USDA-ARS / USWBSI
FY03 Final Performance Report (approx. May 03 – April 04)
July 15, 2004

Cover Page

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Year:	**FY2003 (approx. May 03 – April 04)**
FY03 ARS Agreement ID:	**59-0790-9-040**
FY03 ARS Agreement Title:	**Development of FHB Resistant Wheat Genotypes Adapted to the Gulf Coast.**
FY03 ARS Award Amount:	**$ 17,073**

USWBSI Individual Project(s)

USWBSI Research Area*	Project Title	ARS Adjusted Award Amount
VDUN	Development of FHB Resistant Wheat Genotypes Adapted to the Gulf Coast.	$ 17,073
	Total Amount Recommended	**$ 17,073**

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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: ***Development of FHB Resistant Wheat Genotypes Adapted to the Gulf Coast.***

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

The overall objective of this project is to accelerate development of wheat varieties and germplasm adapted to the Gulf Coast that are resistant to Fusarium Head Blight (FHB). This region is unique in climate and receives little attention from commercial breeding programs. Therefore it is imperative adapted, scab-resistant varieties for the region be developed by the LSU AgCtr. Scab occurs occasionally across Louisiana and frequently in the rice region of southwest Louisiana. Objectives will be accomplished by: (1) Participating in regional screening nurseries, (2) Initiating a recurrent selection program, and (3) Crossing adapted soft wheat lines and varieties with genotypes having resistance to FHB

2. What were the most significant accomplishments?

The breeding program continued to make significant progress in FY 2003 despite weather-related setbacks. FHB research plots were planted at Baton Rouge (south) and Winnsboro (north) Louisiana. The south Louisiana FHB screening plots were lost to heavy rainfall at harvest time (30" in May-June, a 50 year record). Very dry condition in north Louisiana during the six-week period centered around flowering prevented significant FHB development despite use of misters and inoculation. Samples from this site will be analyzed for shriveled kernels and DON. A yield trial of advanced generation lines from the FHB project was grown at Baton Rouge and Winnsboro, with corresponding headrow plots grown under inoculated conditions.

There were 26 new crosses/ backcrosses made to incorporate FHB resistance in to adapted germplasm during April 2004. Most of the crosses involved soft red winter wheat lines that already have resistance genes incorporated from 'exotic' sources but are not adapted to the Gulf Coast. Fifty-two F1 crosses were grown to produce F2 populations for selection in 2005. These involved parents with diverse sources of FHB resistance, in addition to the commonly used genes from Chinese sources. Parents used as resistance sources include, but are not limited to: 1) CIMMYT lines from Anne McKendry, 2) backcross lines developed by Gene Milus, 3) VA01W476 from VaTech, and 4) ND2928 out of North Dakota. Twelve F2 populations with specific resistance source for FHB were grown and were grown and selected for plant type and adaptation. Forty-three F3 populations with specific FHB resistance sources (2001 LSU crosses) were grown at Baton Rouge and also shared with the Florida breeding program at Quincy, FL. These populations were lost at Baton Rouge to torrential rains at maturity Baton Rouge but approximately 200 heads were selected from each at Quincy, FL. The F4 headrows from these will be grown at Crowley, LA in 2005 under inoculated (corn-based inoculum, non-misted) conditions. FHB epidemics frequently occur in this area due to climate and it likely effective screening can be carried out on large populations here. The regional FHB screening nursery will also be grown in Crowley under misted-inoculation.

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.

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