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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Grant Number:	**59-0790-9-041**
Grant Title:	**Fusarium Head Blight Research**
FY02 ARS Award Amount:	**$ 83,210**

Project

Program Area	Project Title	USWBSI Recommended Amount
FSTU	Regional Diagnostic Clinic Providing DON Analytical services for regional FHB research projects.	$79,540
CBC	Chemical Management of FHB in Wheat.	$5,750
	Total Amount Recommended	**$85,290**

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Principal Investigator Date

Project 1: Regional Diagnostic Clinic Providing DON Analytical services for regional FHB research projects.

1. What major problem or issue is being resolved and how are you resolving it?
This proposal addresses issues related to the delivery of safe food products derived from small grains to the consumer. Two objectives are included: 1) Develop sampling protocols providing estimates of vomitoxin in pre-harvested grain; and 2) Continued operation of a regional diagnostic laboratory. Estimating DON levels in grain prior to harvest allows producers and processors to take appropriate action insuring a safe food product. Such actions might include increased testing for DON at buying points, and importing and purchasing of wheat from regions where FHB did not occur. In research, increasing plot size, and using commercial fields as research units (ie epidemiological studies) results in uncertainty of comparative studies due to heterogeneity of FHB, and therefore DON, within a field. The DON levels in Michigan in 2000 resulted in 50% of the wheat used by processors being imported, and a significant amount of the 2001 wheat crop was designated feed grade due to vomitoxin. In 2000, high levels of vomitoxin were not consistent with the record high wheat yields (72 bu/acre), and in 2001 a preliminary survey suggested wide variability in vomitoxin levels across the state. Therefore, sampling protocols for estimating DON in wheat/barley before harvest would be a valuable tool. Previous research identified sampling protocols that predicted limits of DON in trucks. Therefore, it should be possible to predict DON levels in individual fields prior to harvest. Although the principles and experiments involved are complex, the results should provide for a relatively simple sampling and testing protocol to provide reliable estimates of DON.

2. What were the most significant accomplishments?
Because scab did not develop in Michigan in 2002, in field sampling to develop an estimate of DON levels prior to harvest were not possible. However, 2001 results (not reported in last years report) indicated that the mean of 20 randomly collected samples in a field should provide an estimate of DON levels that could be expected after harvest. In the diagnostic clinic, approximately 5,000 samples were submitted for DON analysis by seventeen researchers in eleven states. Michigan administers a quality assurance program comparing analytical results on common samples conducted by separate laboratories. The QA program allows laboratories to identify potential problems with analytical procedures when significant differences between analytical laboratories occur.

Project 2: Chemical Management of FHB in Wheat.

1. What major problem or issue is being resolved and how are you resolving it?
The severity of the FHB epidemics in Michigan in 1996 and 1998, and again in 2000 and 2001, suggested a role for fungicide management. Tests across wheat classes and environments will evaluate products under different conditions. The proposed research allows testing of products that may be registered in the future, and further evaluation of application methods to improve application coverage. Test results will provide information to producers nationwide and locally on what products are providing the greatest disease control and improvement in yield and quality, plus this information is valuable in getting federal or special registrations of new materials. A set of core fungicide treatments will be established and compared to the untreated checks.

2. What were the most significant accomplishments?
2002 fungicide trials at Michigan State University were inconclusive due to a failure of the irrigation system required for scab infection to develop. These experiments will be repeated in 2003.

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.

M.S. Mostrom , P. Schwarz, Y. Dong, and P. Hart. 2002. Diagnostic vomitoxin (DON) services in 2002/2003 samples. 2002 National Fusarium Head Blight Forum Proceedings. 191-194.