

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:	59-0790-9-74
FY03 ARS Agreement Title:	Conventional Breeding and Information Technologies to control FHB in Wheat and Barley.
FY03 ARS Award Amount:	\$ 278,205

USWBSI Individual Project(s)

USWBSI Research Area*	Project Title	ARS Adjusted Award Amount
EC/HQ	U.S. Wheat & Barley Scab Initiative's Networking and Facilitation Office.	\$ 193,528
VDUN	Development of FHB Resistant Soft White Wheat Varieties for Michigan and Similar Environments.	\$ 84,677
	Total Amount Recommended	\$ 278,205

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: *U.S. Wheat & Barley Scab Initiative's Networking and Facilitation Office.*

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

Scab affects the industries and people involved in virtually every stage of the production, processing, and distribution systems of five market classes of wheat and barley across the U.S. The Networking and Facilitation Office (NFO) was established in 1999 to minimize the barriers to the U.S. Wheat & Barley Scab Initiative's success arising from the administrative burdens and communication challenges that are involved in working with around 79 researchers across 25 states. The NFO is addressing this problem by 1) helping scientists and all interested parties, who in the past may have problems communicating with each other, to learn from each other by facilitating communications and communication system development; 2) identifying and implementing an internet-based communication and collaboration mechanisms; and 3) acting as a center of accountability and a rapid clearing house of scab-related information. The NFO also provides administrative support to the various committees and an associated conference associated with the Initiative, including annual resolution of a comprehensive national research plan and budget, and represents the Initiative's only 'fixed' asset.

2. What were the most significant accomplishments?

Volume 4 Issue 3 and Volume 5 Issue 1 of the Initiative's newsletter "Fusarium Focus" have been published. The call for pre-proposals for the FY05 research plan has gone out, and final performance reports for the FY03 projects are being completed by researchers and will be forwarded to ARS in late July. Information pertaining to the FY04 Awards, as well as the FY03 Final Performance Reports, has been added to the web-based database. The 7th National Fusarium Head Blight Forum was held in December 2003 in Bloomington, MN. Participation was up again from the previous year with over 250 attendees. Planning for the 2nd International Symposium on Fusarium Head Blight, incorporating the 8th European Fusarium Seminar, which will be held December 11-15 in Orlando, Florida, is well underway. Significant changes were made to the web-based poster/paper submission process to accommodate the expansive needs in planning an international symposium. The expectation is a 50% increase in participation over the annual national forums. The NFO drafted numerous changes to the USWBSI's Policies and Procedures which were approved by the Steering Committee at the 5-27-04 semi-annual meeting which was held in Chicago, IL.

The NFO is responsible for organizing/coordinating meetings, conference calls and workshops for the various USWBSI committees and research area collaborators. A complete list of all communication activities for FY03 is detailed in Table 1. New web-based discussion forum software was purchased in time for use during the development of the FY05 Research Area Program Descriptions and Research Priorities. This software will greatly enhance the communication of the USWBSI Administrative branch, the scab research community and the Initiative's stake-holders.

Table 1. Summary of Meetings, Conference Calls and Workshops facilitated by the Networking & Facilitation Office (NFO).

Date	Committee/ Research Area	Type	Description	Number of Participants	Meeting Location
5-29-03	Steering Committee (SC)	Meeting	Semi-Annual Meeting	26	Minneapolis, MN
8-14-03	CBC Research Area Committee (RAC)	Conference Call	Discuss Ground and Aerial Application Technology	9	NA
9-8-03	CBC RAC	Conference Call	Discuss Aerial Application Technology	8	NA
9-8-03	Executive Committee (EC)	Conference Call	EC's Quarterly Conference Call	9	NA
10-06-03	DON Task Force	Conference Call	DON problem in 2003 commercial wheat industry crop.	15	NA
10-15-03	CBC* RAC	Conference Call	Discuss Folicur Section 18	22	NA
10-22-03	USWBSI Co-Chairs, NFO and RAC Chairs	Conference Call	Discuss upcoming FY04 Pre-Proposal Review Process.	9	NA
10-27-03	CBC* RAC	Conference Call	Discuss upcoming FY04 Pre-Proposal Review Process.	4	NA
10-29-03	FSTU RAC	Conference Call	Discuss upcoming FY04 Pre-Proposal Review Process.	4	NA
11-17-03	CBC Review Panel	Conference Call	Discuss panel's review of submitted pre-proposals.	4	NA
11-17-03	FSTU Review Panel	Conference Call	Discuss panel's review of submitted pre-proposals.	4	NA
11-19-03	BIO Review Panel	Conference Call	Discuss panel's review of submitted pre-proposals.	6	NA
11-21-03	EDM Review Panel	Conference Call	Discuss panel's review of submitted pre-proposals.	6	NA
11-24-03	VDUN Review Panel	Conference Call	Discuss panel's review of submitted pre-proposals.	4	NA
11-24-03	EDM Review Panel	Conference Call	Discuss panel's review of submitted pre-proposals.	6	NA
11-25-03	GIE Review Panel	Conference Call	Discuss panel's review of submitted pre-proposals.	6	NA
12-12-03	EC/RAC Chairs and Vice-Chairs	Meeting	Discuss review panels recommendation for pre-proposals submitted for FY04 funding.	23	Minneapolis, MN
12-13-03	SC	Meeting	Semi-Annual Meeting – Review FY04 Research Plan and Budget	30	Minneapolis, MN
12-15-04	EC	Meeting	Follow-up of Annual Forum and USWBSI's recommendation for FY04 Research Plan and Budget.	7	Minneapolis, MN

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Date	Committee/ Research Area	Type	Description	Number of Participants	Meeting Location
3-8-04	VDUN RAC	Conference Call	Discuss planning of proposed genotyping workshop.	4	NA
3-30-04	EC	Conference Call	EC's Quarterly Conference Call	8	NA

Project 2: *Development of FHB Resistant Soft White Wheat Varieties for Michigan and Similar Environments.*

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

All of the currently grown soft white winter wheat cultivars grown in Michigan or neighboring regions are highly susceptible to FHB. We employ conventional plant breeding approaches including field and greenhouse FHB screening nurseries to redress this shortcoming.

2. What were the most significant accomplishments?

Soft white winter wheat lines exhibiting commercially acceptable levels of agronomic and grain quality attributes coupled with FHB resistance are emerging from our breeding efforts. The 03/04 Michigan wheat crop is severely challenged by FHB. Soft white winter wheat breeding lines E0009, E2048, E2043, E2002 all exhibited moderate to strong resistance as in past years. Those lines also all performed extremely well in yield tests where FHB was omnipresent irrespective of heading date. Each of those lines will be considered for accelerated multiplication and release. Several lines in our preliminary yield tests also exhibited good resistance to FHB. Observations at our naturally infected yield test sites correlated well with observations in our misted and inoculated nursery. Screening of approximately 450 F3 derived F4 lines at the misted/inoculated test site identified 12 families with extremely high FHB resistance. Those lines combine white seed coat, winter habit, winter habit/hardiness, and very strong FHB resistance. They in fact show stronger resistance than any winter wheat we have screened to date, including any and all in the uniform scab nurseries. Each line is derived from a bi-parental matings of superior Michigan-adapted soft white wheats and W14 or similar FHB resistant Chinese parents. We believe these lines represent the best white grain winter wheat breeding parents currently know to us. Our breeding 'pipeline' is populated at each stage with lines derived from crosses involving lines with known FHB resistance, and our fall '04 plantings will include a greatly enlarged pre-yield test screening nursery similar to that described above.

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.

Sayler, Tracy, S. Canty, and R. Ward. Spring 2004. Scab News. U.S. Wheat & Barley Scab Initiative. Volume 6, Issue 1.

Canty, Susan, R. Ward and J. Lewis (Eds.). 2003. Proceedings from the 2003 National Fusarium Head Blight Forum, Minneapolis, MN; December 13-15. Michigan State University, East Lansing, MI.

Sayler, Tracy, S. Canty, and R. Ward. Fall 2003. Scab News. U.S. Wheat & Barley Scab Initiative. Volume 5, Issue 2.

Ward, Richard, L. Siler, J. Lewis and L.P. Hart. 2003. Michigan State Wheat Variety Trial: 2003. Michigan State University, East Lansing, MI.