

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:	59-0790-9-032
FY03 ARS Agreement Title:	Chemical and biological trials for Fusarium head blight (FHB) management.
FY03 ARS Award Amount:	\$ 10,732

USWBSI Individual Project(s)

USWBSI Research Area*	Project Title	ARS Adjusted Award Amount
CBC	Chemical and biological trials for Fusarium head blight (FHB) management.	\$ 10,732
	Total Amount Recommended	\$ 10,732

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: *Chemical and biological trials for Fusarium head blight (FHB) management.*

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

FHB has been a periodic and significant problem in localized areas of South Dakota. So far, producers have received the best relief from the disease from fungicide applications. The availability of Folicur, via Section 18, has become widely accepted among growers and has become a common production input in some parts of the state. More effective fungicides or application methods are needed to provide better disease control and improving the profit margin of producers. Awareness of FHB risk has been elevated and is a significant consideration in

We have continued to screen products through the uniform fungicide trial, participated in the “mini”-uniform biological trial, screened SDSU biological products in the field for Dr. Bruce Bleakley, and tested droplet patterns from aerial applicators using standard nozzle configurations.

2. What were the most significant accomplishments?

Due to extreme drought and heat in SD in 2003, low levels of FHB developed in test plots at all locations, including a misted nursery at Brookings. FHB models forecast optimal temperature conditions with minimal moisture conditions. Treatments containing prothioconazole (JAU 6576) suppressed scab incidence significantly more than tebuconazole (Folicur). Mixes of the two active ingredients show promise for optimizing control of leaf diseases while suppressing FHB.

Bacillus (TrigoCor 1448, 1 BC) biological control agents (BCAs) reduced DON levels better than any other biological. TrigoCor 1448 significantly reduced DON to less than half of the level of the untreated. 1 BC reduced DON significantly from the Folicur treated, but only numerically from the untreated.

A graduate student on the project continues to study on application technology and droplet deposition. Accomplishments on this project will be reported in the coming year.

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

Research Reports

N.L. Baye, B.H. Bleakley, M.A. Draper, and E. Calli. 2003. Laboratory studies with purified iturin A and with *Bacillus* spp. grown in complex and defined growth media to ascertain the identity and ability of compounds that inhibit *Fusarium graminearum*. US Wheat and Barley Scab Forum. December 13-15, 2003, Bloomington, MN., Proceedings p 60.

M.A. Draper, K.R. Ruden, K.D. Glover, E. Calli, S.M. Schilling, and G. Lammers. 2003. 2003 uniform fungicide performance trials in South Dakota. US Wheat and Barley Scab Forum. December 13-15, 2003, Bloomington, MN, Proceedings p 4.

M.A. Draper, B.H. Bleakley, N.L. Baye, K.R. Ruden, E. Calli, and S.M. Schilling. 2003. 2003 Uniform trials for the performance of biological control agents in the suppression of Fusarium Head Blight in South Dakota. December 13-15, 2003, Bloomington, MN., Proceedings p 67-68.

L.Osborne and M. Draper. 2003. FHB risk advisory for spring wheat in South Dakota, 2003. US Wheat and Barley Scab Forum. December 13-15, 2003, Bloomington, MN., Proceedings p 148.

M.A. Draper, K.R. Ruden, and S. Schilling. 2004. 2003 Field Plot Summaries: Plant Disease and Fungicide Trials. 67 pp.

Presentations

M.A. Draper. 2004. I've got good news and bad news... SD Aerial Applicators Association. February 25, 2004, Sioux Falls, SD.

M.A. Draper. 2004. Plant diseases and the changing fungicide scene. SD Commercial Pesticide Applicators Training. January 21 - February 2, 2004, Aberdeen, Watertown, Brookings, Pierre, Mitchell, Yankton and Sioux Falls, SD.

M.A. Draper. 2003. Wheat disease management in South Dakota, 2003. AgHorizons Conference, December 9, 2003, Pierre, SD.

M.A. Draper. 2004. Managing wheat diseases in South Dakota in the 2003 environment. March 17, 2004, Onida, SD.