U.S. Wheat and Barley Scab Initiative
FY02 Final Performance Report (approx. May 02 – April 03)
July 15, 2003

Cover Page

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Year:	**FY2002 (approx. May 02– April 03)**
Grant Number:	**59-0790-9-062**
Grant Title:	**Fusarium Head Blight Research**
FY02 ARS Award Amount:	**$ 70,281**

Project

Program Area	Project Title	USWBSI Recommended Amount
VDUN	Spring wheat breeding for scab resistance in South Dakota.	$72,038
	Total Amount Recommended	**$72,038**

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Principal Investigator Date

Project 1: Spring wheat breeding for scab resistance in South Dakota.

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

   Fusarium head blight (FHB) is a serious wheat disease that continues to pose as a production threat within South Dakota as well as the North Central region of the USA. In an attempt to alleviate the wheat production threat caused by FHB, development of resistant varieties has became a high priority within the spring wheat breeding program at South Dakota State University. An aggressive program was initiated to accelerate the development of spring wheat varieties that have improved FHB resistance and desirable agronomic traits. Established off-season nurseries and mist-irrigated greenhouse and field screening nurseries are being utilized to accelerate breeding efforts in improving resistance along with desirable agronomic characteristics. Three early generations of breeding materials are evaluated for scab resistance each year: two generations in the greenhouse and one in the field. Approximately 8,000 individual hills are evaluated in the greenhouse nurseries and 3,000 rows are screened in the field nurseries. Both the field and greenhouse nurseries are inoculated with infested corn and conidial suspensions. A mist-irrigation system is used to provide a favorable environment for infection and disease development. We continue to make a large number of crosses to introduce new resistance genes and new combinations. Sources of resistance used in the crosses include materials from the Uniform Regional Scab Nursery for spring wheat, new resistant germplasm provided by the Germplasm Introduction and Evaluation for Scab Resistance in spring wheat, other introduced sources, and advanced breeding lines that have various levels of FHB tolerance. The off-season nursery aids in the simultaneous selection for resistance and desirable agronomic characteristics.

2. What were the most significant accomplishments?

   A new variety, “Briggs” (SD3367) was released in March 2002. Briggs is an early maturing variety with an FHB resistance level that is similar to “Ingot”. Additionally, it consistently produces higher yield and protein quantities, and has better leaf rust resistance, than the popular varieties “Russ” and “Oxen”.

   The experimental line SD3546 is our next potential release. Though still under consideration, its high FHB resistance level that is also similar to Ingot, superior yield potential, along with test weight and flour quality characteristics that are on par with, or greater than, other varieties common to the area combine to suggest that this line holds much promise. Our fourth year of observation on SD3546 is taking place this season. A tentative release prior to the 2004 growing season has been approved and will transpire if SD3546 retains its ability to perform as in previous years.

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.

I have just completed my first full year as the PI associated with this program. Although the FHB resistance breeding project has remained operational since inception, it does not generally produce publishable results with the exception of variety releases. Specific research projects within the program that were aimed at combating FHB were completed prior to my arrival. Publishable results from this program for FY2002 are therefore, very minimal. It is my intent that more documented progress will become available for inclusion in the FY2003 report.

Draper, M.A., **Glover, K.D.**, Ruden, K.R., LeBouc, A.L., Schilling, S.M., and Lammers, G. 2002. Uniform fungicide performance trials in South Dakota- 2002. National Fusarium Head Blight Forum, 2002 Proceedings p.67-68.