

**FY21 Performance Progress Report****Due date:** July 26, 2022**Cover Page**

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<b>Fiscal Year:</b>	2021
<b>USDA-ARS Agreement ID:</b>	N/A
<b>USDA-ARS Agreement Title:</b>	Evaluation of Barley Breeding Lines for FHB Resistance in Controlled Field Nursery in Idaho
<b>FY20 USDA-ARS Award Amount:</b>	\$23,800
<b>Recipient Organization:</b>	USDA-ARS Small Grains and Potato Germplasm Research 1691 S 2700 W, Aberdeen, ID 83210
<b>DUNS Number:</b>	N/A
<b>EIN:</b>	N/A
<b>Project/Grant Period:</b>	5/1/21 - 4/30/22
<b>Reporting Period End Date:</b>	4/30/2022

**USWBSI Individual Project(s)**

USWBSI Research Category*	Project Title	ARS Award Amount
BAR-CP	Development of 2-rowed FHB Resistance Germplasm and Cultivars	\$23,800
<b>FY21 Total ARS Award Amount</b>		<b>\$23,800</b>

I am submitting this report as an:  Annual Report  Final Report

I certify to the best of my knowledge and belief that this report is correct and complete for performance of activities for the purposes set forth in the award documents.

**GONGSHE HU** Digitally signed by GONGSHE HU  
Date: 2022.07.27 13:18:33 -0600

Principal Investigator Signature

Date Report Submitted

† BAR-CP – Barley Coordinated Project  
 DUR-CP – Durum Coordinated Project  
 EC-HQ – Executive Committee-Headquarters  
 FST-R – Food Safety & Toxicology (Research)  
 FST-S – Food Safety & Toxicology (Service)  
 GDER – Gene Discovery & Engineering Resistance  
 HWW-CP – Hard Winter Wheat Coordinated Project

MGMT – FHB Management  
 MGMT-IM – FHB Management – Integrated Management Coordinated Project  
 PBG – Pathogen Biology & Genetics  
 TSCI – Transformational Science  
 VDHR – Variety Development & Uniform Nurseries  
 NWW – Northern Soft Winter Wheat Region  
 SPR – Spring Wheat Region  
 SWW – Southern Soft Red Winter Wheat Region

## Project 1: Development of 2-rowed FHB Resistance Germplasm and Cultivars

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

The major goals are to evaluate FHB resistance, particularly DON levels of our barley breeding lines developed in Idaho. We hope to obtain enough data from multi-year and multi-location evaluations to conclude the selected lines with FHB resistant or produce low DON. The FHB resistant and low DON lines will be used as parents in future crosses or released as a variety.

### 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?

1. Planted 200 lines in Aberdeen, Idaho, and Osnabrock in North Dakota. The nurseries worked normally. Seeds were harvested and tested for DON. The data are received.
2. In 2022 spring, we have planted 100 lines in five nurseries: Aberdeen and Kimberley in Idaho, Fargo and Osnabrock in North Dakota, Twin city in Minnesota.

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

1. We accumulated at least ten trials data for our released barley varieties to conclude their resistance in terms of DON level by comparing to the 2-rowed medium resistance check variety of Conlon. Those varieties include Julie, Kardia, and Transit for food type and Lenatah and Tetonia for feed type. Kardia is concluded as the MS resistance level, rest of the varieties are grouped as MR level of resistance.
2. Seven elite breeding lines showed lower DON than Conlon in averaged five trials from 2020-2021.

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

As the newly established screening nursery in collaboration with University of Idaho, Kimberley location is the second nursery in Idaho. Preliminary testing results showed that it is a better nursery in terms of infection and disease development. This will secure the disease evaluation data available from Idaho environment.

### 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?

We have communicated with the extension people and the growers association in Idaho to have updated the variety resistance of our released varieties.

## Publications, Conference Papers, and Presentations

Please include a listing of all your publications/presentations about your FHB work that were a result of funding from your FY21 grant award. Only citations for publications published (submitted or accepted) or presentations presented during the **award period** should be included.

**Did you publish/submit or present anything during this award period?**

- Yes, I've included the citation reference in listing(s) below.  
 No, I have nothing to report.

### Journal publications as a result of FY21 grant award

*List peer-reviewed articles or papers appearing in scientific, technical, or professional journals. Include any peer-reviewed publication in the periodically published proceedings of a scientific society, a conference, or the like.*

Identify for each publication: Author(s); title; journal; volume; year; page numbers; status of publication (published [include DOI#]; accepted, awaiting publication; submitted, under review; other); acknowledgement of federal support (yes/no).

G. Hu,\* C. P. Evans, K. Satterfield, S. Ellberg. 2022. Registration of Three Winter Malting Barley Lines. Journal of Plant Registration. Accepted. The federal support is acknowledged in the manuscript.

### Books or other non-periodical, one-time publications as a result of FY21 grant award

*Report any book, monograph, dissertation, abstract, or the like published as or in a separate publication, rather than a periodical or series. Include any significant publication in the proceedings of a one-time conference or in the report of a one-time study, commission, or the like.*

Identify for each one-time publication: Author(s); title; editor; title of collection, if applicable; bibliographic information; year; type of publication (book, thesis or dissertation, other); status of publication (published; accepted, awaiting publication; submitted, under review; other); acknowledgement of federal support (yes/no).

### Other publications, conference papers and presentations as a result of FY21 grant award

Identify any other publications, conference papers and/or presentations not reported above. Specify the status of the publication.