USDA-ARS/
U.S. Wheat and Barley Scab Initiative
FY19 Final Performance Progress Report
Due date: July 29, 2021

Cover Page

Principle Investigator (PI):	Kaitlyn Bissonnette
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Fiscal Year:	2019
USDA-ARS Agreement ID:	59-0206-9-120
USDA-ARS Agreement Title:	Applied Management of Fusarium Head Blight in Missouri Soft Red Winter Wheat
FY19 USDA-ARS Award Amount:	$ 10,174
Recipient Organization:	The Curators of the University of Missouri 310 Jesse Hall Columbia, MO 65211
DUNS Number:	153890272
EIN:	43-6003859
Recipient Identifying Number or Account Number:	059158
Project/Grant Reporting Period:	5/1/19-4/30/21
Reporting Period End Date:	4/30/2021

USWBSI Individual Project(s)

USWBSI Research Category*	Project Title	ARS Award Amount
MGMT	Efficacy of New Fungicides for FHB and DON Management in Missouri	$ 10,174
	FY19 Total ARS Award Amount	**$ 10,174**

07/29/2021

Principal Investigator Date

* MGMT – FHB Management
FST – Food Safety & Toxicology
R – Research
S – Service (DON Testing Lab)
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: *Efficacy of New Fungicides for FHB and DON Management in Missouri*

1. **What are the major goals and objectives of the research project?**
   The major goal of this research project was to compare the efficacy of Miravis Ace® when applied at heading or at anthesis to that of standard anthesis application of Prosaro® or Caramba® in Missouri.

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?**
   Field plots were established at the Bradford Research Farm in Columbia, Missouri with a Fusarium inoculated trial and a non-inoculated trial. Each trial was intermittently irrigated to increase infection potential. Commercial standard fungicide treatments were applied at the Feekes 10.5.1 growth stage and were compared to Miravis Ace applied at Feekes 10.3 and Feekes 10.5.1. FHB incidence and severity were noted and used to calculate FHB index. Additionally, DON concentration was calculated for the grain collected from each plot.

   b) **What were the significant results?**
   In both trials, the Miravis Ace treatment at Feekes 10.5.1 provided comparable control to Prosaro as compared to the non-treated check for both FHB index and DON. Though high levels of disease were observed, DON levels were not as high as expected.

   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. Additionally, these data launched into the next phase of integrated disease management questions for this product including the use of moderately resistant varieties and the coupling of different product timings as compared to a standard FHB management strategy for the region.

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 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 forums in December 2019 and 2020 and at commercial pesticide application trainings in January of 2020 and 2021.

Training of Next Generation Scientists

Instructions: Please answer the following questions as it pertains to the **FY19 award period (5/1/19-4/30/21)**. 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 FY19 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 FY19 award period?**
   ☐Yes ☒No
   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
   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
   If yes, how many? Click to enter number here.

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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 (5/1/19-4/30/21)**. 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	FHB Rating (0-9)	Year Released
Not applicable to this project.	Select Grain Class	Select what represents your most resistant check	Enter as text 0-9 rating	Select Year
Click here to enter text.	Select Grain Class	Select what represents your most resistant check	Enter as text 0-9 rating	Select Year
Click here to enter text.	Select Grain Class	Select what represents your most resistant check	Enter as text 0-9 rating	Select Year
Click here to enter text.	Select Grain Class	Select what represents your most resistant check	Enter as text 0-9 rating	Select Year
Click here to enter text.	Select Grain Class	Select what represents your most resistant check	Enter as text 0-9 rating	Select Year
Click here to enter text.	Select Grain Class	Select what represents your most resistant check	Enter as text 0-9 rating	Select Year
Click here to enter text.	Select Grain Class	Select what represents your most resistant check	Enter as text 0-9 rating	Select Year
Click here to enter text.	Select Grain Class	Select what represents your most resistant check	Enter as text 0-9 rating	Select Year
Click here to enter text.	Select Grain Class	Select what represents your most resistant check	Enter as text 0-9 rating	Select Year
Click here to enter text.	Select Grain Class	Select what represents your most resistant check	Enter as text 0-9 rating	Select Year
Click here to enter text.	Select Grain Class	Select what represents your most resistant check	Enter as text 0-9 rating	Select Year
Click here to enter text.	Select Grain Class	Select what represents your most resistant check	Enter as text 0-9 rating	Select Year
Click here to enter text.	Select Grain Class	Select what represents your most resistant check	Enter as text 0-9 rating	Select Year
Click here to enter text.	Select Grain Class	Select what represents your most resistant check	Enter as text 0-9 rating	Select Year

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

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Publications, Conference Papers, and Presentations

Instructions: Refer to the 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 (5/1/19-4/30/21**) 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/NFHBF20_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

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: Uniform fungicide 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. 44-48), Virtual; December 2020. University of Kentucky, Lexington, KY.

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Acknowledgement of Federal Support: Yes