

**USDA-ARS**  
**U.S. Wheat and Barley Scab Initiative**  
**FY20 Annual Performance Progress Report**  
**Due date: July 29, 2021**

**Cover Page**

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<b>Fiscal Year:</b>	2020
<b>USDA-ARS Agreement ID:</b>	59-0206-0-125
<b>USDA-ARS Agreement Title:</b>	Applied Management of Fusarium Head Blight in Missouri Soft Red Winter Wheat
<b>FY20 USDA-ARS Award Amount:</b>	\$ 15,189
<b>Recipient Organization:</b>	The Curators of the University of Missouri 310 Jesse Hall Columbia, MO 65211
<b>DUNS Number:</b>	153890272
<b>EIN:</b>	43-6003859
<b>Recipient Identifying Number or Account Number:</b>	68644
<b>Project/Grant Reporting Period:</b>	5/1/20 - 4/30/21
<b>Reporting Period End Date:</b>	4/30/2021

**USWBSI Individual Project(s)**

<b>USWBSI Research Category*</b>	<b>Project Title</b>	<b>ARS Award Amount</b>
MGMT	Integrated Disease Management for FHB and DON in Missouri	\$ 15,189
<b>FY20 Total ARS Award Amount</b>		<b>\$ 15,189</b>

07/29/2021

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Principal Investigator

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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 Disease Management for FHB and DON in Missouri**

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

- 1) Validation that, like has previously been reported for Prosaro® and Caramba®, the greatest reductions in DON and FHB index are observed when an application of Miravis Ace® is coupled with a moderately resistant cultivar.
- 2) An evaluation of an early application time (Feekes 10.3) of Miravis Ace and the impacts on FHB index and DON content as compared to the industry standards Prosaro and Caramba.

**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?**

For objectives 1 and 2, field trials were established at two locations in Missouri, one irrigated, one non-irrigated, which were artificially inoculated with a Fusarium spore suspension to ensure infection. Two trials were conducted at each location, the first focusing on objective 1 looking at the use of a moderately resistant variety as compared to a susceptible variety in combination with a fungicide applied at recommended timings. The second trial focused on objective two comparing fungicide effectiveness in a susceptible variety and the evaluation of fungicide timing of Miravis Ace as compared to industry standards.

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

Differences were noted among treatments for control of DON accumulation in the grain in year one, but results from year 2 have yet to be assessed at the time of this report. Overall, Miravis Ace applied at Feekes 10.5.1 provided comparable control to both Prosaro and Caramba for FHB index and DON in year 1 in both the integrated management study and the fungicide timing trial.

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

A major outcome of this work was the contribution to the regional dataset to improve our understanding of Miravis Ace across diverse environments.

**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.**

Yes. Due to Covid-19 restrictions (order to cease research at the university by close of business March 20, 2020) and travel limitations (no travel outside of Columbia starting

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March 20, 2020), training and professional development opportunities for this project became limited. It is during this timeframe that most opportunities for outreach begin with 99% of acreage in the state in winter wheat production. Field days for the 2020 season were canceled and field research efforts faced restrictions through wheat harvest and beyond. Restrictions were lifted as of June 1, 2021.

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

Due to the impacts of Covid-19, opportunities for dissemination of project results have been limited. An overview of the results of this project were presented at pesticide applicator recertification trainings virtually in January 2021 to growers, industry professionals, and other stakeholders. At the time of this report, an undergraduate researcher has been working to further develop the dataset for presentation for Missouri growers as restrictions have been lifted.

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

Data have been presented via the FHB forum in December 2020 and at commercial pesticide application trainings in January of 2021.

## Training of Next Generation Scientists

**Instructions:** Please answer the following questions as it pertains to the FY20 award period (5/1/20 - 4/30/21). 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 FY20 award period?**

Yes     No

**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 FY20 award period?**

Yes     No

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

- 3. Have any post docs who worked for you during the FY20 award period and were supported by funding from your USWBSI grant taken faculty positions with universities?**

Yes     No

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

- 4. Have any post docs who worked for you during the FY20 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

**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 (5/1/20 - 4/30/21)** 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:

Z.J. Winn, R. Acharya, J. Lyerly, G. Brown-Guedira, C. Cowger, C. Griffey, J. Fitzgerald, R.E. Mason and J.P. Murphy. 2020. "Mapping of Fusarium Head Blight Resistance in NC13-20076 Soft Red Winter Wheat." In: S. Canty, A. Hoffstetter, and R. Dill-Macky (Eds.), *Proceedings of the 2020 National Fusarium Head Blight Forum* (p. 12.), Virtual; December 7-11. Online: [https://scabusa.org/pdfs/NFHB20\\_Proceedings.pdf](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.

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., Langston, D.B., 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. Fusarium head blight management coordinated project: Integrated management trials 2018-2020. In S. Canty, A. Hoffstetter, H. Campbell, and R. Dill-Macky (Eds.), *Proceedings of the 2020 National Fusarium Head Blight Forum* (p. 38-43), Virtual; December 2020. University of Kentucky, Lexington, KY.

Status: Report Published and Poster Presented

Acknowledgement of Federal Support: Yes

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Status: Report Published and Poster Presented

Acknowledgement of Federal Support: Yes