

USDA-ARS
U.S. Wheat and Barley Scab Initiative
FY20 Annual Performance Progress Report
Due date: August 31, 2021

Cover Page

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| Principle Investigator (PI): | Heather Kelly |
| Institution: | University of Tennessee-Knoxville |
| E-mail: | youngkelly@utk.edu |
| Phone: | 731-425-4713 |
| Fiscal Year: | 2020 |
| USDA-ARS Agreement ID: | 59-0206-0-185 |
| USDA-ARS Agreement Title: | Investigation of Fusarium Head Blight in Tennessee |
| FY20 USDA-ARS Award Amount: | \$ 13,443 |
| 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: | R111017479 |
| Project/Grant Reporting Period: | 6/1/20 - 5/31/21 |
| Reporting Period End Date: | 5/31/2021 |

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 | \$ 13,443 |
| FY20 Total ARS Award Amount | | \$ 13,443 |



 Principal Investigator

8/31/21

 Date

* MGMT – FHB Management
 FST – Food Safety & Toxicology
 R- Research
 S – Service (DON Testing Labs)
 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

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 these three items below.)

a) What were the major activities?

FHB trials were conducted across 4 different varieties (Pioneer26R59, Pioneer26R45, Beck's726, and Beck's730) at 2 locations (Research and Education Center at Milan and on-farm location – Cotton Grove) and investigated 5 different treatments (Prosaro® 6.5 fl oz/a at anthesis, Miravis Ace® 13.7 fl oz/a at anthesis, Miravis Ace 13.7 fl oz/a at 50% head emergence, BAS840/Sphaerex 7.3 fl oz/a at anthesis, and Miravis Ace 13.7 fl oz/a at anthesis followed by TebuStar 4 fl oz/a 6 days after anthesis).

b) What were the significant results?

While only low levels of FHB developed at one location (Cotton Grove), there was significant separation, as expected across the 4 varieties, with lower FHB incidence and severity developing on the more tolerant varieties. Although there was no difference in yield across varieties or treatments at either location, most likely due to the low disease pressure.

c) List key outcomes or other achievements.

These data will be presented to growers as well as previous years data from this initiative that highlight the advantages of using a more FHB tolerant variety as well as utilizing scouting and FHB forecast model to best guide fungicide application decisions, doing such saves producers money and reduces unnecessary fungicide applications.

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

No

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

Undergraduate and graduate students assisted in collected data from the trial as well as get hands-on experience with a factorial field plot design and analysis of data from such a design

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

These results will be disseminated through winter production meetings (~12 meetings) as well as posted on the web (UTcrops.com and news.utcrops.com) and shared with the MGMT FHB group.

Training of Next Generation Scientists

Instructions: Please answer the following questions as it pertains to the FY20 award period (6/1/20 - 5/31/21). 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?**

Yes No Not Applicable

If yes, how many? [Click to enter number here.](#)

- 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?**

Yes No Not Applicable

If yes, how many? [Click to enter number here.](#)

- 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?**

Yes No Not Applicable

If yes, how many? [Click to enter number here.](#)

- 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?**

Yes No Not Applicable

If yes, how many? [Click to enter number here.](#)

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Publications, Conference Papers, and Presentations

Instructions: Refer to the PR_Instructions for detailed more instructions for listing publications/presentations about your work that resulted from all of the projects included in the FY20 grant award. Only citations for publications published (submitted or accepted) or presentations presented during the **award period (6/1/20 - 5/31/21)** 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:

Winn, Z.J., Acharya, R., Lyerly, J., Brown-Guedira, G., Cowger, C., Griffey, C., Fitzgerald, J., Mason R.E., and Murphy, J.P. (2020, Dec 7-11). Mapping of Fusarium Head Blight Resistance in NC13-20076 Soft Red Winter Wheat (p. 12). In: Canty, S., Hoffstetter, A. and Dill-Macky, R. (Eds.), *Proceedings of the 2020 National Fusarium Head Blight Forum*. https://scabusa.org/pdfs/NFHB20_Proceedings.pdf.

Status: Abstract Published and Poster Presented

Acknowledgement of Federal Support: YES (Abstract and Poster)

Journal publications.

Nothing to report.

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

Nothing to report.

Other publications, conference papers and presentations.

Kelly, H. 2021. Wheat Disease Update and Fungicide Considerations. News article on blog news.utcrops.com published April 21, 2021.

<https://news.utcrops.com/2021/04/wheat-disease-update-and-fungicide-considerations-2/>

Status: published blog/newsletter article

Acknowledgement of Federal Support: Yes

Luis, J.M., Ng, S.J., Bergstrom, G., Bissonnette, K., Bowen, K., Bradley, C., Byamukama, E., Chilvers, M., Collins, A., Cowger, C., Darby, H., DeWolf, E., Dill-Macky, R., Esker, P., Friskop, A., Kleczewski, N., Koehler, A., Madden, L., Marshall, J., Mehl, H., Moraes, W.,

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Nagelkirk, M., Rawat, N., Smith, D., Telenko, D., Wegulo, S., Young-Kelly, H., and Paul, P.A. (2020, Dec. 7-11). Fusarium head blight management coordinated project: Integrated management trials 2018-2020 (pp. 38-43). In: Canty, S., Hoffstetter, A. and Dill-Macky, R. (Eds.), *Proceedings of the 2020 National Fusarium Head Blight Forum*. https://scabusa.org/pdfs/NFHBF20_Proceedings.pdf.

Status: Published

Acknowledgement of Federal Support: Yes

Luis, J.M., Ng, S.J., Bergstrom, G., Bissonnette, K., Bowen, K., Bradley, C., Byamukama, E., Chilvers, M., Collins, A., Cowger, C., Darby, H., DeWolf, E., Dill-Macky, R., Esker, P., Friskop, A., Kleczewski, N., Koehler, A., Madden, L., Marshall, J., Mehl, H., Moraes, W., Nagelkirk, M., Rawat, N., Smith, D., Telenko, D., Wegulo, S., Young-Kelly, H., and Paul, P.A. (2020, Dec. 7-11). Fusarium head blight management coordinated project: Uniform fungicide trials 2018-2020 (pp. 44-48). In: Canty, S., Hoffstetter, A. and Dill-Macky, R. (Eds.), *Proceedings of the 2020 National Fusarium Head Blight Forum*. https://scabusa.org/pdfs/NFHBF20_Proceedings.pdf.

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