

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

**Cover Page**

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<b>Fiscal Year:</b>	FY14
<b>USDA-ARS Agreement ID:</b>	NA
<b>USDA-ARS Agreement Title:</b>	Genotyping Breeding Lines for FHB Resistance.
<b>FY14 USDA-ARS Award Amount:</b>	\$ 45,000

**USWBSI Individual Project(s)**

<b>USWBSI Research Category*</b>	<b>Project Title</b>	<b>ARS Award Amount</b>
VDHR	Genotyping Breeding Lines for FHB Resistance.	\$ 45,000
	<b>FY14 Total ARS Award Amount</b>	<b>\$ 45,000</b>

Deven R. See   
Principal Investigator

7-15-2015  
Date

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\* 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:** *Genotyping Breeding Lines for FHB Resistance.*

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

As a regional genotyping laboratory, my contributions to specific problems regarding scab include the running of molecular markers to help facilitate the introgression of resistance genes for FHB resistance. For this reporting cycle the genotyping lab has run multiple FHB diagnostic markers on 425 samples in the breeding program for southern Idaho for Jianli Chen. In addition the lab has run Genotype by Sequencing (GBS) markers on two mapping populations, UI Silver X Shaan89150 and IDO694C X Capstone which consisted of 285 samples and has developed markers for a Association Mapping (AM) panel consisting of 190 samples. Each sample in both the mapping populations and the AM panel was sequenced to a depth of 2 million sequence tags.

**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:**

For the Southern Idaho breeding program, running diagnostic markers for FHB resistance on 3BS and 5AS helps the introgression of major genes for resistance to FHB. Development of 2 million GBS tags per sample on both mapping populations and AM panels will help in elucidation new minor genes with an impact on resistance for FHB.

**Impact:**

Breeding with molecular markers for FHB accelerates breeding generation time and allows multi genic incorporation of resistance genes. Development of deep sequence novel GBS tags will help in identification of QTL for minor effects in increasing FHB resistance.

### **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

- 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

- 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?**

None

- 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?**

None

FY14 (approx. May 14 – May 15)

FY14 Final Performance Report

PI: See, Deven

USDA-ARS Agreement #: NA

**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.***

N/A

**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.**

As a genotyping laboratory, all work is in support of breeding programs. Specific publications from resulting work would be generated by the PI in the breeding program.