

FY21 Performance Progress Report

Due date: July 26, 2022

Cover Page

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Fiscal Year:	2021
USDA-ARS Agreement ID:	N/A
USDA-ARS Agreement Title:	Database and Analysis Tools to Improve Data Management and Crossing Decision Support
FY20 USDA-ARS Award Amount:	\$28,519
Recipient Organization:	USDA-ARS US Plant, Soil and Nutrition Laboratory Robert W. Holley Center, Tower Road Ithaca, NY 14853-2901
DUNS Number:	N/A
EIN:	N/A
Recipient Identifying Number or Account Number, if any:	
Project/Grant Period:	5/1/21 - 4/30/22
Reporting Period End Date:	4/30/2022

USWBSI Individual Project(s)

USWBSI Research Category*	Project Title	ARS Award Amount
BAR-CP	Optimizing Parent Combinations to Improve FHB/DON Resistance in Barley	\$19,218
EC-HQ	US Wheat & Barley Scab Initiative's Networking & Facilitation Office and Website	\$9,301
FY21 Total ARS Award Amount		\$28,519

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.

Jean-Luc Jannink
Digitally signed by Jean-Luc Jannink
 Date: 2022.08.01

Principal Investigator Signature

8/1/22

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: Optimizing Parent Combinations to Improve FHB/DON Resistance in Barley

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

Develop a web-based database containing public sector breeding data, facilitating collaboration and data-sharing across programs since FY10. This database is called The Triticeae Toolbox (T3)

<https://barley.triticeaetoolbox.org>

<https://wheat.triticeaetoolbox.org>

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?

We have continued to upload data from cooperative nurseries to the database.

In wheat, we currently have 672 trials with Fusarium incidence data and 273 trials with DON content data.

In barley, we currently have 214 trials with Fusarium severity data and 255 trials with DON content data.

b) What were the significant results?

Results are available to the public and specifically to other breeders. The data are in an environment that includes analysis tools

c) List key outcomes or other achievements.

In total, T3/Wheat Breedbase contains 29,996 accessions with phenotype data and 16,674 with genotype data. A total of 3,226 phenotype trials (containing 937,718 observations) and 44 genotype trials have been uploaded to T3/BreedBase.

T3/Barley Breedbase contains 30,960 accessions with phenotype data and 16,263 with genotype data. A total of 1,237 phenotype trials (containing 815,654 observations) and 29 genotype trials have been uploaded to T3/BreedBase.

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

The T3 curator, David Waring, gave a training on the use of the database in September 2020. Recordings of that training, split into eight manageable segments, is posted on YouTube.

<https://www.youtube.com/channel/UC3jrvvzGKKEHzOriDBgnj0A>

The introduction has been viewed 394 times. Across the eight segments, the total number of views is over 1,300.

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

Main dissemination is through the web:

<https://barley.triticeaetoolbox.org>

<https://wheat.triticeaetoolbox.org>

See also the YouTube channel link above

Project 2: US Wheat & Barley Scab Initiative's Networking & Facilitation Office and Website

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

We work on the third objective of the overall proposal:

Develop tools for the T3 database to make parent selection for genetic variance and trait correlations accessible to all wheat and barley breeders.

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?

New vignettes and bug fixes on the R package to perform the analyses

<https://github.com/wolfemd/genomicMateSelectR>

Planning to hire a postdoc to incorporate this package into T3

b) What were the significant results?

Nothing concrete until we hire the postdoc

c) List key outcomes or other achievements.

Nothing concrete until we hire the postdoc

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

None within the Wheat and Barley communities

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

The research remains accessible publicly

<https://github.com/wolfemd/genomicMateSelectR>

The published article on the research has been cited within the Barley community.

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).

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).

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.