U.S. Wheat and Barley Scab Initiative
FY02 Final Performance Report (approx. May 02 – April 03)
July 15, 2003

Cover Page

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Year:	**FY2002 (approx. May 02 – April 03)**
Grant Number:	**NA**
Grant Title:	**Fusarium Head Blight Research**
FY02 ARS Award Amount:	**$ 59,448**

Project

Program Area	Project Title	USWBSI Recommended Amount
BIO	Microsatellite Marker Development and Mapping.	$60,934
	Total Amount Recommended	**$60,934**

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Principal Investigator Date

(Form – FPR02)

Project 1: Microsatellite Marker Development and Mapping.

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

Wheat breeders do not have unfettered access to DNA markers that can be effectively used in the discovery of and selection for genes that control Fusarium resistance in wheat. As a result, wheat breeding programs with the goal of producing agronomically superior cultivars with acceptable grain quality make relatively little use of existing RFLP markers. To solve this problem we are developing microsatellite DNA markers that are more polymorphic and less laborious to use than RFLPs. New microsatellite markers will be placed on the wheat genome map in the ITMI mapping population and by physical mapping with aneuploid stocks.

2. What were the most significant accomplishments?

During the granting period a total of 102 new microsatellite loci were developed. These markers were all developed from random genomic libraries and were polymorphic among Chinese Spring, Opata 85 and M6. A total of 67 of these markers were positioned on the ITMI map. Mapping of the remaining loci to individual chromosomes using nulli-tetrasomic lines of Chinese Spring CS is in progress.

Mapping of markers: Mapping of polymorphic microsatellites is progressing at MSU and loci are being positioned in the ITMI population with results as follows:

Numbers of BARC/BARCM microsatellites positioned on wheat chromosomes during the reporting period.

Chromosome	A	B	D
1	3	1	2
2	7	3	2
3	7	1	3
4	3	1	3
5	6	2	5
6	0	1	1
7	2	3	11

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.

Song, Q.J., Fickus, E.W., Cregan, P.B. 2002. Characterization of trinucleotide SSR motifs in wheat. Theor. Appl. Genet. 104:286-293.

Czembor, P.C., Arseniuk, E., Czaplicki A., Song, Q.J., Cregan, P.B., and Ueng, P. 2003. QTL mapping of partial resistance in winter wheat to stagonospora nodorum blotch. Genome (in press).

Arseniuk E, Czembor PC, Czaplicki A, Song QJ, Cregan PB, Hoffman DL, and Ueng P. 2003. QTL analysis of partial resistance to stagonospora nodorum blotch in wheat. J. of Heredity (submitted).

Shi, J.R. Shi, Song, Q.J., Singh, S., Ward, R., Cregan, P.B., Gill, B.S. 2002. Microsatellite genetic map in wheat. Proceedings of the National Fusarium Head Blight Forum. 2002. p. 40.

QJ Song, J. R. Shi, S. Singh, E. W. Fickus, R. Fernalld, B. S. Gill, P. B. Cregan, and R. Ward. 2002. Development and mapping of microsatellite markers in wheat. Theor. Appl. Genet. (awaiting submission).