

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

**Cover Page**

<b>Principle Investigator (PI):</b>	Gary Bergstrom
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<b>Fiscal Year:</b>	2020
<b>USDA-ARS Agreement ID:</b>	59-0206-0-126
<b>USDA-ARS Agreement Title:</b>	FHB Management Research in New York
<b>FY20 USDA-ARS Award Amount:</b>	\$ 18,267
<b>Recipient Organization:</b>	Cornell University 341 Pine Tree Road Ithaca NY 14850
<b>DUNS Number:</b>	872612445
<b>EIN:</b>	15-0532082
<b>Recipient Identifying Number or Account Number:</b>	1538132 (OSP91332)
<b>Project/Grant Reporting Period:</b>	5/3/20 - 5/2/21
<b>Reporting Period End Date:</b>	5/2/2021

**USWBSI Individual Project(s)**

<b>USWBSI Research Category*</b>	<b>Project Title</b>	<b>ARS Award Amount</b>
MGMT	Integrated Management of FHB and DON in Wheat and Barley in New York	\$ 18,267
<b>FY20 Total ARS Award Amount</b>		<b>\$ 18,267</b>

**Gary Carlton Bergstrom** Digitally signed by Gary Carlton Bergstrom  
Date: 2021.08.16 11:03:43 -04'00'

Gary C. Bergstrom August 16, 2021  
Principal Investigator 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 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 in wheat and barley. 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?**

We conducted standard protocol IM studies on winter wheat (cultivars Erie, Pioneer 25R25, and Pioneer 25R40), winter barley (cultivars KWS Scala and LCS Violetta), and spring barley (cultivars AC Newdale and AAC Synergy).

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

Unfortunately, dry conditions prevailed through grain filling, thus preventing significant development of FHB or grain contamination with DON. We did find that early application (FGS 10.3) of Miravis Ace resulted in the best control of scald in susceptible varieties of winter barley and of spot blotch in susceptible varieties of spring barley.

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

While best timing of Miravis Ace and other fungicides for FHB management appears to be at FGS 10.5, earlier application may be most beneficial for management of fungal leaf blights.

**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 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*.

## Training of Next Generation Scientists

**Instructions:** Please answer the following questions as it pertains to the FY20 award period (5/3/20 - 5/2/21). 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 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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### 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 FY20 award period (5/3/20 - 5/2/21). 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
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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
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.

## 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 (5/3/20 - 5/2/21)** 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/NFHF20\\_Proceedings.pdf](https://scabusa.org/pdfs/NFHF20_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

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

Nothing to report.

**Other publications, conference papers and presentations.**

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, 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

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**Extension presentations by Gary C. Bergstrom from 5/3/20 to 5/2/21 that included updates on Fusarium head blight research:**

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

Status: Presented

Acknowledgement of Federal Support: Acknowledged in slides.

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

Status: Presented

Acknowledgement of Federal Support: Acknowledged in slides.

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

Status: Presented

Acknowledgement of Federal Support: Acknowledged in slides.

Cornell Virtual Field Crop Dealers Meeting. (12/3/20)

Status: Presented

Acknowledgement of Federal Support: Acknowledged in slides