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

Cover Page

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Year:	**FY1999**
Grant Number:	**59-0790-9-031**
Grant Title:	**Fusarium Head Blight Research**
Amount Granted:	**$39,024.00**

Project

Program Area	Objective	Requested Amount
Epidemiology	Investigate inoculum potential of crop residues.	$40,000
	Requested Total	$40,000[1]

Principle

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

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Project 1: Investigate inoculum potential of crop residues

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

Fusarium survives between growing seasons on the plant residues. Changes in cropping practices such as chisel plowing and zero till, have resulted in more residues at or near the soil surface which have provided the inoculum in the recent FHB epidemics. This study is examining the relative importance of the various components of residue, on the survival and production of ascospore inoculum. The project also includes a study to examine the impact of post-planting burning of the residue from small grains crops on the survival and inoculum production capacity of *F. graminearum*. Outcomes of this project will assist in determining the effectiveness of cultural (tillage, removal, or burning residues), chemical and biological control practices directed to reducing Fusarium inoculum and will provide a basis for providing recommendations to producers dealing with Fusarium infected residue.

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

The capacity of residue from small grains crops infected with Fusarium to remain a source for the survival of Fusarium inoculum is being studied. The relative importance of residue components (especially straw and head tissues) in contributing to inoculum of Fusarium Head Blight is being examined. Residue of infected plants was obtained in 1999 and has been separated into the major components which likely contribute to Fusarium inoculum. The plant parts are being examined in greenhouse and laboratory studies to determine the survival and inoculum potential of *Fusarium*.
The impact of post-planting burning of the residue from small grains crops on the survival and inoculum production capacity of *F. graminearum* will be examined. It is anticipated that the study of post-planting burning of residue would be conducted on large plots situate in commercial fields in the Red River Valley. Two sites are currently proposed for the spring of 2000. As seeding depth is likely to effect seed viability and so initial studies on the effects of burning on seeding depths and to determine the window of opportunity to time burning in relation to planting date will also be conducted. This information will determine the conditions where burning is possible without risking damage to stand establishment. For these studies pre-burn and post-burn measurements of residue cover and stand establishment will be collected. The survival of Fusarium in pre and post burn residues will also be examined to determine the effect of heat and residue destruction on Fusarium survival.

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

Funding was not available soon enough to enable the field work to be conducted in the 1999 field season. Greenhouse and laboratory studies have commenced and field sties have been selected. Field work is scheduled to begin next spring.

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

We are still gearing up to conduct that field work next spring although we have been successful in locating the field sites and appropriate equipment and in making the necessary contacts to conduct field research in the spring. Greenhouse studies were started following the fall harvest in August and so no results are available at the time of writing in mid-September.

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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.

Publications:

Pereyra, S.A., Dill-Macky, R. and Sims, A.L. (1999). Survival and Inoculum Potential of *Fusarium graminearum* in Wheat Residues. *Phytopathology*, **89**:S60.

Dill-Macky, R. and Jones, R.K. (1999). Effects of Previous Crops and Tillage on Fusarium Head Blight of Wheat. *Phytopathology*, **89**:S21.