

**USDA-ARS**  
**U.S. Wheat and Barley Scab Initiative**  
**FY16 Final Performance Report – NCE for FY17**  
**Due date: July 31, 2018**

**Cover Page**

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<b>Fiscal Year:</b>	2016 (NCE for FY17)
<b>USDA-ARS Agreement ID:</b>	59-0200-3-005
<b>USDA-ARS Agreement Title:</b>	Molecular Characterization and Pyramiding of Novel Scab Resistance Sources Adapted to the Northern Plains Growing Region.
<b>FY16 USDA-ARS Award Amount:</b>	\$ 11,192 (NCE for FY17)
<b>Recipient Organization:</b>	South Dakota State University SAD 133, Box 2201 Brookings, SD 57007
<b>DUNS Number:</b>	929929743
<b>EIN:</b>	46-6000364
<b>Recipient Identifying Number or Account Number:</b>	3F4428
<b>Award Reporting Period:</b>	5/1/17 - 4/30/18
<b>Reporting Period End Date:</b>	04/30/18

**USWBSI Individual Project(s)**

<b>USWBSI Research Category*</b>	<b>Project Title</b>	<b>ARS Award Amount</b>
HW-CP	Pyramiding Multiple FHB Resistance QTLs in Different Winter Wheat Backgrounds.	\$ 11,192
	<b>FY16 Total ARS Award Amount</b>	<b>\$ 11,192</b>

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Principal Investigator

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Date

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\* 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  
HW-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: *Pyramiding Multiple FHB Resistance QTLs in Different Winter Wheat Backgrounds.***

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

The goal of this project is to deliver germplasm combining multiple resistance genes with multiple elite germplasm to the winter wheat breeders in this region. The rationale is the need to introgress additional FHB resistance QTLs, as well as to study their effect on diverse genetic backgrounds. In this cycle we proposed to use “Emerson” (McClintock/CDCOsprey) is a recent release from Canterra Seeds (Ag Canada initiative) that has shown very good levels of FHB resistance; Emerson does not carry the *Fhb1* locus. For this, we propose to use an IBD-mapping approach using multiple early generation families generated diverse crosses.

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

1) major activities.

Develop populations with Emerson and initiate FHB screening.

2) specific objectives.

Develop populations with Emerson and initiate FHB screening

3) significant results.

Three F2:3 populations (Emerson/Ideal; Emerson/Smoky Hill and Emerson/Lyman) of 100 families each were grown in mist irrigated FHB nursery at Volga, SD in 2016-2017 growing season.

4) key outcomes or other achievements.

Due to a severe drought in South Dakota and very dry conditions the incidence and severity were very low in the FHB nursery including these three populations yielding no usable phenotypic data.

We decided to advance the lines one more generation and proceed with a new evaluation in the next growing season.

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

A graduate student was directly involved in the project and other students under Dr. Gonzalez and Dr. Sehgal contributed to the inoculation and disease scoring, so they also received training in those areas.

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

Because the results are not final formal dissemination has not taken place. Project was continued under ARS agreement No. 59-0206-7-003.

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### **Training of Next Generation Scientists**

**Instructions:** Please answer the following questions as it pertains to the FY16 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 FY16 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 FY16 award period? Yes**

**If yes, how many? 1**

3. **Have any post docs who worked for you during the FY16 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 FY16 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 FY16 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

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## **Publications, Conference Papers, and Presentations**

**Instructions:** Refer to the FY16-FPR\_Instructions for detailed instructions for listing publications/presentations about your work that resulted from all of the projects included in the FY16 grant. Only include citations for publications submitted or presentations given during your award period (5/1/17 - 4/30/18). 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.**