USDA-ARS
U.S. Wheat and Barley Scab Initiative
FY19 Final Performance Report
Due date: July 24, 2020

Cover Page

Principle Investigator (PI):	Heather Kelly
Institution:	University of Tennessee
E-mail:	youngkelly@utk.edu
Phone:	731-425-4713
Fiscal Year:	2019
USDA-ARS Agreement ID:	59-0206-6-009
USDA-ARS Agreement Title:	Integrated Management of FHB and DON in Soft Red Winter Wheat in Tennessee
FY19 USDA-ARS Award Amount:	$ 12,832
Recipient Organization:	UTIA Office of Sponsored Programs 2621 Morgan Circle Drive 225 Morgan Hall Knoxville, TN 37996-4514
DUNS Number:	133891015
EIN:	62-6001636
Recipient Identifying Number or Account Number:	R11-1017-338
Project/Grant Reporting Period:	6/1/19 - 5/31/20
Reporting Period End Date:	5/31/2020

USWBSI Individual Project(s)

USWBSI Research Category*	Project Title	ARS Award Amount
MGMT	Integrated Management of FHB and DON in Soft Red Winter Wheat in Tennessee	$ 12,832
	FY19 Total ARS Award Amount	**$ 12,832**

Heather M. Kelly

7/29/2020

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 Management of FHB and DON in Soft Red Winter Wheat in Tennessee*

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

   1) Develop integrated management strategies for FHB and mycotoxins that are robust to conditions experienced in production fields

   2) Help develop and validate the next generation of management tools for FHB/DON control

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

   a) What were the major activities?
   Two field trials using soft winter wheat (2 varieties – P26R59 susceptible and P26R36 moderately susceptible) were conducted which evaluated 3 fungicides applied at bloom (Feekes 10.5.1): Prosaro, Caramba, and Miravis Ace, with the latter also being applied at heading (Feekes 10.5). Disease ratings (field severity and incidence and Fusarium damaged kernel (FDK)), yield, and when deemed necessary DON data was collected.

   b) What were the significant results?
   No significant disease pressure occurred at either location (no field disease ratings taken). As expected the FDK ratings were not statistically different across varieties or fungicide treatments. At Milan location, the full susceptible variety had statistically greater yield (88.4 vs. 81.8 bu/a). At the Jackson location, only test weight was statistically different where the more tolerant variety was greater (55.6 vs 52.5 lbs) and the Miravis Ace applied at bloom had statistically the greatest test weight. Due to the lack of FHB in the field, samples were not sent for DON testing.

   c) List key outcomes or other achievements.
   These data were presented to growers as well as previous years data from this initiative the highlighted the advantages to using a more FHB tolerant variety as well as utilizing scouting for disease and FHB forecast model to best guide when fungicide applications are warranted and when they are not, saving producers money and reducing unnecessary fungicide applications.

3. **Was this research impacted by the COVID-19 pandemic (i.e. university shutdowns, reduced or lack of support personnel, etc.)? If yes, please explain how this research was impacted or is continuing to be impacted.**

   No

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

Graduate and undergraduate students have learned how to scout for wheat diseases and rate FDK as well as seen first-hand a factorial field plot design and the analysis of data from such a design.

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

Included in production meeting presentations to producers (>12 in reporting time period) and posted on the web (utcrops.com and news.utcrops.com)

Training of Next Generation Scientists

Instructions: Please answer the following questions as it pertains to the FY19 award period (6/1/19 - 5/31/20). 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 FY19 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 FY19 award period?**
   No
   If yes, how many?

3. **Have any post docs who worked for you during the FY19 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 FY19 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 FY19 award period. All columns must be completed for each listed germplasm/cultivar. Use the key below the table for Grain Class abbreviations.

NOTE: 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 FY19-FPR_Instructions for detailed more instructions for listing publications/presentations about your work that resulted from all of the projects included in the FY19 grant award. Only citations for publications published (submitted or accepted) or presentations presented during the **award period (6/1/19 - 5/31/20**) should be included. If you did not publish/submit or present anything, state 'Nothing to Report' directly above the Journal publications section.

NOTE: Directly below each citation, you **must** indicate the Status (i.e. published, submitted, etc.) and whether acknowledgement of Federal support was indicated in the publication/ presentation. See example below for a poster presentation with an abstract:

De Wolf, E., D. Shah, P. Paul, L. Madden, S. Crawford, D. Hane, S. Canty, R. Dill-Macky, D. Van Sanford, K. Imhoff and D. Miller. 2019. "Impact of Prediction Tools for Fusarium Head Blight in the US, 2009-2019." In: S. Canty, A. Hoffstetter, H. Campbell and R. Dill-Macky (Eds.), *Proceedings of the 2019 National Fusarium Head Blight Forum* (p. 12), Milwaukee, WI; December 8-10. University of Kentucky, Lexington, KY.
Status: Abstract Published and Poster Presented
Acknowledgement of Federal Support: YES (Abstract and Poster)

Journal publications.

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

Other publications, conference papers and presentations.

Paul, P.A., S. J. Ng, G. Bergstrom, K. Bissonnette, K. Bowen, C. Bradley, E. Byamukama, M. Chilvers, A. Collins, C. Cowger, H. Darby, E. DeWolf, R. Dill-Macky, P. Esker, A. Friskop, N. Kleczewski, A. Koehler, L. Madden, J. Marshall, H. Mehl, W. Moraes, M. NegelKirk, N. Rawat, D. Smith, D. Telenko, S. Wegulo, and H. Young-Kelly. 2019. "Fusarium head blight management coordinated project: integrated management trials 2018-2019." In: S. Canty, A. Hoffstetter, H. Campbell and R. Dill-Macky (Eds.), *Proceedings of the 2019 National Fusarium Head Blight Forum* (p. 12), Milwaukee, WI; December 8-10. University of Kentucky, Lexington, KY.
Status: Poster presented and paper published.
Acknowledgement of Federal Support: YES on both.

Bowen, K.L. 2019. Fusarium head blight management in Alabama. Proc. 2019 National Fusarium Head Blight Forum, p. 3.
Status: Poster presented and abstract published.
Acknowledgement of Federal Support: Yes on both.

Paul, P.A., S. J. Ng, G. Bergstrom, K. Bissonnette, K. Bowen, C. Bradley, E. Byamukama, M. Chilvers, A. Collins, C. Cowger, H. Darby, E. DeWolf, R. Dill-Macky, P. Esker, A. Friskop, N. Kleczewski, A. Koehler, L. Madden, J. Marshall, H. Mehl, W. Moraes, M. NegelKirk, N. Rawat, D. Smith, D. Telenko, S. Wegulo, and H. Young-Kelly. 2019. "Fusarium head blight management coordinated project: uniform fungicide trials 2018-2019." In: S. Canty, A. Hoffstetter, H. Campbell and R. Dill-Macky (Eds.), *Proceedings of the 2019 National Fusarium Head Blight Forum* (p. 20), Milwaukee, WI; December 8-10. University of Kentucky, Lexington, KY.
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