

**USDA-ARS/
U.S. Wheat and Barley Scab Initiative
FY17 Final Performance Report
Due date: July 31, 2018**

Cover Page

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Phone:	208-397-4162 ext.241
Fiscal Year:	2017
USDA-ARS Agreement ID:	N/A
USDA-ARS Agreement Title:	Evaluation of Barley Breeding Lines for FHB Resistance in Controlled Field Nursery in Idaho.
FY17 USDA-ARS Award Amount:	\$ 22,000

USWBSI Individual Project(s)

USWBSI Research Category*	Project Title	ARS Award Amount
BAR-CP	Evaluation of Aberdeen Barley Germplasm Lines on their FHB Resistance.	\$ 15,000
	FY17 Total ARS Award Amount	\$ 22,000

Principal Investigator

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

Project 1: *Evaluation of Aberdeen Barley Germplasm Lines on their FHB Resistance.*

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

This project aims to conduct multiple-year/location evaluation of barley breeding lines from Idaho and introduced lines for FHB resistance. We hope to obtain enough data to conclude which lines are FHB resistant or produce low DON from our breeding program. The FHB resistant and low DON lines will be used as parents in future crosses.

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

- 1) Major activities: we have used NDSU nurseries and the Aberdeen nursery to evaluate FHB resistance and DON levels in the 140 elite barley lines. Total 7 year-location data have been obtained. Analysis of the FHB resistance and DON data are complete.
- 2) Specific objectives: to optimize the Aberdeen nursery conditions for reliable infection by working with the Co-Investigators, Dr. Juliet Marshall and Dr. Jianli Chen, of University of Idaho; to assure that useful data are obtained, we use the Scab nurseries in NDSU as an evaluation nursery managed by Dr. Robert Brueggeman.
- 3) Significant results: In seven trials with infection and DON data, we concluded that 16 Aberdeen breeding lines show infection resistance compared to the 2-rowed resistant check of Conlon. Conlon averaged 14.7% infection and the selected 16 lines averaged 6.4% to 14.5% in infection. Conlon averaged 24.6 ppm in DON and averaged DON for our 16 resistant lines varied from 11.7ppm to 22.9 ppm.
- 4) Key outcomes or other achievements: We identified 16 elite barley lines from our breeding program with resistance and low DON levels compared to the 2-rowed resistance check Conlon. Some of those lines have been used as parents in crosses.

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

N/A

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

Yes, we presented the data in FHB annual forum.

Training of Next Generation Scientists

Instructions: Please answer the following questions as it pertains to the FY17 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 FY17 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 FY17 award period? No**

If yes, how many?

- 3. Have any post docs who worked for you during the FY17 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 FY17 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?

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 FY17 award period. All columns must be completed for each listed germplasm/cultivar. Use the key below the table for Grain Class abbreviations. *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

Publications, Conference Papers, and Presentations

Instructions: Refer to the FY17-FPR_Instructions for detailed instructions for listing publications/presentations about your work that resulted from all of the projects included in the FY17 grant. Only include citations for publications submitted or presentations given during your award period. 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.

Nothing to Report.

Journal publications.

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

Other publications, conference papers and presentations.