

**U.S. Wheat and Barley Scab Initiative
Annual Progress Report
September 15, 1999**

Cover Page

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Year:	FY1999
Grant Number:	59-0790-9-059
Grant Title:	Fusarium Head Blight Research
Amount Granted:	\$19,512.00

Project

Program Area	Objective	Requested Amount
Epidemiology	Development of integrated management approaches to scab control.	\$15,000
Chemical & Biological Control	Identify safe fungicides that are most effective against FHB and evaluate across wheat classes and varieties, barley varieties, and environments.	\$4,000
Chemical & Biological Control	Develop and implement systems for disseminating research information in a timely fashion to producers.	\$1,000
	Requested Total	\$20,000¹

Principle Investigator

Date

¹ Note: The Requested Total and the Amount Granted are not equal.

Project 1: Development of integrated management approaches to scab control.

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

Wheat is grown on 1.5 million acres in Illinois, compared with 10-11 million acres of soybeans or corn. However, wheat is an excellent crop to include in a crop rotation to reduce other disease problems, e.g. soybean cyst nematode or gray leaf spot on corn. In addition, wheat can be double-cropped with soybeans to potentially increase farm income. We are addressing two major problems in this project. First, what is the most effective crop rotation to optimize yield and reduce scab on wheat? Second, can scab be affected by tillage, especially no-till vs minimum tillage. In addition, we are evaluating three wheat cultivars for levels of resistance to scab.

2. Please provide a comparison of the actual accomplishments with the objectives established.

Wheat planted after soybean achieved 7.9% higher yield (4.2 bu/a) than wheat planted after minimum tilled corn and a 12.1% (6.5 bu/a) higher yield than wheat planted after no-tilled corn. There was a corresponding reduction in inoculum levels, scab infection, and DON levels in grain samples from wheat planted after soybean than wheat following corn. Minimum tillage reduced scab inoculum levels, but not as effectively as planting wheat following soybean. There was a significant effect of variety, but all three varieties responded in the same manner and are combined for this report.

Crop Rotation	Disease (%)	Yield (bu/a)	DON (ppm)
Soybean	1.6	52.7	1.5
Corn (Minimum Tillage)	3.6	48.5	2.6
Corn (N-till)	5.1	46.3	3.0

3. What were the reasons established objectives were not met? If applicable.

While disease levels were relatively low, the planting of wheat after soybean resulted in reduced inoculum levels of scab, lower disease and DON levels, and higher yields.

4. What were the most significant accomplishments this past year?

It has been known for many years that wheat following corn could result in higher levels of scab, but there is little data to demonstrate the economic losses due to scab under different tillage and crop rotations. This study will provide data to assist growers in assessing cropping patterns for both yield and disease control.

Project 2: Identify safe fungicides that are most effective against FHB and evaluate across wheat classes and varieties, barley varieties, and environments.

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

The major problem for the evaluation of safe fungicides was the low level of scab in 1999. This was due to the dry weather that occurred during flowering, hence inoculum levels were very low, approximately 90% less than we observed in 1996-1997. Despite the low level of scab, several fungicides were effective in reducing scab infection.

2. Please provide a comparison of the actual accomplishments with the objectives established.

Number	Treatment	Scab (%)	DON (ppm)	Rust (0 - 9)	Septoria (0 - 9)	Yield (bu/a)
1	Control	2.7	0.7	3.5	5.5	60.4
2	Folicur 3.6SC (4.0)	0.6	0.5	0.3	3.0	64.9
3	Benlate 50DF+Manzate 200DF	1.3	0.6	1.6	3.8	61.9
4	Penncozeb DF	3.6	0.5	2.5	4.9	59.7
5	BAS 500 (15.3) GS 10.3	0.0	0.6	0.1	3.8	65.6
6	BAS 500 (15.3) GS 10.5	1.7	0.5	4.5	4.1	63.3
7	Stratego (10)	0.0	0.8	0.5	2.1	67.7
8	Stratego (14)	0.0	0.3	0.7	2.0	69.5
9	Quadris (.20)	1.3	0.2	0.3	1.8	71.3
10	Quadris (.15)	2.6	0.3	0.7	2.0	68.4
11	Folicur 3.6SC (6.0)	0.0	0.1	0.1	3.1	64.9
12	Tilt (4.0)	0.8	0.3	1.8	2.9	66.4
13	Tilt (6.0)	0.8	0.5	0.7	2.5	67.4
14	Quadris (.15) + Benlate (.25)	1.7	0.4	2.1	1.9	70.1
LSD (5%)		2.6	0.3	1.2	0.4	3.4

3. What were the reasons established objectives were not met? If applicable.

Low levels of disease were observed in 1999, probably due to dry weather during flowering.

4. What were the most significant accomplishments this past year?

- 1) Several fungicides appeared to reduce scab infection and resulted in low DON levels, however, disease levels are very low compared with 1996-1997.
- 2) In 1999, Septoria leaf blight and leaf rust were important diseases on wheat. The application of several fungicides at the time they would be sprayed to control scab, resulted in the control of Septoria and rust. This resulted in an increase of 10.9 bu/a for the most effective fungicide compared with the unsprayed control.

Project 3: Develop and implement systems for disseminating research information in a timely fashion to producers.

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

Over the past ten years, growers in Illinois have reduced wheat acres, primarily because of scab. To control or manage this disease is will require an integrated approach of disease resistant varieties and best management practices. We are working with the Illinois Wheat Growers Assoc. and the Cooperative Extension Service to provide information to the wheat growers. This includes presentations at field days and articles in farm publications. In addition, we are continually adding information to our web-based extension information resources.

2. Please provide a comparison of the actual accomplishments with the objectives established.

We only have one year of data, but we are providing information to Cooperative Extension personnel for winter growers meeting. In addition, we have summarized preliminary results for the Illinois Wheat Growers Association newsletter.

3. What were the reasons established objectives were not met? If applicable.

Not applicable

4. What were the most significant accomplishments this past year?

Completing the first year of research on management systems.

Year: 1999

Progress Report

PI: Wayne Pedersen

Grant: 59-0790-9-059

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.

No publications have resulted from this grant.

Field day presentation (1999) Scab and Septoria on Wheat

In service training for Crop Scouting / Consulting