U.S. Wheat and Barley Scab Initiative
Annual Progress Report
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Cover Page

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Year:	**FY2000**
Grant Number:	**59-0790-0-F076**
Grant Title:	**Fusarium Head Blight Research**
Amount Granted:	**$112,195**

Project

Program Area	Objective	Requested Amount
Variety Development	Facilitate international germplasm and information exchange	$115,000
	Requested Total	$115,000[1]

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Principal Investigator Date

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

Project 1: Facilitate international germplasm and information exchange

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

Fusarium Head Blight (FHB) is a common disease of cereals caused by several species of *Fusarium* that has increased in incidence over the past 10 years. It impacts on grain yield and grain quality and concerns about toxin-related illness caused by *Fusarium* in animals and humans have increased in recent years.

Researchers at CIMMYT are working on incorporating genetic resistance for FHB into commercially grown varieties; specifically identifying and combining resistance types I, II, III and IV.

Sources of resistance from genetic sources have been identified in Brazil, Japan, Argentina, China and Rumania.

In addition, sources of resistance in synthetic wheats have been identified with initial derivatives showing promising Type II resistance to FHB.

The objectives of the project are four fold:

(i) To conduct pre-breeding activities using synthetic wheats and major US cultivars to provide agronomically suitable FHB resistant germplasm to US collaborators;

(ii) To conduct a world-wide search for and acquisition of suitable FHB resistant germplasm and to make this available to the US Wheat and Barley Scab Initiative;

(iii) To test germplasm through the International Testing Nursery; and

(iv) To provide elite germplasm, pre-breeding activities, FHB resistant germplasm and International Nursery Testing for barley.

During the reporting period, research has commenced on objectives (i), (ii) and (iv).

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

(i) The best sources (12) of FHB resistance including synthetic wheats were crossed with five US parents (Ivan, Reeder, Russ, Verde and Wheaton). During the Obregon cycle in 2000/01 the F1s will be backcrossed to the 5 US parents to obtain F1 topcrosses. These F1 topcrosses will be screened for *S. Tritici* and *P. Striiformis* during the 2001 cycle in Toluca. F4s will be shipped to US collaborators in 2003 as planned.

(ii) Spring wheat lines with good FHB resistance originating from Japan (27 lines), Brazil (16 lines) and Argentina (192 lines), together with winter wheats from Rumania (7 lines) will be shipped to US collaborators in November 2000.

A further 15 lines of Chinese wheats with FHB resistance were identified during the recent International Conference on Wheat Improvement for Scab Resistance held in

Jiangsu Province. These lines are currently under multiplication at CIMMYT and will be shipped to US collaborators in December 2000.

(iii) Progress against this objective will be reported during the next period and will be dependent upon the timely shipment of seed by US collaborators to CIMMYT in Mexico (required by April 2001).

(iv) 39 advanced two- and six-row barley lines showing an acceptable level of FHB resistance will be shipped soon to researchers in the US (B. Steffenson,, North Dakota).

Elite materials (150 lines) with excellent resistance to FHB have been developed at CIMMYT including high yielding bread wheats, synthetic bread wheats and lines derived from the latter. These lines have been characterised for their resistance (Types I-IV) and are now being multiplied. They will be harvested in October and sent to US collaborators in November 2000 (A. McHendry, Missouri).

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

Not applicable.

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

The project started in the current year and activities are on target. Accomplishments are reported under 2).

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.

Information sharing during the reporting period was mainly centred on two (2) meetings held at CIMMYT in Mexico.

1. CIMMYT researchers met with Drs. M^{c}Hendry and Ward and presented research results from the *Fusarium* research project.

June 2000, El Batan, Mexico

2. CIMMYT and US researchers (16) conducted a field day at the Toluca Experimental Station and visited CIMMYT headquarters at El Batan.

7-8 September 2000, Mexico.