

**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:	59-0790-9-063
Grant Title:	Fusarium Head Blight Research
FY02 ARS Award Amount:	\$ 105,379

Project

Program Area	Project Title	USWBSI Recommended Amount
FSTU	Malting Barley Deoxynivalenol Diagnostic Services.	\$108,014
	Total Amount Recommended	\$108,014

 Principal Investigator Date

Project 1: Malting Barley Deoxynivalenol Diagnostic Services.

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

DON analytical services are provided to eight collaborating researchers at four barley varietal developmental programs. These programs require the analysis of approximately 7,000 samples/year, and the major issue is to provide DON analytical services in a cost effective, timely and accurate manner. Funds provided by the USWBSI have allowed us to hire additional personnel, and to subsidize the cost of analysis.

2. What were the most significant accomplishments?

Approximately 8,650 barley samples from the 2002 crop were analyzed for DON by gas chromatography with electron capture detection (GC-ECD) This compares to 7,500 in 2001-02. Samples included breeder's lines, crop survey samples, and samples from research studies. The 2002 crop samples were analyzed beginning September , 2002 and are to complete in March, 2003.

Developed techniques for the determination of single kernel DON. Approximately 1,000 single kernels were analyzed in FY02 as part of research studies.

A barley DON check sample service was operated as a service to 17 academic and industry labs. Two samples are shipped to each participant on a monthly basis.

Regional crop survey samples (N≈280) were analyzed for DON in order to provide an estimate of (barley) FHB distribution and severity throughout the region. Crop survey samples were also scanned on the 1241 NIR. This data is made available to FOSS North America (Eden Prairie, MN) as part of an effort to develop whole grain calibration for DON screening.

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.

Dahleen, L.S., Agrama, H.A., Horsley, R.D., Steffenson, B.J., Schwarz, P.B., Mesfin, A. and Franckowiak, J.D. Identification of QTLs associated with Fusarium head blight resistance in Zhedar 2 barley. *Accepted: Theoretical and Applied Genetics*.

Kottapalli, B., Wolf-Hall, C.E., Schwarz, P., Schwarz, J., and Gillespie, J. Evaluation of hot water and electron-beam irradiation for reducing fusarium infection in malting barley. *Accepted: J. Food Protection*.

Urrea, C.A., Horsley, R.D., Steffenson, B.J., and Schwarz, P.B. 2002. Heritability of Fusarium Head Blight resistance and deoxynivalenol accumulation from barley accession CIho. *Crop Science*: 42: 1404-1408.

Schwarz, P.B., Jones, B. L., and Steffenson, B.J. 2002. Enzymes associated with *Fusarium* infection of barley. *J. Am. Soc. Brew. Chem.* 60(3):130-134.

Schwarz, P.B. Impact of Head Blight on the Malting and Brewing Quality of Barley. 2003. Pages 395-419 in: *Fusarium Head Blight of Wheat and Barley*. K.J. Leonard and W.R. Bushnell, eds. American Phytopathological Society Press, St Paul, MN.

Schwarz, P. 2003. Distribution of deoxynivalenol on Fusarium Head Blight infected samples of Midwestern six-rowed malting barley. Pages 54-61 in *Mycotoxins and Other Contaminants in the Malting and Brewing Industries*. European Brewery Convention, Symposium Bulletin. EBC, Zoeterwoude, Netherlands.