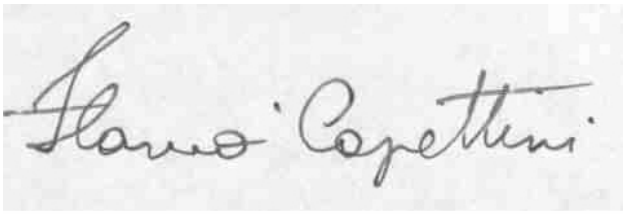
USDA-ARS/
U.S. Wheat and Barley Scab Initiative
FY05 Final Performance Report (approx. May 05 – April 06)
July 14, 2006

Cover Page

PI:	**Flavio Capettini**
Institution:	**CIMMYT**
Address:	**Km. 45, Carretera México-Veracruz** **El Batán, Texcoco, Edo. de México** **C.P. 56130 México**
E-mail:	**f.capettini@cgiar.org**
Phone:	**52 55 5804 2004**
Fax:	**52 55 5804 7558**
Fiscal Year:	**2005**
FY05 ARS Agreement ID:	**59-0790-5-F092**
Agreement Title:	**ICARDA/CIMMYT FHB Barley Enhancement.**
FY05 ARS Award Amount:	**$ 20,293**

USWBSI Individual Project(s)

USWBSI Research Area*	Project Title	ARS Adjusted Award Amount
GIE	International Barley Germplasm and Information Exchange Through ICARDA/CIMMYT.	$ 20,293
	Total Award Amount	**$ 20,293**



July 13, 2006

Principal Investigator Date

* BIO – Biotechnology
CBC – Chemical & Biological Control
EDM – Epidemiology & Disease Management
FSTU – Food Safety, Toxicology, & Utilization
GIE – Germplasm Introduction & Enhancement
VDUN – Variety Development & Uniform Nurseries

(Form – FPR05)

Project 1: *International Barley Germplasm and Information Exchange Through ICARDA/CIMMYT.*

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

The primary problems that we are working to resolve are the need for identification and acquisition of new sources of FHB resistance in barley which will diversify the current resistance gene pool (with emphasis in 6-row types), and the need for facilitation of distribution of such resistant germplasm identified. We are meeting these needs through the following approaches:

- Screening new FHB resistant barley germplasm through extensive systematic screening activities of the barley genetic resources available at the ICARDA gene bank and making that available to the programs cooperating with the USWBSI.
- Introducing ('highly') resistant barley germplasm from international programs and promoting germplasm exchanges, especially 6-row types, through the ICARDA gene bank and CIMMYT international network that otherwise maybe inaccessible to US researchers .
- Providing agronomically suitable FHB resistant barley germplasm to US collaborators through pre-breeding activities using major USA cultivars.
- Testing USA barley germplasm at CIMMYT-Toluca field station and/or through the CIMMYT International Wheat Improvement Network.
- Testing preliminary resistant gemplasm identified through other projects searching for novel sources of resistance in order to determine the GxE interaction of such sources.

2. List the most important accomplishment and its impact (how is it being used?). Complete all three sections (repeat sections for each major accomplishment):

Accomplishment:

The major accomplishment was the identification of new putative sources of FHB resistance from materials that were screened (Table 1). Material has been advanced for further testing to confirm resistance and distributed to US breeding programs (North Dakota State University, The University of Minnesota, Busch Agricultural Resources, Inc.), Canada (Agriculture Canada at Brandon, Manitoba) and China. Three nurseries that were deployed were the EGS2006: 238 entries, NABSEN 2006: 8 entries contributed to the nursery, and China Nursery: 100 entries. Germplasm with superior resistance is being used in crosses within the breeding program.

Table 1. Nuber of nurseries and entries screened at Toluca, México during 2005 and number of putative resistant entries selected for further testing.

Name MV-05	Origin	Entries	Selected
New Germplasm			
Fusarium Ethiopia	Gene Bank ICARDA	295	90
Fusarium ICARDA	Gene Bank ICARDA	277	75
Palestina 03	Palestina 03	19	2
RCheca	Czech Rep	40	10
BARI05	EEUU	422	42
Germplasm Introduced from Other Programs			
Alberta FHB 05	CANADA BMZY-05 F.	50	8
Alberta FHB 04	Alberta FHB 04	5	4
FHB Brandon	EEUU/Canada	7	7
FHB Brandon II	Canada	200	50
FHB MN 05	EEUU	7	7
Prel BARI 05	F6 GH	480	194
NABSEN 05	EEUU	108	8
Germplasm from the Breeding Program			
Peliminar BARI2	F8GH FHB BRSR II	194	45
Prel BARI 05 Des	F6 GH Des	45	31
BARI 2004	BARI 2004	31	22
BARI1	PC BARI	120	44
BARI FHB 05		53	53
NABSEN 03	NABSEN 03	12	9
Fusarium Barley	Basicos	83	83
Elite FHB	Elite FHB	41	41
Preliminar FHB 05	Ensayos y Prelim Y04-05	335	110
Total		2824	935

Impact:

As a result of that accomplishment, what does your particular clientele, the scientific community, and agriculture as a whole have now that they didn't have before?:

The scientific community is obtaining:

1. Putative resistance sources from ICARDA gene bank that were not available before.

2. Advanced lines originated from the ICARDA/CIMMYT breeding program with enhanced FHB resistance as well as resistance to several other important diseases in an acceptable agronomic background, many of them in a US-germplasm based lines.

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.

Capettini, Flavio, Stefania Grando, Tomohiro Ban, and JanValkoun. 2005. Searching for novel sources of resistance to *Fusarium* head blight in barley. In: Proceedings of the National Fusarium Head Blight Forum; 2005 Dec 9-11, Milwaukee, WI. p. 22.