

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

Cover Page

PI:	Prem P. Jauhar
Institution:	USDA-ARS
Address:	P.O. Box 5677 SU Station Fargo, ND 58105-5677
Email:	prem_jauhar@ndsu.nodak.edu
Phone:	701-239-1309
Fax:	701-239-1369
Year:	FY2000 (approx. May 00 – April 01)
Grant Number:	
Grant Title:	Fusarium Head Blight Research
2000 ARS Award Amount:	\$24,390

Project

Program Area	Project Title	Requested Amount
Biotechnology	Transfer of FHB resistance from wild relatives into durum wheat.	\$68,800.00
	Requested Total	\$68,800.00¹

 Principal Investigator

 Date

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

Project 1: Transfer of FHB resistance from wild relatives into durum wheat.

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

Current cultivars of durum wheat have no resistance to FHB. Two of the wild relatives of wheat, namely, the diploid wheatgrass (*Lophopyrum elongatum*) and tetraploid wheatgrass (*Thinopyrum junceiforme*) are excellent sources of scab resistance. Our main objective is to transfer this resistance to commercial durum cultivars and produce scab-resistant germplasm. Therefore, we crossed the wheatgrasses with durum cultivars, Lloyd, Langdon, and Monroe. We raised F₁ hybrids and hybrid derivatives by backcrossing these hybrids to their respective durum parents. We studied chromosome pairing in several of the hybrid derivatives and observed intergenomic pairing. Pairing between wheat and grass chromosomes should facilitate the transfer of desirable genes into durum wheat.

2. What were the most significant accomplishments?

Employing the embryo rescue techniques, we produced several intergeneric hybrids, which were male-sterile. We have produced semi-fertile hybrid derivatives by crossing F₁ hybrids (as female parents) with their respective durum parent. Some of the hybrid derivatives appear promising from the point of view of scab resistance. We will continue this program using diploid wheatgrass as the donor of scab resistance.

PI: Prem P. Jauhar

Grant:

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.

Jauhar, P. P. 1999. USDA-ARS research team in Fargo identifies scab resistance in wild grasses. North Dakota State University Extension Service Bulletin, October 14, 1999. pp1-2. (Popular article).

Jauhar, P. P., and Peterson, T. S. 2000. Progress in producing scab-resistant germplasm of durum wheat. Proc. International Symposium on Wheat Improvement for Scab Resistance, Nanjing Agricultural University, Nanjing, China, pp. 77-81. (International proceedings).

Jauhar, P. P., and Peterson, T. S. 2000. Toward transferring scab resistance from a diploid wild grass, *Lophopyrum elongatum*, into durum wheat. Proc. of the 2000 National Fusarium Head Blight Forum, Cincinnati, December 2000. pp. 201-204.

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

Jauhar, P. P., and Peterson, T. S. 2001. Hybrids between durum wheat and *Thinopyrum junceiforme*: Prospects for breeding for scab resistance. Euphytica 118: 127-136.