

## 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>	59-0206-0-139
<b>USDA-ARS Agreement Title:</b>	Reducing Scab and Vomitoxin in Malting Barley in the Mid-Atlantic
<b>FY20 USDA-ARS Award Amount:</b>	\$20,236
<b>Recipient Organization:</b>	Pennsylvania State University PSU Southeast Ag Research & Extension Center 1446 Auction Rd, Manheim, PA 17545
<b>DUNS Number:</b>	00-340-3953
<b>EIN:</b>	24-6000376
<b>Recipient Identifying Number or Account Number, if any:</b>	G#900303
<b>Project/Grant Period:</b>	6/1/21 - 5/31/23
<b>Reporting Period End Date:</b>	5/31/2022

### USWBSI Individual Project(s)

USWBSI Research Category*	Project Title	ARS Award Amount
MGMT-IM	Integrated Management of Malting Barley in Pennsylvania	\$20,236
<b>FY21 Total ARS Award Amount</b>		<b>\$20,236</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.*

\_\_\_\_\_  
Principal Investigator Signature

7/26/2022 \_\_\_\_\_  
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: Integrated Management of Malting Barley in Pennsylvania

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

The objectives of this project in alignment with the USWBSI Action Plan are to:

- Develop integrated management strategies for FHB and mycotoxins that are robust to conditions experienced in MidAtlantic production fields of barley by trialing fungicide chemistries, timing, and genetic resistance.
- Help develop and validate the next generation of management and mitigation tools for FHB and mycotoxin control by providing information regarding field scale conditions and disease development.
- Enhance communication and end user education/outreach regarding best management practices for production of high-quality malting barley

### 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?

Malting barley integrated management trials and uniform fungicide trials were established in two production regions of Pennsylvania (the Penn State Southeast Agricultural Research & Extension Center in the south and Russell E. Larson Agricultural Research Center in the central region).

Following the coordinated project established protocols, fungicide products and application timings were tested on three mid-Atlantic adapted malting barley varieties ranging susceptible to moderately FHB resistant. The trials were inoculated at both sites. Harvest has been completed and data analysis is now underway.

This and previous work have been used by the Penn State Agronomy Extension Team in delivering education focused on quality malting barley production for growers as well as maltsters and brewers/distillers.

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

Samples continue to undergo analysis at this time, but initial observations indicate only moderately conducive conditions for the development of FHB in this year's trials, despite successful inoculation. An important component of this work in the long term is the evaluation of cultivar utility in unpredictable environmental conditions. Because we employ the same cultivars (Calypso, Thoroughbred, Violetta) each year, we hope to demonstrate the performance of these cultivars for malting in the region across years of both high and low disease pressure.

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

During the FY2021 period, we were able to mostly resume full field activities, as well as in-person programming. This allowed us to more effectively disseminate the results of this work to critical stakeholders who were not able to be well-served digitally. In

addition, the digital products created in the previous cycle remain as tools for stakeholders who find value in them, and we are able to draw upon those resources to enrich the educational opportunities resulting from this project.

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

While students were not directly supported on this award, this project has provided the opportunity for four undergraduate students at two locations to participate in study plot planting, evaluation, harvest, and sample analysis.

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

Data from FY21 trials will be shared back to the coordinated project. Findings and recommendations from this work were shared at combined agronomy meetings held from September 2021 through March 2022, with over 500 attendees. We wrote seven articles during the growing season about scab risk as part of Penn State Extension's Field Crop News, which is received by over 10,000 currently signed up to receive information Penn State Extension. Updated commentary was also provided continuously through ScabSmart during the critical small grain disease management period. In a more novel approach to outreach, co-PIs presented a Facebook Live session in June 2021 focused on Small Grain Diseases to inform and answer questions regarding FHB mitigation in real time, directly from the field.

## 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).

Duffeck, M., Bandara, A., Weerasooriya, D., & Collins, A. A., et al. (2021). Fusarium head blight of small grains in Pennsylvania: unravelling species diversity, toxin types, growth and triazole sensitivity. *Phytopathology*. <https://doi.org/10.1094/PHYTO-02-21-0070-R>; *acknowledgement of federal support- Yes*

### 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).

None

### 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.

None