

**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>	Improvement and Adoption of FHB Management Techniques.
<b>FY14 USDA-ARS Award Amount:</b>	\$ 26,294

**USWBSI Individual Project(s)**

<b>USWBSI Research Category*</b>	<b>Project Title</b>	<b>ARS Award Amount</b>
MGMT	Integrated FHB Management of Winter Barley in the Mid-Atlantic.	\$ 10,000
	<b>FY14 Total ARS Award Amount</b>	<b>\$ 26,294</b>

*Christina Cowger*

6/8/15

Principal Investigator

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  
 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:** *Integrated FHB Management of Winter Barley in the Mid-Atlantic.***1. What major problem or issue is being resolved relevant to Fusarium head blight (scab) and how are you resolving it?**

Winter barley cultivation is increasing in the mid-Atlantic and southeast U.S., especially in response to the upsurge of craft brewing and distilling. Tolerance for DON in malting barley is extremely low; thus, DON-free barley is key to providing a local grain supply to this rapidly growing industry. However, very little is known about either resistance levels of currently grown mid-Atlantic barleys or the best practices for applying fungicides to minimize FHB and DON in these barley cultivars.

Key mid-Atlantic barley nurseries are being screened under elevated FHB pressure in a misted, inoculated nursery. These are nurseries focused on winter-hardiness and malting quality, and consist mainly of lines being developed by Virginia Tech and the USDA-ARS Plant Science Research Unit. In addition, four Mid-Atlantic barleys with a range of putative FHB resistance levels and varying in maturity were used to conduct a replicated test of fungicide timing under elevated FHB pressure. The two timings used were (1) spikes just fully emerged, which is the recommended timing, or (2) 6 days after spikes just fully emerged. (In wheat, it has been shown that applications up to 5-7 days after the optimal timing of early flowering can substantially reduce FHB and DON.)

**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:** Raleigh misted barley FHB nursery successfully established, maintained, inoculated, misted, rated; currently being harvested.

**Impact:** The experiments constitute the first North Carolina screening of mid-Atlantic barleys under FHB pressure, and the first comparison of two relevant timings of fungicide application for FHB management. As such, they will have great impact on breeding and management in the 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?**

N/A.

**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?**

**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?**

N/A.

**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?**

**If yes, how many?**

FY14 (approx. May 14 – May 15)

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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.**