

**U.S. Wheat and Barley Scab Initiative
Annual Progress Report
September 18, 2000**

Cover Page

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Year:	FY2000
Grant Number:	59-0790-9-044
Grant Title:	Fusarium Head Blight Research
Amount Granted:	\$32,942.00

Project

Program Area	Objective	Requested Amount
Epidemiology	Study the spatial and temporal aspects of genetic diversity in G. zeae.	\$32,942.00
	Requested Total	\$32,942.00

Principal Investigator

Date

Project 1: Study the spatial and temporal aspects of genetic diversity in *G. zeae*.

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

We are investigating small-scale genetic variability in *G. zeae* using AFLP markers. Samples were collected from 11 "target areas" in four states. Each target area consisted of a wheat field that was immediately adjacent to one field containing wheat debris and another with corn debris. Samples were collected from the debris fields at the time of wheat anthesis, and infected wheat heads were collected approximately three weeks later. Isolates from these samples are being characterized using AFLP technology.

Small-scale population structure will be analyzed by first comparing isolates from the debris fields surrounding each target wheat field to determine the level diversity. Since corn and wheat debris represent the local inoculum source, the population structure of *G. zeae* causing disease in the target field will be compared to populations obtained from these adjacent corn and wheat debris fields. If the debris populations differ in structure, we will use unique bands to identify which debris source population is the most important inoculum source. Further, long-distance dispersal into an area will be estimated from the presence of AFLP bands that are not found in adjacent inoculum source populations.

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

I expect that all objectives of this study will be accomplished. However, the time frame for completing the work may be a bit longer than we had originally expected. Some delay occurred due to the difficulty in obtaining adequate numbers of *G. zeae* isolates from wheat debris. We have set a minimum sample size of 20 isolates for characterizing a *G. zeae* population from any single field. Currently we have been obtain 20 isolates from only four wheat debris fields -- one each from Michigan, Minnesota, North Dakota, and South Dakota. We have decided to use the target areas containing these wheat debris fields for further analysis.

We have also had some problems getting reproducible AFLP markers. However, runs in the last month have yielded gels with discernable bands that are consistent from one run to the next. Assuming that we do not encounter any further major problems, we expect to have all isolates characterized by the end of the funding period. Analysis of these data and publication of the results may occur after the end of funding.

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

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

- a. Isolations from all populations in four target areas are largely complete. Analysis of these samples will allow us to complete the main goals of the project.
- b. We have worked out AFLP techniques that can be used for population analyses.

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Progress Report

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 at this time.