety & Toxicology (Service)
GDER – Gene Discovery & Engineering Resistance
HWW-CP – Hard Winter Wheat Coordinated Project
MGMT – FHB Management
MGMT-IM – FHB Management – Integrated Management Coordinated Project
PBG – Pathogen Biology & Genetics
TSCI – Transformational Science
VDHR – Variety Development & Uniform Nurseries
NWW –Northern Soft Winter Wheat Region
SPR – Spring Wheat Region
SWW – Southern Soft Red Winter Wheat Region

**Project 1:** Integrated Strategies for Improved Management of FHB and DON in Soft Red Winter Wheat

---

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

Major goals of this project are:

1. To develop integrated management strategies for FHB and mycotoxins that are robust to conditions experienced in production fields of wheat.
2. Help develop and validate the next generation of management and mitigation tools for FHB and mycotoxin control.

Objectives are:

1. To evaluate the integrated effects of fungicide and genetic resistance on FHB and DON in soft red winter wheat (SRWW) grown in AL and
2. To evaluate the efficacy of two newer products (ProsarPro® and Sphaerex®) relative to currently recommended fungicides (MiravisAce®, Prosaro®, and Caramba®) for FHB management.

**2. What was accomplished under these goals or objectives?** *(For each major goal/objective, address these three items below.)*

**a) What were the major activities?**

i. During summer and fall 2022, yield data were collected and analyzed, and harvest samples were tested for DON from winter wheat field studies planted in the fall of 2021.

ii. A field trial was planted in Fall 2022 at GC (= south AL, 30.542, -87.882) with a factorial set of treatments for two cultivars and nine fungicide treatments. During Spring 2023, disease ratings were done and head samples collected for determination of the average scab severity per head (=index).

**b) What were the significant results?**

i. From 1 May 2022, from trial at GC, no differences were noted between the two cultivars (AGS 2021, MR, and Pioneer P26R94, MS). However, each of the fungicide treatments reduced the scab index, with lowest values seen with MiravisAce fb Sphaerex and the Sphaerex only treatments than the non-treated control and the MiravisAce only treatments. Test weights, yield, and % FDK did not statistically differ among treatments or cultivars. However, each of the fungicide treatments increased test weights, and greatest gains were seen with MiravisAce fb ProsaroPro or fb Sphaerex; the MiravisAce fb ProsaroPro also increased yield (bu/A) by 9.5% compared to the non-treated control. DON content was significantly reduced with each of the fungicide treatments; greatest reductions ($\geq$ 50%) were noted with MiravisAce fb ProsaroPro, Miravis fb Sphaerex, and Caramba treatments compared to the non-treated control.

ii. In April 2023, at GC, although not statistically different, field ratings indicate that AGS 2021 has greater resistance to FHB than Pioneer 26R94. Similarly, MiravisAce, and the two application programs with MiravisAce, had numerically lower field ratings for scab than the non-treated control.

**c) List key outcomes or other achievements.**

Established fungicides for FHB management (Caramba, Prosaro, MiravisAce) continue to provide good efficacy compared to newer products such as ProsaroPro and Sphaerex.

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

Graduate students have been trained to recognize and rate disease levels in wheat.

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

A summary report is provided to station personnel and results from all locations at which work was done is shared with growers at a commodity group meeting. Results are also discussed with extension specialists on campus.

# Publications, Conference Papers, and Presentations

Please include a listing of all your publications/presentations about your FHB work that were a result of funding from your FY22 grant award. Only citations for publications published (submitted or accepted) or presentations presented during the **award period** should be included.

**Did you publish/submit or present anything during this award period May 1, 2022 – April 30, 2023?**

☒ Yes, I've included the citation reference in listing(s) below.

☐ No, I have nothing to report.

## Journal publications as a result of FY22 award

*List peer-reviewed articles or papers appearing in scientific, technical, or professional journals. Include any peer-reviewed publication in the periodically published proceedings of a scientific society, a conference, or the like.*

Identify for each publication: Author(s); title; journal; volume: year; page numbers; status of publication (published [include DOI#]; accepted, awaiting publication; submitted, under review; other); acknowledgement of federal support (yes/no).

## Books or other non-periodical, one-time publications as a result of FY22 award

*Report any book, monograph, dissertation, abstract, or the like published as or in a separate publication, rather than a periodical or series. Include any significant publication in the proceedings of a one-time conference or in the report of a one-time study, commission, or the like.*

Identify for each one-time publication: Author(s); title; editor; title of collection, if applicable; bibliographic information; year; type of publication (book, thesis, or dissertation, other); status of publication (published; accepted, awaiting publication; submitted, under review; other); acknowledgement of federal support (yes/no).

## Other publications, conference papers and presentations as a result of FY22 award

Identify any other publications, conference papers and/or presentations not reported above. Specify the status of the publication.

Bowen, K. (2022). Fusarium head blight management in Alabama: Observations from 2021 and 2022 spring seasons. Proceedings of the National Fusarium Head Blight Forum; Tampa, FL. December 4-6, 2022. Retrieved from: https://scabusa.org/forum/2022/2022NFHBForumProceedings.pdf