

**U.S. Wheat and Barley Scab Initiative
Annual Progress Report
September 18, 2000**

Cover Page

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Year:	FY2000
Grant Number:	
Grant Title:	Fusarium Head Blight Research
Amount Granted:	\$25,000.00

Project

Program Area	Objective	Requested Amount
Germplasm	Transfer of Fusarium head blight resistance from wild relatives to durum wheat.	\$68,800.00
	Requested Total	\$68,800.00¹

Principal Investigator

Date

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

Project 1: Transfer of Fusarium head blight resistance from wild relatives to durum wheat.

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

We discovered that two wild relatives of wheat, the diploid wheatgrass, *Lophopyrum elongatum* ($2n = 14$; EE genome), and tetraploid wheatgrass, *Thinopyrum junceiforme* ($2n = 28$; $J_1J_1J_2J_2$ genomes) – are excellent sources of resistance to scab. Our objective is to transfer this resistance to commercial durum cultivars. We therefore crossed these wild grasses with Lloyd and Langdon. This year, we made crosses using durum cultivars Monroe and Ben. Using embryo rescue, we have raised F_1 hybrids for further studies. We have also used Langdon 5D(5B) substitution lines as female parents because hybrids involving these lines will have substantial pairing between grass chromosomes and wheat chromosomes. High intergenomic pairing will accelerate alien gene transfers into durum wheat.

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

We have an ongoing research program for transferring scab resistance from wild sources into durum cultivars. We met all of the objectives established for scab project funded by the Scab Initiative (\$25,000). We made several new hybrids of commercial durum cultivars, Monroe and Ben, and the two wild grasses and raised hybrids using the embryo rescue techniques.

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

Not applicable.

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

Using embryo rescue techniques, we have produced hybrids between durum wheat (cultivars Monroe and Ben) and tetraploid wild grass *Th. junceiforme*. To promote pairing between chromosomes of wheat and grass parent, we have made hybrids using Langdon 5D(5B) substitution lines. We will be studying these hybrids cytologically and backcross them with the parental cultivars to produce fertile hybrid derivatives.

Year: 2000
PI: Prem P. Jauhar
Grant:

Progress 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.

Publications (peer-reviewed)

Jauhar, P.P. and Peterson, T.S. 2000. Hybrids between durum wheat and *Thinopyrum junceiforme*: Prospects for breeding for scab resistance. *Euphytica*. 109:1-10.

Jauhar, P.P. and Peterson, T.S. 2000. Progress in producing scab-resistant germplasm of durum wheat. Proceedings of the International Symposium on Wheat Improvement for Scab Resistance, Suzhou and Nanjing, China. May 2000. pp. 77-81.

Publications (non peer-reviewed)

Jauhar, P.P. USDA-ARS research team in Fargo identifies scab resistance in wild grasses. North Dakota State University Extension Service Bulletin, October 14, 1999.

Presentation:

Jauhar, P.P., Peterson, T.S. Hybridization with wild grass species and production of scab-resistant durum wheat germplasm. Annual Meetings of Dakota Growers, Devils Lake, North Dakota, January 15, 2000.