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Project ID: FY12-DI-013

ARS Agreement #: 59-0206-9-069

Research Category: GDER

Duration of Award: 1 Year

Project Title: A Field Nursery for Testing Transgenic Spring Wheat and Barley from the USWBSI.

PROJECT 4 ABSTRACT

(1 Page Limit)

This project has the single objective of establishing an annual nursery to provide a central field testing site for transgenic spring wheat, barley and durum lines developed by researchers in the USWBSI.

The proposed nursery will be located in Rosemount Minnesota and will be inoculated (macroconidia) and mist-irrigated and conducted so as to conform to the Minnesota state and US federal regulations for the field testing of transgenic materials. My lab has gained considerable experience with conducting field nurseries to screen both wheat and barley for their reaction to Fusarium head blight, having been involved in field nurseries screening of breeding material since 1994. Our annual nurseries, conducted in collaboration with the wheat and barley breeding programs, are generally more than 9,000 rows and 14,000 rows, respectively. We have been testing transgenic materials since 1997 and thus have considerable experience in running these specialized nurseries. We do not anticipate any problems in conducting the nursery or meeting the necessary regulations. In 2008, 2009 and 2011 the trials passed field site inspections conducted by APHIS.

Collaborators and anticipated entry numbers to be submitted in 2012 and 2013 are:

Tilahun Abebe, University of Northern Iowa, Cedar Falls IA – barley, 5-7 entries each year.

Lynn Dahleen, USDA-ARS, Fargo ND – barley, 10 entries in 2012 and 100 entries in 2013.

Gary Muehlbauer, University of Minnesota, St. Paul MN – wheat, 10 entries each year.

Steve Scofield*, USDA-ARS, West Lafayette, IN – wheat, 4 constructs (multiple entries of each likely) in 2012, possibly more in 2013.

Jyoti Shah, University of Northern Texas, Denton TX – wheat, 7 entries each year.

Nilgun Tumer, Rutgers, New Brunswick, NJ – wheat, 7 entries each year.

Additional entries (space being the only limiting factor) could also be accommodated from these or other USWBSI-funded researchers as necessary.

This research is needed because increasing the efficiency of individual breeding programs to develop FHB resistant varieties and developing effective FHB resistance through transgenics are major strategies of the USWBSI for reducing the impact of FHB in wheat and barley. The proposed research addresses the following research needs in the Action Plan by providing a centralized facility for testing transgenic wheat, barley and durum thus helping to characterize the genetic function of existing and novel loci for FHB resistance.