

**U.S. Wheat and Barley Scab Initiative  
 FY00 Final Performance Report (approx. May 00 – April 01)  
 July 30, 2001**

**Cover Page**

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<b>Year:</b>	<b>FY2000 (approx. May 00 – April 01)</b>
<b>Grant Number:</b>	<b>59-0790-0-064</b>
<b>Grant Title:</b>	<b>Fusarium Head Blight Research</b>
<b>2000 ARS Award Amount:</b>	<b>\$14,634</b>

**Project**

<b>Program Area</b>	<b>Project Title</b>	<b>Requested Amount</b>
Biotechnology	Developing new germplasm of wheat with resistance to scab.	\$51,800.00
	<b>Requested Total</b>	<b>\$51,800.00<sup>1</sup></b>

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

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 Date

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

**Project 1: Developing new germplasm of wheat with resistance to scab.**

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

Major problem is the rapid and effective incorporation of resistance to scab from exotic sources into adapted soft red winter wheat (SRWW) germplasm. The approach is to use backcrossing, three-way crossing into adapted wheat lines and varieties as well as marker-assisted selection (MAS) by incorporation of the Sumai 3 allele and other exotic alleles into the Maryland breeding program.

2. What were the most significant accomplishments?

Sixty-two initial one-way crosses were made between exotic and adapted wheat genotypes in 2000. These were backcrossed or top-crossed (three-way cross) with adapted parental genotypes during the 2001 crossing season.

A set of eighty adapted and exotic wheat lines and varieties were screened for the presence of three simple sequence repeat (SSR) Xgwm389, Xgwm493, and Xgwm 533.1 markers located on chromosome 3B where a QTL controlling scab resistance has been detected. Xgwm493 and Xgwm 533.1 appear to have the most promise for use in marker assisted selection schemes because these showed the most variation between exotic and adapted lines. Xgwm533.1 was the most reproducible of these markers. Xgwm389 was mostly monomorphic and would not be useful for marker-assisted selection. The adapted lines were selected from the breeding program that are being used as parents in crosses while the exotic lines comprised germplasm from China, Korea, Japan and South America.

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.

Costa , J.M., Demianski, Grant, K. and K. Salmon. 2000. Marker Assisted Selection for Head Blight Resistance in Soft Red Winter Wheat. 2000 Scab Forum. Cincinnati, OH.