USDA-ARS / USWBSI
FY04 Final Performance Report
July 15, 2005

Cover Page

PI:	**L. Patrick Hart**
Institution:	**Michigan State University**
Address:	**Department of Botany & Plant Pathology** **107 CIPS** **East Lansing, MI 48824**
E-mail:	**hartl@msu.edu**
Phone:	**517-353-9428**
Fax:	**517-353-5598**
Year:	**FY2004** (approx. May 04 – April 05)
FY04 ARS Agreement ID:	**59-0790-4-105**
FY04 ARS Agreement Title:	**Diagnostic Services for DON, and Regional Uniform Fungicide Trials.**
FY04 ARS Award Amount:	**$ 90,611**

USWBSI Individual Project(s)

USWBSI Research Area*	Project Title	ARS Adjusted Award Amount
CBC	Chemical Management of FHB in Wheat.	$ 8,415
FSTU	Regional Diagnostic Laboratory Providing DON Analytical Services for Regional FHB Research Projects.	$ 82,196
	Total ARS Award Amount	**$ 90,611**

_____

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 Management of FHB in Wheat.***

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

. The research objective is the testing of products that may be registered in the future. Test results will be provided to producers nationwide on what products are providing the greatest disease control and improvement in yield and quality, plus this information is used in applications for federal or special registrations of new materials

2. What were the most significant accomplishments?

FHB was extremely severe in Michigan in 2004. Fungicide field trials across two varieties showed significant fungicide treatment differences, allowing us to select promising fungicides for future development. JAU6476 480SC 5.0 fl. oz +0.125% Induce, and V-10116 1.81 FL @ 6 fl oz/A + 0.125% Induce were superior to other products tested. The results also demonstrated significant differences between two varieties (Freedom and Harus) for DON development. Interestingly, FHB symptoms were not significantly different between varieties, including the percent of infected heads, and the percent of the head infected, but DON levels were three times lower in Freedom than in Harus.

3. Most important accomplishment and its impact.

The results suggest that DON levels can be reduced by using specific combinations of variety and fungicides. It also suggests that variety selection can have a major impact on DON levels, and varietal development should include screening for DON.

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

By comparing fungicide treatments across varieties we can now identify combinations of fungicides and varieties that will have the greatest impact on the reduction of DON in commercial wheat production.

Project 2: ***Regional Diagnostic Laboratory Providing DON Analytical Services for Regional FHB Research Projects.***

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

The number of DON analyses performed by individual research projects can vary significantly between years. Anticipating the costs associated with analyzing samples can be difficult as needs change each year. Also, consistent levels of accuracy and precision can be difficult to obtain when diagnoses are made on an intermittent basis. Therefore, centralized diagnostic services offering the FHB (scab) research community DON analysis overcomes these problems. Also, comparing the results of DON analysis between research laboratories is more reliable when all of the analyses are centrally performed.

2. What were the most significant accomplishments?

Over 7,000 DON analyses were performed in 2004 for Scab Initiative related research projects. The DON analyses allow researchers to make selections based on DON levels, even when differences in the amount of infection present between varieties is not different.

3. Most important accomplishment and its impact.

The DON analyses allow researchers to make selections based on DON levels. Centralized diagnostics reduce the overall cost to the initiative of performing DON diagnostic testing.

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

Selection of wheat and barley for varietal development can be made based on their ability to reduce levels of DON, even when differences in the amount of infection present between varieties is not different. Recommendations on commercial variety use can be made that could reduce, although not eliminate, DON levels in commercial sources of wheat. This would have a significant impact on the industry, especially when a year like 2004 occurs where DON levels were unusually high in commercial wheat.

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

Hart, B. Munn, R. Ward, and L. Siler. 2004. Fusarium Head Blight in Michigan in 2004. Proceedings Fusarium Head Blight Forum. P. p.453-457..

Browne, R.A., J.P. Murphy, B.M. Cooke, D. Devaney, E.J. Walsh, C.A. Griffey, J. A. Hancock, S.A. Harrison, L.P. Hart, F.L. Kolb, A.L. McKendry, E.A. Milus, C. Sneller, and D.A. Van Sanford. 2004. Evaluation of Fusarium Head Blight Resistance in US Soft Red Winter Wheat Germplasm Using a Detached Leaf Assay. Proceedings 2004 Fusarium Head Blight Forum. Poster 11.

Yu, J-B, G-H. Bai, W-C. Zhou, F-L. Kolb, Y-H. Dong and P. Hart. 2004. Fine Mapping of Wheat QTL for Resistance to FHB and DON in Chinese LandraceWangshuibai.. Proceedings 2004 Fusarium Head Blight Forum. Poster 108.

Rick Ward, Lee Siler, Janet Lewis, Ben Munn, and L. Patrick Hart. 2004. Michigan State Wheat Variety Trial:. MSU Extension Publication