

**USDA-ARS/  
U.S. Wheat and Barley Scab Initiative  
FY09 Final Performance Report  
July 15, 2010**

**Cover Page**

<b>PI:</b>	Ivan Rayment
<b>Institution:</b>	University of Wisconsin
<b>Address:</b>	Department of Biochemistry 433 Babcock Drive Madison, WI 53706-1544
<b>E-mail:</b>	ivan_rayment@biochem.wisc.edu
<b>Phone:</b>	608-262-0437
<b>Fax:</b>	608-262-1319
<b>Fiscal Year:</b>	2009
<b>USDA-ARS Agreement ID:</b>	59-0790-6-066
<b>USDA-ARS Agreement Title:</b>	Structural and Functional Studies of Trichothecene Biosynthetic Enzymes.
<b>FY09- USDA-ARS Award Amount:</b>	\$ 40,502

**USWBSI Individual Project(s)**

<b>USWBSI Research Category*</b>	<b>Project Title</b>	<b>ARS Adjusted Award Amount</b>
PBG	Development and Testing of Improved Enzymes for Transgenic Control of FHB.	\$ 40,502
	<b>Total Award Amount</b>	<b>\$ 40,502</b>

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Principal Investigator

\_\_\_\_\_  
Date

\* MGMT – FHB Management  
 FSTU – Food Safety, Toxicology, & Utilization of Mycotoxin-contaminated Grain  
 GDER – Gene Discovery & Engineering Resistance  
 PBG – Pathogen Biology & Genetics  
 BAR-CP – Barley Coordinated Project  
 DUR-CP – Durum Coordinated Project  
 HWW-CP – Hard Winter Wheat Coordinated Project  
 VDHR – Variety Development & Uniform Nurseries – Sub categories are below:  
 SPR – Spring Wheat Region  
 NWW – Northern Winter Wheat Region  
 SWW – Southern Sinter Wheat Region

**Project 1:** *Development and Testing of Improved Enzymes for Transgenic Control of FHB.*

**1. What major problem or issue is being resolved relevant to Fusarium head blight (scab) and how are you resolving it?**

This proposal is attempting to generate resistance to FHB by introducing a modified and improved version of FgTri101 into barley to examine whether this will yield resistance in field trials.

**2. List the most important accomplishment and its impact (i.e. how is it being used) to minimize the threat of Fusarium head blight or to reduce mycotoxins. Complete both sections (repeat sections for each major accomplishment):**

**Accomplishment:**

A modified Tri101 gene has been prepared that has better enzymatic characteristics towards DON and improved thermal stability relative to the wild-type enzyme. It has been transformed into barley and plants are growing. These will be tested for resistance later this fall.

**Impact:**

The modified enzyme provides a rational strategy for testing whether Tri101 can provide resistance to FHB in North America.

FY09 (approx. May 09 – May 10)

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PI: Rayment, Ivan

USDA-ARS Agreement #: 59-0790-6-066

**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.**