

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

**Cover Page**

<b>PI:</b>	<b>Frederic Kolb</b>
<b>Institution:</b>	<b>University of Illinois</b>
<b>Address:</b>	<b>Dept. of Crop Sciences 1102 S. Goodwin Ave. Urbana, IL 61801</b>
<b>Email:</b>	<a href="mailto:f-kolb@uiuc.edu">f-kolb@uiuc.edu</a>
<b>Phone:</b>	<b>217-398-5925</b>
<b>Fax:</b>	<b>217-333-9817</b>
<b>Year:</b>	<b>FY1999</b>
<b>Grant Number:</b>	<b>59-0790-9-050</b>
<b>Grant Title:</b>	<b>Fusarium Head Blight Research</b>
<b>Amount Granted:</b>	<b>\$68,293.00</b>

**Project**

<b>Program Area</b>	<b>Objective</b>	<b>Requested Amount</b>
Variety Development	Accelerate development of resistant varieties.	\$70,000
	<b>Requested Total</b>	<b>\$70,000<sup>1</sup></b>

\_\_\_\_\_  
Principal Investigator

\_\_\_\_\_  
Date

<sup>1</sup> Note: The Requested Total and the Amount Granted are not equal.

**Project 1: Accelerate development of resistant varieties.**

1. What major problem or issue is being resolved and how are you resolving it?  
The major problem to be resolved in developing scab resistant varieties is combining scab resistance with all of the other traits required for a variety. We are evaluating breeding lines for scab resistance and many other traits.
2. Please provide a comparison of the actual accomplishments with the objectives established.  
  
Obj. 1: Many single, three way, and four way crosses were made.  
Obj. 2: At least 575 experimental breeding lines were evaluated in either the field or the greenhouse.  
Obj. 3: Selections were made in the field and the greenhouse.  
Obj. 4: Breeding lines were evaluated at several field locations for yield, agronomic traits, and disease resistance.  
Obj. 5: Three breeding lines were entered in the 1999 Winter Wheat Cooperative Scab Screening Nursery. Four breeding lines have been entered in the 2000 Winter Wheat Cooperative Scab Screening Nursery.  
Obj. 6: We are continuing to make refinements to the evaluation procedures.  
Obj. 7: Production of doubled haploids was attempted, but success rate was very low.
3. What were the reasons established objectives were not met? If applicable.  
  
Obj. 7: We need to improve the techniques used in the production of doubled haploids.
4. What were the most significant accomplishments this past year?
  - Two Illinois breeding lines entered into the 1999 Cooperative Winter Wheat Scab Screening Nursery were among the most scab resistant lines in the nursery. These lines have potential as parents, represent sources of resistance that are different from the Chinese sources or resistance, and are in soft red winter backgrounds. These lines were made available to cooperators (other breeders) by entering them into the Cooperative Winter Wheat Scab Screening Nursery.
  - About 575 breeding lines were evaluated in the misted, inoculated field nursery. Additional evaluations were conducted in the greenhouse. At least 55 advanced breeding lines with scab resistance equal to or better than Ernie were identified, and the best of these will be evaluated further.
  - Individual heads were selected from 27 segregating populations grown in the field nursery. About 4000 headrows resulting from these selections will be planted this season (1999-2000).
  - About 1700 individual plants from six segregating populations were evaluated in the greenhouse scab screening, and about 210 plants with excellent scab resistance were selected.

Year: 1999  
PI: Frederic Kolb  
Grant: 59-0790-9-050

Progress Report

- In cooperation with the USDA, NCAUR, the relationship between DON content and visual scab ratings was studied in soft red winter wheat cultivars.

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.

Bai, G-H, R. Plattner, A. Desjardins, and F. Kolb. 1998. Relationship between visual scab ratings and deoxynivalenol in wheat cultivars. Proceedings of the 1998 National Fusarium Head Blight Forum. Oct. 26-27, 1998, East Lansing, MI. p. 21-23.

Bai, G-H, R. Plattner, A. Desjardins, and F. Kolb. 1999. Deoxynivalenol production by *Fusarium graminearum* on wheat. Plant Disease. (submitted)