

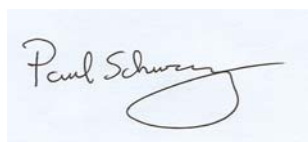
**USDA-ARS/  
U.S. Wheat and Barley Scab Initiative  
FY06 Final Performance Report (approx. May 06 – April 07)  
July 16, 2007**

**Cover Page**

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<b>Fiscal Year:</b>	2006
<b>USDA-ARS Agreement ID:</b>	59-0790-4-122
<b>USDA-ARS Agreement Title:</b>	Malting Barley Deoxynivalenol Diagnostic Services.
<b>FY06 ARS Award Amount:</b>	\$ 148,210

**USWBSI Individual Project(s)**

<b>USWBSI Research Area*</b>	<b>Project Title</b>	<b>ARS Award Amount</b>
FSTU-S	Malting Barley Deoxynivalenol Diagnostic Services.	\$ 148,210
	<b>Total Award Amount</b>	<b>\$ 148,210</b>



Principal Investigator

7-16-07  
Date

\* CBCC – Chemical, Biological & Cultural Control  
 EEDF – Etiology, Epidemiology & Disease Forecasting  
 FSTU – Food Safety, Toxicology, & Utilization of Mycotoxin-contaminated Grain  
 GET – Genetic Engineering & Transformation  
 HGR – Host Genetics Resources  
 HGG – Host Genetics & Genomics  
 PGG – Pathogen Genetics & Genomics  
 VDUN – Variety Development & Uniform Nurseries

**Project 1:** *Malting Barley Deoxynivalenol Diagnostic Services.*

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

Mycotoxin analyses are essential for most researchers working on FHB of cereals. However, in barley DON is a major economic factor, and new varieties must display increased resistance to DON accumulation as well as to FHB. Screening barley lines for DON is requisite for any breeding program intending to develop varieties for the upper Midwestern USA. DON analytical services are provided to nine collaborating researchers within four barley varietal developmental programs. These programs stated a need for the analysis of approximately 11,000 samples in FY06. 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. List the most important accomplishment and its impact (how is it being used?).  
Complete all three sections (repeat sections for each major accomplishment):**

**Accomplishment:**

Approximately 14,500 samples from barley varietal development programs were analyzed in FY06. An additional 3,500 samples were analyzed for barley FHB research projects. Approximately 350 samples were analyzed as part of the 2006 regional barley crop quality survey. DON levels were the lowest observed in the region since 1993. The 2006 samples were analyzed between August, 2006 and July, 2007.

**Impact:**

**As a result of that accomplishment, what does your particular clientele, the scientific community, and agriculture as a whole have now that they didn't have before?**

The analysis of DON in barley breeder's materials is absolutely essential in achieving the goal of new varieties that display reduced levels of DON accumulation. Research projects focusing on control of FHB and DON may provide short-term solutions for the utilization of FHB-contaminated barley. Monitoring DON levels in regional grain (crop survey) is important in maintaining food and feed safety, and also helps to maintain an epidemiological record of FHB on barley in the upper Midwest. This data is important to producers and users of regional grain, pathologists, agricultural economists, and to regulatory agencies.

**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.**

Manoharana, M., Dahleen, L.S., Hohnc, T.M., Neate, S.M., Yue, X.-H., Alexander, N.J., McCormick, S.P. Bregitzer, P., Schwarz, P.B., and Horsley, R.D. Expression of 3-OH trichothecene acetyltransferase in barley (*Hordeum vulgare* L.) and effects on deoxynivalenol. *Plant Science* (6): 699-706, 2006.

Hill, N.S., Schwarz, P.B., Dahleen, L. S. Neate, S.M., Horsley, R., Glenn, A.E. and O'Donnell , K. ELISA analysis for *Fusarium* in barley: development of methodology and field assessment. *Crop Sci.* 46: 2636-2642, 2006.

Horsley, R.D. Schmierer, D. Maier, C., Kudrna, D. Urrea, C., Steffenson, B.J., Schwarz, P.B., Franckowiak, J.D., Green, M., Zhang, B., Kleinhofs, A. Identification of QTLs associated with Fusarium Head Blight resistance in barley accession CIho 4196. *Crop Sci.* 46: 145-156, 2006.

Schwarz, P.B., Horsley, R.D., Steffenson, B.J., Salas, B., and Barr, J.M. Quality risks associated with the utilization of Fusarium Head Blight infected malting barley. *J. Am. Soc. Brew. Chem.* 64(1):1-7, 2006