

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

Cover Page

PI:	Kurt Leonard and H. Corby Kistler
Institution:	University of Minnesota
Address:	USDA-ARS, Cereal Disease Lab 1551 Lindig St. St. Paul, MN 55108
Email:	kurtl@puccini.crl.umn.edu hckist@puccini.crl.umn.edu
Phone:	612-625-5786 612-625-9774
Fax:	312-649-5054
Year:	FY1999

Project

Program Area	Objective	Requested Amount
Epidemiology	Investigate the genetics of pathogenicity.	\$10,000
	Requested Total	\$10,000¹

Principle Investigator

Date

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

Project 1: Investigate the genetics of pathogenicity.

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

Fusarium head blight or scab is an extremely destructive disease on all varieties of wheat and barley. The emergence of Fusarium head blight in the 1990's is likely due to a combination of factors including unfavorable climatic conditions, changes in agronomic practices and the lack of high levels of genetic resistance in currently planted wheat and barley. Another unknown but potentially important factor of the disease is the level of genetic variation in the pathogen. In order to assist effective plant breeding and disease management programs, it is essential to understand the epidemiology of the disease as well as the ecology and extent of genetic variation in the head blight pathogen. Further knowledge of the genetic basis for pathogenicity may also give clues for alternative approaches to disease management and control.

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

Our first year goals were development of a culture system for crossing fungal strains, selection of *F. graminearum* strains with low and high pathogenicity, initiation of transformation based mutagenesis and development of methods for selecting non-pathogenic mutants. Despite working only three months on the project we have made significant progress in three of our four first-year goals. We have identified naturally occurring *F. graminearum* strains that are low in pathogenicity to wheat and may be called non-pathogens. We have obtained genetically tagged strains of the fungus that may be used for crossing and we have adapted a greenhouse method for screening for loss of pathogenicity in these fungal strains.

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

The primary reason for not meeting all of our first year objectives is that we have been working on the project for only three months.

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

While it is very early in the project, the major accomplishment this year has been to determine that plants other than wheat, barley and corn may harbor the Fusarium head blight pathogen. This finding suggests that the pathogen may be more diverse and adaptable than previously recognized.

Year: 1999
PI: Kurt Leonard

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.

No new publications have resulted from this research during the past three months.