USDA-ARS | U.S. Wheat and Barley Scab Initiative

FY21 Performance Progress Report

Due date: July 26, 2022

Cover Page

Principle Investigator (PI):	Richard Horsley
Institution:	North Dakota State University
E-mail:	richard.horsley@ndsu.edu
Phone:	701-231-8142
Fiscal Year:	2021
USDA-ARS Agreement ID:	59-0206-0-164
USDA-ARS Agreement Title:	Deoxynivalenol in Wheat and Inhibition of F. graminearum by Compounds in Wheat Bran
FY20 USDA-ARS Award Amount:	$162,715
Recipient Organization:	North Dakota State University Department of Plant Sciences NDSU Dept # 7670, PO Box 6050 Fargo, ND 58108-6050
DUNS Number:	80-388-2299
EIN:	45-6002439
Recipient Identifying Number or Account Number, if any:	FAR0031947
Project/Grant Period:	6/1/21 - 5/31/23
Reporting Period End Date:	5/31/2022

USWBSI Individual Project(s)

USWBSI Research Category*	Project Title	ARS Award Amount
FST-S	Deoxynivalenol (DON) Analysis in Wheat	$162,714
	FY21 Total ARS Award Amount	$162,715

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.

Kirk O. Horsley

Principal Investigator Signature

7/22/2022

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: Deoxynivalenol (DON) Analysis in Wheat

1. **What are the major goals and objectives of the research project?**
   The goal of this project is to provide information to the wheat breeders, durum breeders, plant pathologists, commodity groups, and other researchers working on developing Fusarium resistant cultivars and developing fungicide protocols, with DON analysis results that are timely and affordable.

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?**
   Approximately 4,465 samples (exclusive of checks and standard curve samples) were analyzed for DON during the reporting period. 10 researchers from four US states (ND, SD, NE, MT) submitted the samples and the majority of them were from breeding programs. Some the samples were from pathologists and other researchers developing fungicide protocols.

   b) **What were the significant results?**
   Results for DON content of samples sent by cooperators were obtained and provided to the cooperators. The results were obtained for about 4,465 samples. Statistical information is listed on the DON QC addendum page.

   c) **List key outcomes or other achievements.**
   The major outcome of this project for FY21 was that we were able to effectively analyze all of the samples sent by the 10 cooperators by the end of the FY21 funding term. Results were submitted to and accepted by all cooperators involved in USWBSI research.

3. **What opportunities for training and professional development has the project provided?**
   One undergraduate assisted in the laboratory with the testing. The undergraduate student has learned basic laboratory skills and laboratory quality control.

4. **How have the results been disseminated to communities of interest?**
   The data are provided directly to the researchers. Information on DON in wheat has been disseminated to the growers, breeders, and other scientists by written publications, conferences, and webinars.

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).

Nothing to report

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).

Northing to report

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.

FY21– USWBSI ADDENDUM

DON Service Labs – Quality Control (QC) Data

Note: What is being requested is the across lab quality control data (separate QC from Trilogy).

Insert below Quality Control Data/Results from the FY21 Award Period (6/1/21 - 5/31/22):

QC SAMPLES	LOW PPM	HIGH PPM
AVERAGE	0.80	2.53
STD DEV	0.30	0.44
CV	30.00	17.00
LOW	0.40	1.14
HIGH	2.50	3.40
NUMBER	155	155