USDA-ARS/
U.S. Wheat and Barley Scab Initiative
FY06 Final Performance Report (approx. May 06 – April 07)
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Cover Page

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Fiscal Year:	2006
USDA-ARS Agreement ID:	59-0790-4-133
USDA-ARS Agreement Title:	Uniform Fungicide Trial for Scab on Wheat in Illinois.
FY06 ARS Award Amount:	$ 6,468

USWBSI Individual Project(s)

USWBSI Research Area*	Project Title	ARS Award Amount
CBCC	Uniform Fungicide Trial for Scab on Wheat in Illinois.	$ 6,468
	Total Award Amount	**$ 6,468**

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Principal Investigator 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: *Uniform Fungicide Trial for Scab on Wheat in Illinois.*

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

Head scab on wheat has caused severe losses in yield and grain quality in Illinois. Fungicides have the potential to be one of the best options for control of scab (Fusarium head blight, FHB), but many fungicides are not affective or are not labeled for application time necessary for control of scab. The goal of this study is to test the efficacy of new or recently labeled fungicides and biological control agents in controlling head scab on wheat and their resulting effect on yield and quality of wheat. A small reduction in the toxin level (DON) produced by the fungus means a great deal to the millers who process the grain. Conducting uniform fungicide trials will give farmers valuable information for management of scab as well as contributing to data applicable across all the Midwestern wheat growing regions. These trials were conducted at DeKalb and Monmouth, IL.

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:

Weather conditions were not favorable for FHB development to adequately test the effectiveness of the products. The percent incidence of FHB was 0.3, and 3.5 with no fungicides at the two locations the study was conducted. The study at DeKalb had the higher incidence of FHB, with differences in FHB index between the check and the early Tilt treatment (Table 1). There were no differences between the check and the fungicide treatments for FHB severity, incidence, grain yield, or level of DON (Table 1). At Monmouth, there was a very low level of FHB, with no differences between the treatments and control for any of the measurements on FHB and yield (Table 2). There was no DON detected in the grain samples from Monmouth. There was a low level of foliar diseases on the top two leaves on the control at late milk (Feekes 11.1), with no differences between treatments. These results have been presented through Extension activities and can aid companies in developing products and farmers in selecting fungicides that will be effective in controlling scab.

Table 1: Uniform FBH Fungicide Trial, DeKalb, IL, 2005

Fungicide Treatment[z]	*FHB Incidence (%)*[y]	*FHB Severity (%)*[x]	*FHB Index*[w]	*Yield (bu/ac)*	*DON*[v] *(ppm)*
Untreated check	*3.5*	*0.18*	*0.69*	*73.9*	*0.100*
Folicur 432SC 4.0 fl oz	*1.25*	*0.11*	*0.16*	*74.8*	*0.100*
Prosaro 6.5 fl oz	*3.25*	*0.27*	*0.79*	*76.3*	*0.025*
Caramba 13.5 fl oz	*1.75*	*0.10*	*0.20*	*76.8*	*0.025*
Topguard 14 fl oz	*1.5*	*0.11*	*0.21*	*78.3*	*0.150*
KDF-09-01 2 fl oz + Topsin 45FL 8 fl oz	*3.0*	*0.12*	*0.40*	*75.2*	*0.050*
Tilt 4 fl oz @ 10.5	*1.0*	*0.04*	*0.05*	*73.6*	*0.025*
Tilt 4 fl oz @ 10.51	*1.25*	*0.06*	*0.11*	*74.9*	*0.050*
LSD (P=0.05)	*NS*	*NS*	*0.57*	*NS*	*NS*

Table 2: Uniform FBH Fungicide Trial, Monmouth, IL, 2005

Fungicide Treatment[z]	*FHB Incidence (%)*[y]	*FHB Severity (%)*[x]	*FHB Index*[w]	*Yield (bu/ac)*	*Leaf Disease (%)*[u]
Untreated check	*0.25*	*0.19*	*0.19*	*117.0*	*6.8*
Folicur 432SC 4.0 fl oz	*0.25*	*0.05*	*0.05*	*114.6*	*7.3*
Prosaro 6.5 fl oz	*0.0*	*0.0*	*0.00*	*114.8*	*5.6*
Caramba 13.5 fl oz	*0.0*	*0.0*	*0.00*	*119.6*	*3.8*
Topguard 14 fl oz	*0.25*	*0.17*	*0.17*	*112.8*	*5.6*
KDF-09-01 2 fl oz + Topsin 45FL 8 fl oz	*0.0*	*0.0*	*0.00*	*115.2*	*5.6*
Tilt 4 fl oz @ 10.5	*0.75*	*0.34*	*0.48*	*115.6*	*6.0*
Tilt 4 fl oz @ 10.51	*0.50*	*0.34*	*0.37*	*112.1*	*9.0*
LSD (P=0.05)	*NS*	*NS*	*NS*	*NS*	*NS*

[z]*Fungicides were applied at the early flowering stage (Feekes 10.5) with 0.125% Induce..*
[y]*Incidence is the percent of heads with symptoms of FHB.*
xSeverity is percent of florets with FHB in the infected heads.
[w]*Disease index is FHB incidence x severity.*
[v]*Deoxynivalenol*
[u]*Percent foliar disease symptoms on flag and penultimate leaves, wheat at late milk(Feekes 11.1).*

Impact:

Foliar fungicides will have little impact on yield of wheat if the environmental conditions are not favorable for the development of fungal diseases attacking the head and leaves before early grainfill.

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?

Data from these studies show that there was relatively little benefit in applying fungicides to wheat in northern Illinois in 2006 Utilizing disease prediction models that include weather data, variety characteristics, cropping history and growth stage can greatly benefit growers when determining if fungicide applications are economically viable.

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.