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

Cover Page

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Year:	**FY1999**
Grant Number:	**59-0790-9-051**
Grant Title:	**Fusarium Head Blight Research**
Amount Granted:	**$57,561.00**

Project

Program Area	Objective	Requested Amount
Epidemiology	To develop a scab forecast system by monitoring the environment and pathogens.	$50,000
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	To assist in deploying epidemiology information that will link disease forecasting with the optimum timing for fungicide application.	$4,000
Chemical & Biological Control	Develop and implement systems for disseminating research information in a timely fashion to producers.	$1,000
	Requested Total	$59,000[1]

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Principle Investigator Date

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

(Form – PR1)

Project 1: To develop a scab forecast system by monitoring the environment and pathogens.

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

   At the present time, the effect of environmental conditions on the development and severity of a Fusarium Head Blight (FHB) epidemic are not sufficiently defined to enable either a reliable prognosis of disease or recommendations of management activities (timely application of a fungicide or biological control agent). Research being done at Ohio State University includes monitoring inoculum fluctuations, environmental parameters and disease incidence and severity in replicated field plots located in Wooster, Ohio that will provide valuable information and can be incorporated into a disease forecasting system. This work is being done in cooperation with researchers in North Dakota and Indiana in order to assess the affect of regional variation in cropping practices, tillage and climate on inoculum levels and subsequent disease in other wheat producing regions of the United States.

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

   To date we have successfully collected data on pathogen inoculum levels, environmental parameters and disease for one growing season in Ohio as described in the proposal.

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

   Additional information is required prior to development and validation a forecasting system for FHB epidemics in Ohio, and other wheat producing regions of the US.

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

   Our most significant accomplishment this past year was the successful collection of valuable epidemiological information from the aforementioned locations in North America. This information should allow preliminary analysis and important insights into the development of a FHB forecasting system.

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?

   Reliable management of FHB has not been possible with the fungicide products that are presently available to wheat producers. Various fungicidal compounds are being evaluated for effectiveness, and potential contributions to integrated FHB management in Ohio. This project is being conducted in cooperation with researchers in other wheat production regions.

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

   Five fungicides were evaluated as directed by Dr. M. Mc Mullen of North Dakota State University and Dr. G. Bergstrom of Cornel University. Products included: Folicur, Benlate, Stratego, Quadris, BASF500 00F. Products were evaluated at various rates, and treatments applied at growth stage 10.5.1 (Feekes). No disease developed in the plots, and yields ranged from 70.3 to 76.6 among treated plots. Differences in yield were not significant ($P=0.335$).

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

   Research was carried out as planned, but environmental conditions did not favor disease development in Ohio during the 1999 growing season.

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

   Appropriate experimental designs were developed for evaluation of fungicides based on application equipment available to the project.

Project 3: To assist in deploying epidemiology information that will link disease forecasting with the optimum timing for fungicide application.

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

   An additional factor that influences the efficacious use of fungicides to manage FHB is application timing. As we gain critical information about the factors that affect the development of a FHB epidemic, a natural extension of that information is to evaluate fungicides based on the newly acquired epidemiological information.

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

   The past year has provided the opportunity to collect detailed epidemiological information in conjunction with product efficacy data. This information is necessary to make progress toward this objective.

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

   Not applicable

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

   Continued to accumulate the information required that will allow links between disease forecasting and fungicide application technology.

Project 4: 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?

   Once an effective disease forecasting system has been created and recommendations on the fungicide management are available the information will need to be disseminated to wheat producers. The timely dissemination of the information is essential to effective FHB management.

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

   Recommendations were made on Ohio State University Extension's Crop Observation and Recommendation Network (C.O.R.N.), a weekly electronic information source for producers and Ag. Industry personnel, based on current knowledge of FHB epidemiology and fungicide products currently available. The data from inoculum monitoring efforts, coupled with environmental information was utilized to make these recommendations during the 1999 growing season.

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

   At this time we need more information to develop the forecasting system and evaluate possible management recommendations. Additional information during the completion of other objectives within this proposal will allow continuous improvement of the information provided to wheat producers.

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

   New information was available to facilitate FHB management recommendations made to wheat producers, and unnecessary pesticide applications avoided.

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.

Lipps, P. E. 1999. No major problems in wheat yet, head scab. Crop Observation and Recommendation Network (C.O.R.N.) 99-10. http://www.ag.ohio-state.edu/~corn/agcrops.html

Lipps, P. E. 1999. Ohio wheat still in excellent condition. Crop Observation and Recommendation Network (C.O.R.N.) 99-11. http://www.ag.ohio-state.edu/~corn/agcrops.html

Lipps, P. E. 1999. No scab, little Stagonospora leaf blotch or leaf rust on wheat. Crop Observation and Recommendation Network (C.O.R.N.) 99-12. http://www.ag.ohio-state.edu/~corn/agcrops.html