

**USDA-ARS/
U.S. Wheat and Barley Scab Initiative
FY07 Final Performance Report (approx. May 07 – April 08)
July 15, 2008**

Cover Page

PI:	Boyd Padgett
Institution:	Louisiana State University
Address:	Macon Ridge Research Station 212 Macon Ridge Road Building A Winnsboro, LA 71295
E-mail:	bpadgett@agcenter.lsu.edu
Phone:	318-435-2157
Fax:	318-435-2133
Fiscal Year:	2007
USDA-ARS Agreement ID:	59-0790-4-135
USDA-ARS Agreement Title:	Fungicide Efficacy Evaluations for Managing Scab in Louisiana Wheat.
FY07 ARS Award Amount:	\$ 4,878

USWBSI Individual Project(s)

USWBSI Research Area*	Project Title	ARS Adjusted Award Amount
CBCC	Fungicide Efficacy Evaluations for Managing Scab in Louisiana Wheat.	\$4,878
	Total Award Amount	\$ 4,878

Principal Investigator

Date

* CBCC – Chemical, Biological & Cultural Control
EEDF – Etiology, Epidemiology & Disease Forecasting
FSTU – Food Safety, Toxicology, & Utilization of Mycotoxin-contaminated Grain
GET – Genetic Engineering & Transformation
HGR – Host Genetics Resources
HGG – Host Genetics & Genomics
IIR – Integrated/Interdisciplinary Research
PGG – Pathogen Genetics & Genomics
VDUN – Variety Development & Uniform Nurseries

Project 1: *Fungicide Efficacy Evaluations for Managing Scab in Louisiana Wheat.*

1. What major problem or issue is being resolved and how are you resolving it?

Fusarium Head Blight (FHB), *Fusarium graminearum*, can be a major threat to wheat producers in the United States. Disease epidemics are favored by periods of high humidity and moderate temperatures during flowering. These conditions are common along the Louisiana Gulf Coast. Furthermore, increased corn acreage and the use of minimum tillage practices in corn and wheat production systems have increased the risk to this disease in this state. This disease is managed in part by using genetic resistance and fungicides. However, no commercially available fungicides are highly effective against *F. graminearum*; therefore, a multi-state screening effort is ongoing to identify specific chemistries efficacious against this pathogen.

The objective of this project is to evaluate fungicides for the management of FHB in Louisiana. Fungicides were evaluated in LSU AgCenter small field plot tests at the Macon Ridge Research Station (northeast) and the Rice Research Station (southwest). Each location represents a unique environment (e.g. weather, soil type). Disease pressure was enhanced by distributing *F. graminearum* colonized corn (0.5 gm/0.09 m²) into plots prior to flowering. A misting system was also utilized to provide conditions favorable for disease development at the Macon Ridge Research Station.

Seven treatments were evaluated in one test at the Macon Ridge location in 2007-08: 1. Non-treated, 2. Folicur 3.6F @ 4.0 fl. oz/A, 3. Proline 5.0 fl oz/A, 4. Prosaro (1:1 ratio of prothioconazole: tebuconazole) @ 6.5 fl oz/A, 5. Caramba @ 10.0 fl oz/A, 6. Caramba @ 14.0 fl oz/A, and 7. Topguard @ 14.0 fl oz/A. Treatments were applied at early anthesis using a CO₂ charged hand-held boom delivering 17 gallons/A. Three treatments 1. Non-treated, 2. Proline 5.0 fl oz/A, and 3. Prosaro 5.0 fl oz/A were applied to 6 varieties (Terral LA841, D02-8843, Jamestown, GA991109-6E8, VA01W-433, and Pioneer 26R61. Treatments were applied at early anthesis using a CO₂ charged hand-held boom delivering 15 gallons/A.

Scab epidemics did not develop at the Macon Ridge location; however, epidemics did develop at the Rice Research Station location. Yields, moisture, and test weights were reported from both locations. Data was analyzed using appropriate statistical procedures.

Macon Ridge Research Station: No diseases were evident at the Macon Ridge location. Head samples were taken prior to harvest for DON analysis. Yields did not differ among treatments.

Rice Research Station: Fungicides and varieties impact scab epidemics. When averaged across fungicide treatments, incidence ranged from 8.3% (VA01W-433) to 18.7% (Jamestown and GA991109-6E8). Severity ranged from 12.0% (D02-8443) to 20.4% (Pioneer 26R61). The incidence, severity, and severity index in wheat treated with fungicides was less than that observed in the non-treated. When compared to the non-treated, yields were improved in Pioneer 26R61 treated with Proline.

**2. List the most important accomplishment and its impact (how is it being used?).
Complete all three sections (repeat sections for each major accomplishment):**

Accomplishment: Efficacious fungicides are needed to manage scab. This collaborative research is attempting to identify fungicides effective for managing scab in wheat. Coordinating uniform tests throughout land grant universities in the U.S. will help expedite the identification of effective fungicides and application techniques for managing this disease. It was evident that fungicides can be used to reduce scab incidence and severity. It was also apparent that epidemics progressed at different rates within varieties. Therefore, this information should be utilized to develop an integrated strategy for managing scab.

Impact: The discovery of effective fungicides and incorporation into wheat production systems will reduce the threat from scab and increase the quality of the U.S. crop. New fungicides efficacious against scab are being identified. In addition, these fungicides can be combined with genetic resistance (when available) to enhance scab management.

As a result of that accomplishment, what does your particular clientele, the scientific community, and agriculture as a whole have now that they didn't have before?:

This data will be added to an existing data to support decisions concerning the use of fungicides in wheat for managing scab. In addition, the results from these studies are necessary for obtaining an EPA approved commercial fungicide label (section 3).

Include below a list of the publications, presentations, peer-reviewed articles, and non-peer reviewed articles written about your work that resulted from all of the projects included in the grant. Please reference each item using an accepted journal format. If you need more space, continue the list on the next page.

None