U.S. Wheat and Barley Scab Initiative
FY01 Final Performance Report (approx. May 01 – April 02)
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Cover Page

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Year:	**FY2001 (approx. May 01 – April 02)**
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Grant Title:	**Fusarium Head Blight Research**
FY01 ARS Award Amount:	**$ 136,285**

Project

Program Area	Project Title	Requested Amount
Germplasm	Facilitating international germplasm and information exchange through CIMMYT	$ 140,000
	Total Amount Requested	**$ 140,000**

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Principal Investigator Date

(Form – FPR01)

Project 1: Facilitating international germplasm and information exchange through CIMMYT

1. What major problem or issue is being resolved and how are you resolving it?
The overall goal of this collaboration is to increase genetic resistance to Fusarium Head Blight (FHD) in commercially grown US wheat varieties and thus significantly increase the production and yield stability of wheat in the United States of America. Specifically, the objectives of the project area:

- To provide agronomically suitable FHB resistant germplasm to US collaborators through pre-breeding activities using synthetic wheat and major US cultivars;
- 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;
- To test germplasm through the International Testing Nursery; and
- To provide elite germplasm pre-breeding activities, FHB resistant germplasm and International Nursery Testing for barley.

2. What were the most significant accomplishments?
Pre-breeding: Fifty-eight BC1F1 and F2 populations derived from crosses between five commercial USA recurrent spring wheat cultivars (Ivan, Reeder, Russ, Verde and Wheaton) with 12 scab resistant donor parents have been advanced. Screening at Toluca, Mexico with subsequent backcrossing is currently underway. In addition, over 2000 advanced lines screened during the past five years, during the reporting period the best 100 lines were characterized for resistance types I, II and IV, with the a sub-set of 72 lines further characterized for type III resistance. CIMMYT's collection of 800 D-genome synthetic hexaploids (SH) has been screened for type II resistance to FHB. Targeted for durum wheat improvement, sets of A-genome (AAAABB, 194 entries) and B-genome (AABBBB, 54 entries) SH were screened for FHB. Doubled haploids (DH) derived from FHB mapping populations Mayoor/SH(222)// Flycatcher (160) have been supplied to Rick Ward for molecular analysis. DH's derived from FHB mapping populations Frontana/Inia66 (117), Fukuho-komugi/Oligoculm 380 (110), Emblem/Saikai165 (104) and Catbird/Milan (100) are undergoing phenotypic resistance analysis (types I, II and III) in Toluca.
World-wide germplasm: FHB resistant wheat germplasm, which has undergone subsequent FHB resistance confirmation by CIMMYT scientists, has been obtained from: Argentina (127), Brazil (15) and Japan (15). Third-year resistance confirmation has been conducted for 37 CIMMYT-China shuttled derived bread wheat advanced lines. New Aegilops tauschii accessions have been obtained from Australia and WGRC to be used for primary SH production.
International Testing Nursery: The 6th International Scab Resistant Screening Nursery has been distributed to 30 international institutional cooperators in 19 countries. Targeted screening, under supervision of CIMMYT scientists, is being conduced in Argentina, Brazil, China, Mexico, Paraguay, Romania and Uruguay.
Barley: One hundred and five cross populations were generated using the following sources of FHB resistance were used in the ICARDA/CIMMYT barley breeding program during the reporting period: Six-row types: Chevron, Chamico/Tocte//Congona, PFC88209, MNBrite, MNS1. Two-row types: Atahualpa, Azafran, Gobernadora, Shyri, Svanhals, Zhedar1, Zhedar2.

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.

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Mujeeb-Kazi, A, A. Cortes, V. Rosas, S. Cano, J. Sanchez, L. Juarez and R. Delgado. 2001. Genetic diversity for improving scab resistance in wheat. In: Warren Kronstad Symposium, Cd. Obregon, Mexico, March 15, 2001, P. 126-129.

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Mujeeb-Kazi, A. 2001. Synthetic hexaploids for bread wheat improvement. In:. IVth International Triticeae Symposium, ed. Hernandez P, M. T. Moreno, J. I. Cubero and A. Martin, September 10-12, Cordoba, Spain, p 193-199.

Mujeeb-Kazi, A., R. Delgado, S. Cano, L. Juarez and J. Sanchez. 2001. Scab resistance in bread wheat/synthetic hexaploid derivatives. Annual Wheat Newsletter 47:104-105.

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