USDA-ARS/
U.S. Wheat and Barley Scab Initiative
FY14 Final Performance Report
July 15, 2015

Cover Page

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Fiscal Year:	FY14
USDA-ARS Agreement ID:	NA
USDA-ARS Agreement Title:	Evaluation of Barley Breeding Lines for FHB Resistance in Controlled Field Nursery in Idaho.
FY14 USDA-ARS Award Amount:	$ 15,000

USWBSI Individual Project(s)

USWBSI Research Category*	Project Title	ARS Award Amount
WES-CP	Field Nursery Establishment for Fusarium Head Blight Resistance Evaluation of Barley Breeding Lines in Idaho.	$ 15,000
	FY14 Total ARS Award Amount	**$ 15,000**

Gongshe Hu 6-15-2015

Principal Investigator Date

* MGMT – FHB Management
FSTU – Food Safety, Toxicology, & Utilization of Mycotoxin-contaminated Grain
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
WES-CP – Western 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: *Field Nursery Establishment for Fusarium Head Blight Resistance Evaluation of Barley Breeding Lines in Idaho.*

1. **What major problem or issue is being resolved relevant to Fusarium head blight (scab) and how are you resolving it?**

   The major issue is to clearly identify the resistance germplasm lines that adapted in western 2-row barley grow region. The best way to solve the problem in long run is to establish a local FHB screening nursery that allow us to work more efficiently in FHB resistance evaluation of our breeding lines. The first step is to establish a working nursery at Aberdeen. It may take some time to get a reliable nursery. To secure the continuous FHB evaluation, I used the nursery service of North Dakota State University for evaluating 100 lines. After the resistance is confirmed, we will enhance the breeding to incorporate the resistance into the breeding pipelines so that the resistance cultivars with superior agronomic traits will be expected.

2. **List the most important accomplishments and their impact (i.e. how are they being used) to minimize the threat of Fusarium Head Blight or to reduce mycotoxins. Complete both sections; repeat sections for each major accomplishment:**

   Accomplishment:
   We have setup a nursery at Aberdeen location with preliminary functional operations for the first year. We received data for our 100 breeding lines with FHB infection and DON level from North Dakota State University nursery evaluation. Data from two locations and replicates at each location in North Dakota indicated that some of our elite breeding lines may have good resistance already. We understand that we need multiple year's data to make final conclusion, but the data from the first year is promising.

   Impact:

   The preliminary success of the Aberdeen FHB nursery paved the road for further improvement of the evaluation efficiency of barley FHB resistance that eventually becomes an important nursery in the western region to better serve the FHB resistance research.

   The data received from North Dakota State University is exciting because that means that we may have FHB resistance elite lines in our program. The data will serve as preliminary reference in decision making in crosses for developing FHB resistance lines. We will adjust the crosses with more solid data of FHB resistance evaluations of the germplasm lines in our breeding program with the progress of more solid data accumulation.

   Therefore the nursery establishment at Aberdeen and FHB resistance data availability will be a very important resources to be successful in FHB breeding in the western 2-row growth region.

Training of Next Generation Scientists

Instructions: Please answer the following questions as it pertains to the FY14 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 FY14 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 FY14 award period?**

   No.

   If yes, how many?

3. **Have any post docs who worked for you during the FY14 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 FY14 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?

Include below a list of all germplasm or cultivars released with full or partial support of the USWBSI during the FY14 award period. List the release notice or publication. Briefly describe the level of FHB resistance. *If not applicable because your grant did NOT include any VDHR-related projects, enter N/A below.*

Nothing to report.

Include below a list of the publications, presentations, peer-reviewed articles, and non-peer reviewed articles written about your work that resulted from all of the projects included in the FY14 grant. Please reference each item using an accepted journal format. If you need more space, continue the list on the next page.

Nothing to report.