U.S. Wheat and Barley Scab Initiative
FY00 Final Performance Report (approx. May 00 – April 01)
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Cover Page

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Year:	**FY2000 (approx. May 00 – April 01)**
Grant Number:	**59-0790-9-068**
Grant Title:	**Fusarium Head Blight Research**
2000 ARS Award Amount:	**$4,878**

Project

Program Area	Project Title	Requested Amount
Chemical & Biological Control	Uniform fungicide trials to identify safe products that are effective against FHB in Virginia.	$5,000.00
	Requested Total	$5,000.00[1]

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Principal Investigator Date

[1] Note: The Requested Total and the Award Amount are not equal.

Project 1: Uniform fungicide trials to identify safe products that are effective against FHB in Virginia.

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

Uniform fungicide treatment trials for FHB control were established in the spring wheat/barley regions and in winter wheat regions of the United States, including Virginia. The establishment of a core set of treatments across a number of states permitted the evaluation of products and methods for consistency in performance over a wide number of environments and across grain types affected by FHB. Also, because FHB does not occur every year in every location, regardless of attempts to ensure infection, having the trials across environments increases the chance of favorable disease levels for evaluation across multiple sites. One strobilurin fungicide, Quadris 2.08 SC, recently (summer 1999) received federal registration, one triazole fungicide, Folicur 3.6F, was granted special exemptions for use in 1999, and one triazole fungicide, Tilt 3.6E, was granted state labels for use against FHB. Additional, experimental fungicides were included in the 1999 Uniform trials, including Stratego 250E, a combination product of Tilt plus a strobilurin called Flint (CGA-279202 50WG), and BAS 500 00F 2.09EC, another strobilurin. Two biological agents were also evaluated in the Virginia evaluations. Results in locations with FHB indicated favorable control with many of the tested products. In 2000, experimental products that may soon be on the market will be tested once more across environments, to get additional information on their efficacy and performance consistency. In addition, treatments with these compounds will be applied using spray nozzles directed at an angle towards the grain heads, to substantiate that improvements in application techniques can be made across environments.

2. What were the most significant accomplishments?

In Virginia a 15 treatment fusarium head blight plot was seeded no-tillage into corn stubble in mid-October, 1999. The cultivar was the soft red winter wheat 'Roane'. Treatment units were 6 feet wide and 40 feet long. Treatments were a non-treated control, two bacterial isolates (biological agents [TRIGCOR 9790 and TRIGCOR 1448] provided by G. Bergstrom, Cornell University), and 13 different fungicide treatments. **Table 1** reports the results, Zadaks' growth stage at application, harvest moisture, and grain yield at a standard 13.5% moisture for the fusarium head blight trial conducted in 2000.

Growing conditions for the wheat crop were most advantageous with moderate temperature and abundant rainfall from January to 1 May 2000. No rain was received during the critical period of anthesis (aprox. 2 weeks on either side of the beginning of anthesis). This was not at all conducive for fusarium head blight (FHB) to occur. Rains resumed about two weeks after anthesis and permitted good grain filling conditions, but no FHB was observed in the plots when disease ratings were attempted in late May and again in early June. There was no statistically significant ($P<0.05$) differences in grain yields among treatments. Samples of the grain from each plot were collected and sent to Dr. Patrick Hart, Michigan State University, for mycotoxin determinations. No results from Dr. Hart's laboratory have been received.

Table 1. Evaluation of fungicides and two bacterial agents for control of fusarium head blight in the soft red winter wheat cv. Roane seeded no-tillage into maize debris, Warsaw, Virginia, 1999-2000 Crop Year.

Treatment and rate in oz ai/A	**Application at Zadoks' Growth Stage**	**Harvest Moisture % H_2O 26Jun00**	**Yield bu/acre at 13.5% 26Jun00**	**Yield kg/ha at 13.5% 26Jun00**
NON-TREATED		13.3 a	92.0 a-d	6195.0 a-d
FOLICUR 3.6F 1.8	59	13.5 a	95.7 ab	6446.2 ab
+ INDUCE 0.06% V/V				
TILT 3.6E 1.8	59	13.2 a	93.2 a-d	6276.3 a-d
+ INDUCE 0.06% V/V				
STRATEGO 250EC 3.5	59	13.3 a	95.3 a-c	6423.1 a-c
+ INDUCE 0.06% V/V				
BAS 500 00 F 2.09EC 3.2	59	13.7 a	95.4 a-c	6422.8 a-c
+ COC 1.0 % V/V				
BAS 500 00 F 2.09EC 1.6	59	13.4 a	95.5 a-c	6435.1 a-c
+ COC 1.0 % V/V				
QUADRIS 2.08SC 2.6	59	13.7 a	96.1 ab	6470.5 ab
+ BENLATE 50W 2.0				
CGA-279202 50WG 1.5	62	13.3 a	94.3 a-d	6349.7 a-d
+ INDUCE 0.25% V/V				
CGA-279202 50WG 2.0	62	13.6 a	93.7 a-d	6313.6 a-d
+ INDUCE 0.25% V/V				
TILT 3.6E 1.8	62	13.7 a	94.9 a-d	6388.0 a-d
+ CGA-279202 50WG 1.5				
+ INDUCE 0.25% V/V				
STRATEGO 250EC 2.6	62	13.5 a	97.4 a	6561.8 a
+ INDUCE 0.25% V/V				
STRATEGO 250EC 3.5	62	13.8 a	87.8 d	5915.8 d
+ INDUCE 0.25% V/V				
CGA-279202 50WG 2.0	62	13.6 a	94.7 a-d	6375.4 a-d
TRIGCOR 9790	59	13.3 a	88.0 cd	5932.4 cd
TRIGCOR 1448	59	13.5 a	89.6 b-d	6035.7 b-d

Least Significant Difference ($P \leq 0.05$) =		0.5	6.4	430.0
Standard Deviation =		0.38	4.47	300.9
Coefficient of Variation =	2.83	4.78	4.77	

Project 2: 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.

Stromberg, E.L. 2001. Evaluation of seed treatments for the control of disease in a *Fusarium graminearum*-infested soft red winter wheat in Virginia, 2000. Fungicide and Nematicide Tests 2001:ST47.

Stromberg, E.L. 2000. Evaluation of foliar fungicides and a *Fusarium oxysporum* isolate for fusarium head blight control in Pioneer Brand 2580 soft red winter wheat, 1999. Fungicide and Nematicide Tests 55:351-352.

Stromberg, E.L. 2000. The fusarium head blight plots were shown to farmers as part of the Eastern Virginia Agriculture Research and Extension, Warsaw, Virginia's Small Grains Field Day, 24 May 2000. Plots were seen by nearly 400 farmers, agribusiness personnel, crop consultants, and extension agents.

Stromberg, E.L. 2001. Integrated Management of Small Grains Diseases
http://www.ppws.vt.edu/stromberg/smallgrain/sgrain.html