

**USDA-ARS/
U.S. Wheat and Barley Scab Initiative
FY05 Final Performance Report (approx. May 05 – April 06)
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Cover Page

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Fiscal Year:	2005
FY05 ARS Agreement ID:	59-0790-4-135
Agreement Title:	Fungicide Efficacy Evaluations for Managing Scab in Louisiana Wheat.
FY05 ARS Award Amount:	\$ 13,902

USWBSI Individual Project(s)

USWBSI Research Area*	Project Title	ARS Adjusted Award Amount
CBC	Fungicide Efficacy Evaluations for Managing Scab in Louisiana Wheat.	\$ 13,902
	Total Award Amount	\$ 13,902

Principal Investigator

Date

* BIO – Biotechnology
CBC – Chemical & Biological Control
EDM – Epidemiology & Disease Management
FSTU – Food Safety, Toxicology, & Utilization
GIE – Germplasm Introduction & Enhancement
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*, is a major concern for wheat producers in the United States. Periods of high humidity and moderate temperatures during flowering are common along the Louisiana Gulf Coast which provides favorable conditions for FHB development. Furthermore, increased use of minimum tillage practices in corn and wheat production systems have the potential to increase the threat of this disease in the state. This disease is managed in part 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 viable 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), Ben Hur Research Station (south central), 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 Ben Hur and Macon Ridge Research Stations. Seven treatments were evaluated in 2005-06: 1. Nontreated, 2. Folicur 3.6F @ 4 fl. oz + 0.125% Induce, 3. Prosaro (1:1 ratio of prothioconazole:tebuconazole) @ 6.5 fl oz + 0.125% Induce, 4. Caramba 0.75SL @ 10.0 fl oz/A + 0.125% Induce, 5. Folicur 3.6F @ 4.0 fl oz/A + Topsin M 70WSP @ 0.5 lb/A, 6. Topgard 1.04SC @ 14 fl. oz./A + Induce 0.125% v/v, and 7. Tilt 3.6EC 4.0 fl oz. Induce in multi-state uniform fungicide test supported by the USWBSI. All fungicide treatments except Tilt (treatment 7) were applied at flowering using a handheld CO₂ charged spray boom. Tilt was applied at 50% heading. Disease incidence and severity was assessed in accordance with the USWBSI Uniform Fungicide Test materials and methods. Disease assessment data and grain quality measurements were compared using appropriate statistical procedures.

Scab epidemics didn't develop at the Ben Hur and Rice Research Stations due to dry weather; however, incidence was low at the Macon Ridge Research Station. Scab incidence ranged from 2% (Prosaro) to 5% (Non-sprayed and Topgard). Scab index ratings were highest in the Non-sprayed (0.46) and lowest (0.21) in wheat treated with Folicur 3.6F @ 4.0 fl oz/A and Prosaro 6.5 fl oz/A. Yields did not differ among treatments.

Ratings did not differ among treatments, but trends toward less scab were observed in wheat treated with Folicur and Prosaro. These results are consistent with data collected from tests conducted in previous years in Louisiana.

**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. Currently, results from these studies have identified several candidate fungicides that appear to be more efficacious than commercially available products. This data is needed to secure a section 3 label for use in commercial wheat.

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.

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?:

The research has identified several candidate fungicides that may be used to manage scab. 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