

FY19 Final Performance Progress Report
PI: Bergstrom, Gary
USDA-ARS Agreement #: 59-0206-8-195
Reporting Period: 5/3/19 - 8/2/21

Project 1: *Integrated Management of FHB and DON in Winter Wheat in New York*

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

To provide more robust recommendations for management of Fusarium head blight. Emphasis was placed on timings of fungicide treatments involving Miravis Ace.

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?

To provide more robust recommendations for management of Fusarium head blight. Emphasis was placed on timings of fungicide treatments involving Miravis Ace.

b) What were the significant results?

Unfortunately, due to a very dry flowering and grain filling period, there was no significant development of foliar diseases, FHB, or DON contamination in either variety, AAC Synergy or KWS Tinka. Chemical or biological fungicide treatments and their timings had no significant effect on yield, test weight, or diseases parameters.

c) List key outcomes or other achievements.

It is important to document effects, or in this case the lack of effects, of fungicide inputs in the absence of significant diseases.

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.

All objectives were accomplished in spite of COVID-19. We were unable to hire undergraduate workers in 2020, so there was a heavier workload on technical staff. That continues into FY20 and FY21.

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

Though not funded on the grant, M.S. student Andrea Lugo-Torres helped to achieve project objectives. She landed a scientific position with Ascribe LLC and has been a research scientist there since September 2020.

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

Through field days, winter grower meetings, email listserves, presentations at the FHB Forum, and publication in *Plant Disease Management Reports*.

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Training of Next Generation Scientists

Instructions: Please answer the following questions as it pertains to the **FY19 award period (5/3/19 - 8/2/21)**. 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? 1

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.](#)

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 (5/3/19 - 8/2/21)**. 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
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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 (5/3/19 - 8/2/21)** 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.

Fulcher, M.R., J.B. Winans, and G.C. Bergstrom. 2021. *Fusarium graminearum* isolates obtained from wheat and wild grasses in northeastern New York display comparable range of phenotypes, including virulence on crop hosts. *J. Plant Pathol.* 103:71-77. <https://doi.org/10.1007/s42161-020-00717-w> Received Editor's Choice Designation (<https://rdcu.be/ceTTs>).

Status: Published

Acknowledgement of Federal Support: Yes

Starr, J.K., A. Lugo-Torres, G.C. Bergstrom, and P.J. Stachowski. 2021. Evaluation of integrated methods for management of Fusarium head blight and foliar diseases of spring malting barley in New York, 2020. *Plant Disease Management Reports* 15: CF147.

Status: Published

Acknowledgement of Federal Support: Yes

Starr, J.K., A. Lugo-Torres, G.C. Bergstrom, and P.J. Stachowski. 2021. Evaluation of integrated methods for management of Fusarium head blight and foliar diseases of winter malting barley in New York, 2020. *Plant Disease Management Reports* 15: CF146.

Status: Published

Acknowledgement of Federal Support: Yes

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Starr, J.K., A. Lugo-Torres, G.C. Bergstrom, and P.J. Stachowski. 2021. Evaluation of integrated methods for management of Fusarium head blight and foliar diseases of winter wheat in New York, 2020. *Plant Disease Management Reports* 15: CF145.

Status: Published

Acknowledgement of Federal Support: Yes

Cowger, C., J. Smith, D. Boos, C.A. Bradley, J.K. Ransom, and G.C. Bergstrom. 2020. Managing a destructive, episodic crop disease: A national survey of wheat and barley growers' experience with Fusarium head blight. *Plant Dis.*104:634-648.

<https://apsjournals.apsnet.org/doi/10.1094/PDIS-10-18-1803-SR>

Status: Published

Acknowledgement of Federal Support: Yes

Fulcher, M.R., J.B. Winans, M. Quan, and G.C. Bergstrom. 2020. The incidence of *Fusarium graminearum* in wild grasses is associated with rainfall and cumulative host density in New York. *Plant Dis.* 104: 2681-2687. <https://doi.org/10.1094/PDIS-02-20-0286-RE>

Status: Published

Acknowledgement of Federal Support: Yes

Fulcher, M.R., E.D. Oladipo, J.B. Winans, M. Quan, and G.C. Bergstrom. 2020. Structure and diversity of *Fusarium* communities inhabiting non-cultivated grass inflorescences in New York State. *Can. J. Plant Pathol.* 43: 48-55.

<https://www.tandfonline.com/doi/abs/10.1080/07060661.2020.1788166>

Status: Published

Acknowledgement of Federal Support: Yes

Starr, J.K., K.L. Myers, A. Lugo-Torres, G.C. Bergstrom, and P.J. Stachowski. 2020. Evaluation of integrated methods for management of Fusarium head blight of spring malting barley in New York, 2019. *Plant Disease Management Reports* 14: CF050.

Status: Published

Acknowledgement of Federal Support: Yes

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

Nothing to report

Other publications, conference papers and presentations.

Luis, Jane Marian, Sin Joe Ng, Gary Bergstrom, Kaitlyn Bissonnette, Kira Bowen, Carl Bradley, Emmanuel Byamukama, Martin Chilvers, Alyssa Collins, Christina Cowger, Heather Darby, Erick DeWolf, Ruth Dill-Macky, Paul Esker, Andrew Friskop, Nathan Kleczewski, Alyssa Koehler, David B. Langston, Laurence Madden, Juliet Marshall,

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Hillary Mehl, Wanderson Moraes, Martin Nagelkirk, Nidhi Rawat, Damon Smith, Darcy Telenko, Stephen Wegulo, Heather Young-Kelly and Pierce A Paul. 2020. Fusarium head blight management coordinated project: Integrated management trials 2018-2020. Pages 38-43 In: Canty, S., A. Hoffstetter, and R. Dill-Macky (Eds.), *Proceedings of the 2020 National Fusarium Head Blight Forum*. East Lansing, MI: U.S. Wheat & Barley Scab Initiative.

Status: Report Published and Poster Presented

Acknowledgement of Federal Support: Yes

Luis, Jane Marian, Sin Joe Ng, Gary Bergstrom, Kaitlyn Bissonnette, Kira Bowen, Carl Bradley, Emmanuel Byamukama, Martin Chilvers, Alyssa Collins, Christina Cowger, Heather Darby, Erick DeWolf, Ruth Dill Macky, Paul Esker, Andrew Friskop, Nathan Kleczewski, Alyssa Koehler, David Langston, Jr., Laurence Madden, Juliet Marshall, Hillary Mehl, Wanderson Moraes, Martin NagelKirk, Nidhi Rawat, Damon Smith, Darcy Telenko, Stephen Wegulo, Heather Young-Kelly and Pierce A Paul. 2020. Fusarium head blight management coordinated project: Uniform fungicide trials 2018-2020. Pages 44-47 In: Canty, S., A. Hoffstetter, and R. Dill-Macky (Eds.), *Proceedings of the 2020 National Fusarium Head Blight Forum*. East Lansing, MI: U.S. Wheat & Barley Scab Initiative.

Status: Report Published and Poster Presented

Acknowledgement of Federal Support: Yes

Fulcher, M.R., J.B. Winans, M. Quan, J.P. Garcia, K.C.M. Damann, and G. C. Bergstrom. 2019. "Potential of wild grass hosts to serve as reservoirs of pathogen genetic diversity and sources of inoculum." In S. Canty, A. Hoffstetter, H. Campbell, and R. Dill-Macky (Eds.), *Proceedings of the 2019 National Fusarium Head Blight Forum* (p. 67-70), Milwaukee, WI; December 8-10. University of Kentucky, Lexington, KY.

Status: Report Published

Acknowledgement of Federal Support: Yes

Lugo-Torres, A. and G.C. Bergstrom. 2019. "Fusarium flora and mycotoxin profiles of commercial malting barley grain lots in New York." In S. Canty, A. Hoffstetter, H. Campbell, and R. Dill-Macky (Eds.), *Proceedings of the 2019 National Fusarium Head Blight Forum* (p. 74), Milwaukee, WI; December 8-10. University of Kentucky, Lexington, KY.

Status: Report Published

Acknowledgement of Federal Support: Yes

Paul, P.A., S.N. Ng, G. Bergstrom, K. Bissonnette, K. Bowen, C. Bradley, E. Byamukama, Chilvers, A. Collins, C. Cowger, H. Darby, E. DeWolf, R. Dill-Mackey, P.D. Esker, A. Friskop, N. Kleczewski, A. Koehler, L. Madden, J. Marshall, H. Mehl, W. Moraes, M. Nagelkirk, N. Rawat, D. Smith, D. Telenko, S. Wegulo, and H. Young-Kelly. 2019.

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“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. 20-24), Milwaukee, WI; December 8-10. University of Kentucky, Lexington, KY.

Status: Report Published and Poster Presented

Acknowledgement of Federal Support: Yes

Paul, P.A., S.N. Ng, G. Bergstrom, K. Bissonnette, K. Bowen, C. Bradley, E. Byamukama, Chilvers, A. Collins, C. Cowger, H. Darby, E. DeWolf, R. Dill-Mackey, P.D. Esker, A. Friskop, N. Kleczewski, A. Koehler, L. Madden, J. Marshall, H. Mehl, W. Moraes, M. Nagelkirk, 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. 25-29), Milwaukee, WI; December 8-10. University of Kentucky, Lexington, KY.

Status: Report Published and Poster Presented

Acknowledgement of Federal Support: Yes

Extension presentations by Gary C. Bergstrom in 2019-21 that included updates on Fusarium head blight research:

Cornell Seed Growers Field Day, Ithaca, NY. (7/1/21)

Status: Presented

Acknowledgement of Federal Support: Yes, acknowledged verbally.

Cornell Small Grains Management Virtual Field Day (6/3/21)

Status: Presented

Acknowledgement of Federal Support: Yes, acknowledged in slides.

Central New York Virtual Soybean and Disease Summit. (3/3/21)

Status: Presented

Acknowledgement of Federal Support: Yes, acknowledged in slides.

Empire State Barley and Malt Virtual Summit (12/16/20)

Status: Presented

Acknowledgement of Federal Support: Yes, acknowledged in slides.

Cornell Small Grains Management Virtual Field Day (6/4/20)

Status: Presented

Acknowledgement of Federal Support: Yes, acknowledged in slides.