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

Cover Page

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Fiscal Year:	2009
USDA-ARS Agreement ID:	59-0206-9-089
USDA-ARS Agreement Title:	Uniform Fungicide and Biocontrol Agent Testes for Control of Fusarium Head Blight and Deoxynivalenol.
FY09- USDA-ARS Award Amount:	$ 8,241

USWBSI Individual Project(s)

USWBSI Research Category*	Project Title	ARS Adjusted Award Amount
MGMT	Uniform Fungicide and Biocontrol Agents Test for Control of Fusarium Head Blight and Deoxynivalenol.	$ 8,241
	Total Award Amount	**$ 8,241**

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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: *Uniform Fungicide and Biocontrol Agents Test for Control of Fusarium Head Blight and Deoxynivalenol.*

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

Fusarium head blight (FHB) epidemics continue to be responsible for enormous yield and quality losses of wheat in Michigan resulting in financial damage to producers, and risk to the safety of food supplies as a result of the production of mycotoxins by the causal organism e.g. deoxynivalenol (DON). Monitoring for scab incidence and pre-harvest deoxynivalenol (DON) levels was conducted in Michigan during 2000 - 2008. Overall, the severity of scab and DON levels has been low to severe, ranging from 0 to 75% and 0 to 40 ppm, respectively. FHB is sporadic in MI necessitating the advised use of fungicides and severe widespread epidemics in the US in 1993, 1996, and 1997, and recent localized epidemics, have necessitated finding fungicides that are effective against FHB. Scab development depends on host genetics, favorable environmental conditions from anthesis through kernel development, and the ability of the causal fungus to survive.

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:

Fungicide evaluation work has shown that few fungicides are genuinely effective against FHB and hence DON reduction. Efficacy reports for use of fungicides and biofungicides have proved useful for decision makers in wheat producing areas. The research conducted at MSU has allowed: decision-making based on local testing of products (fungicides and biofungicides); and provided an additional testing site for the uniform trials in Michigan. Test results have provided information to producers locally and nationwide on what products are providing the greatest disease control and improvement in yield and quality. The test results have supplied necessary information for this purpose.

Impact:

All treatments tested in the trials [Prosaro, Proline, Caramba, Headline and the biofungicides Taegro and Double Yeast) in the trial reduced the Fusarium head blight severity index in comparison with the untreated control. However, the severity of Fusarium head scab was low due to very dry weather during the critical stage of head development. Growers were able to make an informed choice in 2010 during the season when there was moderate risk of head scab development as to which product to use.

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.

Plant Disease Management Reports

1. Kirk, W.W., R.L. Schafer and P. Tumbalam. 2009. Evaluation of foliar fungicide treatments for control of winter wheat foliar diseases at St. Johns, MI, 2009. 4:FC021.
2. Kirk, W.W., R.L. Schafer and P. Tumbalam. 2009. Evaluation of foliar fungicide treatments for control of winter wheat foliar diseases at Clarksville, MI, 2009. 4:FC022.
3. Kirk, W.W., R.L. Schafer and P. Tumbalam. 2009. Evaluation of foliar fungicide treatments for control of winter wheat foliar diseases at Clarksville, MI, 2008. 4:FC023.