

**USDA-ARS
U.S. Wheat and Barley Scab Initiative
FY18 Performance Report
Due date: July 12, 2019**

Cover Page

Principle Investigator (PI):	Gary Bergstrom
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Phone:	607-255-7849
Fiscal Year:	2018
USDA-ARS Agreement ID:	59-0206-8-195
USDA-ARS Agreement Title:	FHB Management Research in New York.
FY18 USDA-ARS Award Amount:	\$ 11,853
Recipient Organization:	Cornell University 341 Pine Tree Road Ithaca NY 14850
DUNS Number:	872612445
EIN:	15-0532082
Recipient Identifying Number or Account Number:	1538165
Project/Grant Reporting Period:	5/3/18 - 5/2/19
Reporting Period End Date:	05/02/19

USWBSI Individual Project(s)

USWBSI Research Category*	Project Title	ARS Award Amount
MGMT	Integrated Management of FHB and DON in Winter Wheat in New York.	\$ 11,853
	FY18 Total ARS Award Amount	\$ 11,853

Gary Carlton
Bergstrom

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Carlton Bergstrom
Date: 2019.07.14 23:40:23
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Gary C. Bergstrom
Principal Investigator

July 12, 2019
Date

* MGMT – FHB Management
FST – Food Safety & Toxicology
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

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

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

To provide more robust recommendations for management of Fusarium head blight.

2. What was accomplished under these goals? *Address items 1-4) below for each goal or objective.*

1) major activities

Replicated field experiments were conducted to investigate the individual and combined effects of variety resistance and fungicide application on FHB and DON accumulation in winter wheat.

2) specific objectives

Timing of fungicide application was emphasized as was evaluation of the new fungicide, Miravis Ace.

3) significant results

Warm, dry conditions prevailed through flowering and grain forming stages, thus were conducive to low foliar disease and low levels of DON. Fusarium head blight severity was significantly higher in Erie and lowest in Pioneer 25R25. Although the FHB severity was highest in Erie, the test weight also was highest in Erie and significantly lower in Pioneer 25R25. When the cultivars were analyzed separately, both Miravis Ace treatments and Prosaro applied at FGS 10.53 reduced FHB incidence in Erie. Test weight in Erie was higher in the Miravis Ace applied early treatment and lower in the Prosaro applied early treatment. In Pioneer 25R40, FHB severity was reduced in the Prosaro applied late treatment. When the treatments were averaged across cultivars, FHB incidence, FHB index and DON were lower for both Miravis Ace treatments and Prosaro applied at FGS 10.53. The DON for all treatments and varieties was below the 1 ppm threshold.

4) key outcomes or other achievements

In a year with low disease and mycotoxin pressure, each of the fungicides and application timings reduced DON and FHB variables. Miravis Ace appears to be an efficacious fungicide against FHB and DON

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

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4. 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 FY18 award period. 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 FY18 award period?** No

If yes, how many?

2. **Did any graduate students in your research program supported by funding from your USWBSI grant earn their Ph.D. degree during the FY18 award period?** No

If yes, how many?

3. **Have any post docs who worked for you during the FY18 award period and were supported by funding from your USWBSI grant taken faculty positions with universities?** No

If yes, how many?

4. **Have any post docs who worked for you during the FY18 award period and were supported by funding from your USWBSI grant gone on to take positions with private ag-related companies or federal agencies?** No

If yes, how many?

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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 FY18 award period. 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 (S, MS, MR, R, where R represents your most resistant check)	FHB Rating (0-9)	Year Released

Add rows if needed.

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

Abbreviations for Grain Classes

- Barley - BAR
- Durum - DUR
- Hard Red Winter - HRW
- Hard White Winter - HWW
- Hard Red Spring - HRS
- Soft Red Winter - SRW
- Soft White Winter - SWW

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Publications, Conference Papers, and Presentations

Instructions: Refer to the FY18-FPR_Instructions for detailed instructions for listing publications/presentations about your work that resulted from all of the projects included in the FY18 grant. Only include citations for publications submitted or presentations given during your award period (5/3/18 - 5/2/19). If you did not have any publications or presentations, state 'Nothing to Report' directly above the Journal publications section.

NOTE: Directly below each reference/citation, you must indicate the Status (i.e. published, submitted, etc.) and whether acknowledgement of Federal support was indicated in publication/presentation. See example below for a poster presentation with an abstract:

Conley, E.J., and J.A. Anderson. 2018. Accuracy of Genome-Wide Prediction for Fusarium Head Blight Associated Traits in a Spring Wheat Breeding Program. In: Proceedings of the XXIV International Plant & Animal Genome Conference, San Diego, CA.
Status: Abstract Published and Poster Presented
Acknowledgement of Federal Support: YES (poster), NO (abstract)

Journal publications.

Starr, J.K., K.L. Myers, A. Lugo-Torres, L.A. Kane, J.A. Cummings, G.C. Bergstrom, and P.J. Stachowski. 2019. Evaluation of integrated methods for management of Fusarium head blight and foliar diseases of winter wheat in New York, 2018. Plant Disease Management Reports 13: CF064.

Status: Published

Acknowledgement of Federal Support: Yes

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

Other publications, conference papers and presentations.

Fulcher, M.R., J.B. Winans, M. Quan, and G. C. Bergstrom. 2018. *Fusarium graminearum* populations at the intersection of wheat and wild grass communities in New York. Page 82 in S. Canty, A. Hoffstetter, B. Wiermer, and R. Dill-Macky (Eds.), *Proceedings of the 2018 National Fusarium Head Blight Forum*. East Lansing, MI/Lexington, KY: U.S. Wheat and Barley Scab Research Initiative.

Status: Published

Acknowledgement of Federal Support: Yes

Salgado, J.D., G. Bergstrom, C. Bradley, K. Bowen, E. Byamukama, A. Byrne, A. Collins, C. Cowger, J. Cummings, V. Chapara, M.I. Chilvers, E. DeWolf, R. Dill-Mackey, H.M. Darby, P.D. Esker, A. Friskop, J. Halvorson, N. Kleczewski, L.V. Madden, J. Marshall, H. Mehl, M. Nagelkirk, J. Stevens, D. Smith, M. Smith, S. Wegulo, K. Wise, D. Yabwalo, H.M. Young-Kelly, and P.A. Paul. 2018. Efficacy of two-treatment fungicide programs for FHB management: A multi-state coordinated project. Pages 45-46 in S. Canty, A. Hoffstetter, B. Wiermer, and R. Dill-Macky (Eds.), *Proceedings of the 2018 National Fusarium Head Blight Forum*. East Lansing, MI/Lexington, KY: U.S. Wheat and Barley Scab Research Initiative.

(Form – PR18)

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Status: Published

Acknowledgement of Federal Support: Yes

Extension presentations by Gary C. Bergstrom in 2018-19 that included updates on Fusarium head blight research:

Great Lakes Wheat Workers, Ithaca, NY. (3/25/19)

Status: Presented

Acknowledgement of Federal Support: Acknowledged in slides.

Crop Management Meeting, Wayland, NY. (3/20/19)

Status: Presented

Acknowledgement of Federal Support: Acknowledged in slides.

Finger Lakes Soybean and Small Grains Congress, Waterloo, NY. (2/7/19)

Status: Presented

Acknowledgement of Federal Support: Acknowledged in slides.

Western New York Soybean and Small Grains Congress, Batavia, NY. (2/6/19)

Status: Presented

Acknowledgement of Federal Support: Acknowledged in slides.

Empire State Barley and Malt Summit. Syracuse, NY. (12/12-13/18)

Status: Presented

Acknowledgement of Federal Support: Acknowledged in slides.

Cornell Cooperative Extensive Agriculture In-Service. Ithaca, NY (11/14/18)

Status: Presented

Acknowledgement of Federal Support: Acknowledged in slides.

Musgrave Research Farm Field Day, Aurora, NY. (7/12/18)

Status: Presented

Acknowledgement of Federal Support: Not applicable for this type of presentation.

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Cornell Seed Growers Field Day. Ithaca, NY (7/3/18)

Status: Presented

Acknowledgement of Federal Support: Not applicable for this type of presentation.

Small Grains Management Field Day, Aurora, NY (6/7/18)

Status: Presented

Acknowledgement of Federal Support: Not applicable for this type of presentation.