USDA-ARS/
U.S. Wheat and Barley Scab Initiative
FY11 Preliminary Final Performance Report
July 13, 2012

Cover Page

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Fiscal Year:	FY11
USDA-ARS Agreement ID:	59-0206-1-111
USDA-ARS Agreement Title:	Deoxynivalenol: Human Metabolism of Key Metabolites and Toxicity Predictors.
FY11 USDA-ARS Award Amount:	$ 24,390

USWBSI Individual Project(s)

USWBSI Research Category*	Project Title	ARS Award Amount
FSTU	Deoxynivalenol: Human Metabolism of Key Metabolites and Toxicity Predictors.	$ 24,390
	Total ARS Award Amount	**$ 24,390**

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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 Soft Winter Wheat Region
SWW – Southern Soft Red Winter Wheat Region

Project 1: *Deoxynivalenol: Human Metabolism of Key Metabolites and Toxicity Predictors.*

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

   We are determining how deoxynivalenol glucoside is metabolized in mice and by humans feces. The toxicity of this metabolite of DON is not well understood and needs to be to guide development of DON resistant grain species that may be resistant due to conversion of DON to this metabolite.

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:

   We are in the process of developing a biochemical synthesis of DON glucoside as would be done in plants via UDP glucosyltransferases. We have obtained the starting materials and are optimizing plant extract (Arabidopsis thaliana) and DON concentrations, and beta-glucosidase concentrations for the reverse reaction in order to detect reaction efficiency initially. We are also optimizing HPLC conditions for the reaction and for subsequent DON glucoside purification and have obtained pure DON glucoside from a commercial source to aid in our methods development.

   Impact:

   When completed, this should give a better sense of the capability of plants to form DON glucoside and provide sufficient DON glucoside for our human fecal and mouse testing.

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.

None