

Year: 1999
PI: Dave Van Sanford
Grant: 59-0790-9-073

Progress Report

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

Cover Page

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Year:	FY1999
Grant Number:	59-0790-9-073
Grant Title:	Fusarium Head Blight Research
Amount Granted:	\$34,146.00

Project

Program Area	Objective	Requested Amount
Variety Development	Accelerate development of resistant varieties.	\$35,000
	Requested Total	\$35,000¹

Principle

¹ 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 issue that is addressed by my research is the need for rapid development of FHB-resistant soft red winter wheat varieties. Most of the varieties grown by farmers today are quite susceptible to FHB, which leaves the growers vulnerable to severe economic losses. The approach taken in my research is to screen a broad array of genotypes in the field and greenhouse for resistance to initial infection (Type I), resistance to spread throughout the spike (Type II), and resistance to toxin (DON) accumulation (Type III). Genotypes showing promise are used as parents in the crossing block using crossing and selection procedures designed to accelerate the release of resistant varieties.

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

Objective 1: To screen diverse exotic and adapted sources for resistance to FHB under artificial inoculation in the greenhouse and breeding nursery.

The actual accomplishment to date are that one round of field screening has been completed and another round will soon be planted in the field and in the greenhouse.

Thus we have begun to accomplish Objective 1.

Objective 2: To evaluate several crossing and selection methods for incorporation of resistance to FHB.

This objective has not been achieved because we have not yet begun our crossing cycle. This will be planted in early October and crosses will be made in late November.

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

Established objectives have not yet been met because the research was initiated only last spring, which allowed us to begin the screening process described in Objective 1. In the case of winter wheat, however, the number of generations per year is limited, and we have not yet had the opportunity to begin the crossing and selection procedures outlined in Objective 2.

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

- Several of our advanced breeding lines showed promise in terms of scab tolerance;
- We identified an improved experimental unit and planting method for field screening;
- DON testing revealed other types of resistance;
- We identified 17 lines to use as parents in a greenhouse inheritance study.

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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.

Van Sanford, D. A. 1999. Accelerating the Development of Scab Resistant Wheat Varieties. Presented as part of the UK Wheat Science Winter Wheat Meeting, January 7, 1999, Princeton, KY

C.S. Swanson, B. Zeng, B. Kennedy, D.A. Van Sanford. 1999. Screening Soft Red Winter Wheat Varieties for Resistance to Head Scab. Poster presented at the National Wheat Industry Research Forum, Nashville, TN, February 4-6, 1999.