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:	**59-0790-9-046**
FY03 ARS Agreement Title:	**Enhancement of Scab Resistant Wheat Cultivars Adapted to the Southeast.**
FY03 ARS Award Amount:	**$ 19,512**

USWBSI Individual Project(s)

USWBSI Research Area*	Project Title	ARS Adjusted Award Amount
VDUN	Enhancement of Scab Resistant Wheat Cultivars Adapted to the Southeast.	$ 19,512
	Total Amount Recommended	**$ 19,512**

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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: ***Enhancement of Scab Resistant Wheat Cultivars Adapted to the Southeast.***

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

A severe Fusarium head blight epidemic with high levels of scab occurred in Georgia and the Southeast in 2003 with significant losses in both grain yield and marketability of grain due to high DON concentrations. To solve this scab problem, soft red winter wheat varieties with a high levels of resistance to scab must be produced. The USDA-Scab Initiative has allowed for the development of scab screening nurseries and the selection of germplasm with improved level of resistance. The development of varieties with high level of scab resistance that have high grain yield and good disease resistance to other diseases is a major problem. To enhance the development of scab resistance varieties, double haploid and backcross breeding has been employed. With the identification and development with better DNA markers, marker-assisted selection is also been used to accelerated the development of varieties with improved scab resistance that also have good level of resistance to leaf rust and powdery mildew, and stripe rust.

2. What were the most significant accomplishments?

Soft red winter wheat germplasm with improved scab resistance were identified and selected under natural infection in 2003. These lines have good yield potential with resistance to powdery mildew and leaf rust. Significant progress has been made by the use of the double haploid and backcross breeding systems which have facilitated the advancement of germplasm with scab resistance.

About 200 haploid plants derived from single crosses with scab resistance parents were produced for evaluation in 2004. In 2003, about 250 breeding lines and varieties were evaluated in replicated trial under field evaluation. About 600 headrows were evaluated under field conditions.

Five experimental lines were evaluated in the Uniform Soft Red Winter Fusarium Nursery in 2003. Some of these lines are more resistant than the most recently varietal releases from Georgia. Additionally, four Georgia lines in cooperation with CIMMYT in Uruguay (Dr. Koli) were identified with a good level of resistance from field screening.

Several derived lines (F6) and populations (F3-F5) from Ernie, Truman, IN 97395, NK 980582, VA 461 and VA 476 have been evaluated under field conditions and generation advanced.

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 you grant. Please reference each item using an accepted journal format. If you need more space, continue the list on the next page.

None.