

FY22 Performance Progress Report**Due date:** July 26, 2023**Cover Page**

USDA-ARS Agreement ID:	N/A
USDA-ARS Agreement Title:	Understanding and Developing FHB Resistant Durum Wheat
Principle Investigator (PI):	Shahryar Kianian
Institution:	USDA-Agricultural Research Service
Institution UEI:	N/A
Fiscal Year:	2022
FY22 USDA-ARS Award Amount:	\$30,000
PI Mailing Address:	Research Leader USDA-ARS Cereal Disease Laboratory 1551 Lindig Street University of Minnesota St. Paul, MN 55108
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Period of Performance:	May 1, 2022 - April 30, 2023
Reporting Period End Date:	April 30, 2023

USWBSI Individual Project(s)

USWBSI Research Category*	Project Title	ARS Award Amount
DUR-CP	Developing FHB Resistant Durum Wheat Germplasm	\$30,000
FY22 Total ARS Award Amount		\$30,000

I am submitting this report as an: Annual 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.

SHAHRYAR KIANIAN Digitally signed by SHAHRYAR KIANIAN
Date: 2023.07.17 15:07:45 -05'00'

Principal Investigator Signature

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: Developing FHB Resistant Durum Wheat Germplasm

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

As was requested by the committees and agreed to by the PI the objectives of the original project were narrowed to the development of backcross derived nested association mapping panel for the top five resistant mutants to genetically analyze the mechanism at the same time develop populations needed for the durum breeding program (Objective 2). Objective 3 of the project was recommended to be dropped.

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?

For objective 1, we made the initial crosses, obtained hybrid seeds, and now have produced the BC₁F₁ seeds for the development of the proposed NAM lines. These lines will be planted in the Fall greenhouse to be advanced.

b) What were the significant results?

Production of parental lines need to develop the durum NAM lines for genetic analysis of candidate resistance genes as well as production of improved resistant lines for the durum breeding programs.

c) List key outcomes or other achievements.

Ten different BC₁F₁ lines for the FHB resistant mutant durum lines that are being advanced to develop a large NAM population.

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

This project partially supports the work of a postdoctoral scientist. He has had numerous opportunities to present his results as well as train in various bioinformatics analysis tools. He is a highly qualified scientist who has had numerous interviews and will likely obtain a permanent position in the next year or two.

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

Meeting and presentations. We expect an article on the completed transcriptome work (not part of the currently funded project but was initially supported by the USWBSI) and analysis of gene networks within the next few months.

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 FY22 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 May 1, 2022 – April 30, 2023?

Yes, I've included the citation reference in listing(s) below.

No, I have nothing to report.

Journal publications as a result of FY22 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 FY22 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 FY22 award

Identify any other publications, conference papers and/or presentations not reported above. Specify the status of the publication.