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

FY21 Performance Progress Report

Due date: July 26, 2022

Cover Page

Principle Investigator (PI):	Guy 'Boyd' Padgett
Institution:	Louisiana State University Agricultural Center
E-mail:	bpadgett@agcenter.lsu.edu
Phone:	318-614-4354
Fiscal Year:	2021
USDA-ARS Agreement ID:	59-0206-0-159
USDA-ARS Agreement Title:	Evaluating Fungicides for Managing Fusarium Head Blight in Louisiana
FY20 USDA-ARS Award Amount:	$23,100
Recipient Organization:	Louisiana State University Agricultural Center Dean Lee Research and Extension Center 8105 Tom Bowman Drive, Alexandria, LA 71302
DUNS Number:	783201833
EIN:	72-6000848
Recipient Identifying Number or Account Number, if any:	AWD-003150
Project/Grant Period:	5/15/21 - 5/14/23
Reporting Period End Date:	5/14/2022

USWBSI Individual Project(s)

USWBSI Research Category*	Project Title	ARS Award Amount
MGMT-IM	Evaluating Fungicides for Managing Fusarium Head Blight in Louisiana	$23,100
	FY21 Total ARS Award Amount	$23,100

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.

7-7-22

Principal Investigator Signature — Date Report Submitted

ǂ 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: Evaluating Fungicides for Managing Fusarium Head Blight in Louisiana

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

   Obj 1.) Evaluate the integrated effects of fungicide treatment and genetic resistance on FHB and DON in all major grain classes, with emphasis on a new fungicide, Miravis Ace®. Sphaerex® and Prosaro Pro® were added in tests initiated in 2021.

   Obj 2.)Compare the efficacy of Miravis Ace when applied at early heading or at anthesis to that of standard anthesis application of Prosaro® or Caramba®. Sphaerex® and Prosaro Pro® were added in tests initiated in 2021.

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?**

   Trials were established on three LSU AgCenter experiment stations: (Macon Ridge near Winnsboro, Dean Lee near Alexandria, and Doyle Chambers Central Research Station near Baton Rouge). Trials were conducted at Macon Ridge and Dean Lee to address objective one. Three varieties (Blanton: susceptible, Agrimaxx 492: moderate resistant, Delta Grow 1800: resistant) were planted in November 2021. Four fungicide treatments and two non-treated consistent with the protocol outlined in the integrated management coordinated project were implemented. Trials were conducted using Blanton at the three locations to address objective two. Treatments were applied consistent with the uniform fungicide coordinated project. Trials were inoculated (1 gm/sq ft) with *Fusarium graminearum* infested corn seed prior to heading. The trials at Macon Ridge were misted. Scab data was taken and processed according to the coordinated project. Trials were harvested at all locations. Scab ratings and yields for treatments have been analysis. Grain samples have been sent for analysis.

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

   Objective I:

   Dean Lee Research Station: Scab severity in Blanton was less in all the fungicide treatments compared to the non-treated. When comparing fungicide treatments, Miravis Ace had the lowest scab and Sphaerex had the highest scab. Test weights in Blanton treated with Prosaro and Prosaro Pro were higher than the non-treated. Yield in Blanton treated with Miravis Ace was higher than the non-treated. Scab severity in AgriMaxx 492 treated with fungicides was less than the non-treated treatments but did not differ among fungicide treatments. Test weights did not differ among treatments; however, yield in AgriMaxx treated with Prosaro Pro was higher than the inoculated non-treated. No differences in scab severity, test weights, and yield were observed in Delta Grow 1800.

   Macon Ridge Research Station: In Blanton, scab severity was lowest in Miravis Ace when compared to the non-treated. Severity in the Prosaro, Prosaro Pro, and Sphaerex did not differ from the non-treated. Test weights and yields did not differ among treatments. Scab severity in the AgriMaxx 492 was lower than the non-treated

in all fungicide treatments. Test weights did not differ among treatments but yield of the Miravis Ace was higher than the inoculated non-treated. Severity did not differ among treatments in the resistant variety, Delta Grow 1800. Test weights and yield did not differ among any of the treatments.

Objective II:

Dean Lee: Scab severity was less than the non-treated check in all fungicide treatments. No differences in severity were observed among fungicide treatments. Test weights were higher than the non-treated for all fungicide treatments. Yield in wheat treated with Miravis Ace or Miravis Ace followed by Prosaro Pro was higher than the non-treated.

Doyle Chambers Central Research Station: All fungicide treatments had less scab than the non-treated. Two fungicide applications were more effective than single application treatments in preventing the development of scab except a single application of Miravis Ace at anthesis. All fungicide treatments except Caramba had higher test weights than the non-treated, but no differences were observed among yield.

Macon Ridge Research Station: Scab was less than the non-treated in all fungicide treatments except in Caramba and Prosaro (8.2 fl oz/A) treatments. Scab did not differ among the single application of Miravis Ace or Miravis Ace followed by a second application of either Prosaro Pro, Sphaerex or tebuconazole. There were no differences in test weight and yield among treatments.

On-Farm: Two on-farm tests were conducted in Rapides and Beauregard Parishes evaluating Prosaro Pro, Prosaro, Miravis Ace, and Sphaerex. Scab severity was very low in all fungicide treatments and the non-treated.

c) List key outcomes or other achievements.

None to report

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

Information was presented on management at two consultants recertification meetings and in a podcast.

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

Information has been disseminated in newsletters, podcast, parish production meetings, and a field day.

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.

Harrison, S.A., Price, P., and Padgett, G.B. 2021. Fusarium head blight of wheat (scab) in Louisiana. Louisiana Crops 11:7. Online.