

**U.S. Wheat and Barley Scab Initiative
 FY02 Final Performance Report (approx. May 02 – April 03)
 July 15, 2003**

Cover Page

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Grant Number:	58-5430-2-322
Grant Title:	Fusarium Head Blight Research
FY02 ARS Award Amount:	\$ 14,634

Project

Program Area	Project Title	USWBSI Recommended Amount
CBC	Can We Debilitate the Wheat Scab Fungus With a Virus?	\$15,000
	Total Amount Recommended	\$15,000

Principal Investigator

11 July 2003

Date

Project 1: Can We Debilitate the Wheat Scab Fungus With a Virus?

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

The major problem being addressed is that of the virulence of the scab fungus. There are numerous examples of double-strand (ds) RNA viruses lowering the virulence of fungal plant pathogens. The objective of this project has been to screen existing populations of the scab fungus (*Fusarium graminearum*) to determine if such dsRNA viruses occur in field populations of the fungus. There is one such strain that has been reported from field strains of *F. graminearum* from South Korea. However strains infected with this virus grow so poorly that they would not be good competitors under field settings. We screened approximately 1000 strains of *F. graminearum* from both wheat and maize collected in the United States for the presence of dsRNA molecules. When identified the heritability of the viral nucleic acid and the gross growth characteristics of the infected strain and an uninfected isogenic strain were tested.

2. What were the most significant accomplishments?

Screening of strains of *F. graminearum* with normal growth found very few that contained dsRNA molecules. When isogenic strains with and without the dsRNA molecules were compared for laboratory growth rates, no significant differences were observed. The dsRNA molecules were usually present as a multiple molecules of different sizes. None of these dsRNA molecules were cloned, but in general no two strains had the same pattern of number and size of dsRNA molecules. The dsRNA molecules were transmitted in an all-or-none pattern. In general the dsRNA molecules were transmitted only vegetatively, *i.e.* through conidial spores or hyphal fragments, and not sexually, *i.e.* through ascospores. Without transmission through the ascospores, the dsRNA molecules are unlikely to persist in epidemic populations of *F. graminearum*, and are unlikely to be suitable for biological control of wheat scab or other disease caused by this fungus.

FY02 (approx. May 02 – April 03)

PI: Heaton, Louis A.

Grant: 58-5430-2-322

FY02 Final Performance 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.

Dr. Heaton has left his faculty position at KSU in January 2003. I have monitored the close-out of this project, and Dr. Heaton is working on a manuscript to be submitted for publication that summarizes the research that has been done.