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Research Category: GDER

Duration of Award: 1 Year

Project Title: A Field Nursery for Testing Transgenic Spring Wheat, Durum and Barley.

PROJECT 2 ABSTRACT

(1 Page Limit)

This proposal has the single objective of establishing an annual nursery to provide a central field testing site for transgenic spring wheat, durum and barley lines developed by researchers in the USWBSI. The proposed nursery will be located in Rosemount Minnesota and will be inoculated with *F. graminearum* macroconidia and mist-irrigated. The nursery is designed to conform to the state (Minnesota) and federal regulations for the field testing of transgenic materials. My lab has considerable experience conducting field nurseries to screen both wheat and barley for their reaction to Fusarium head blight. I have been involved in the field screening of breeding material since 1994 and currently establish annual nurseries of over 9,000 rows for wheat and over 14,000 rows for barley. We have been field testing transgenic materials since 1997 thus have considerable experience in running these specialized nurseries. In 2010 the nursery will be expanded to include durum entries and to this end preliminary testing of durum check lines will be undertaken in the 2009 nursery.

Collaborators and anticipated entry numbers to be submitted in 2009 are:

Tilahun Abebe, University of Northern Iowa, Cedar Falls IA - 5-7 2-row barley lines.

Lynn Dahleen, USDA-ARS, Fargo ND - 50, 2-row barley lines.

Gary Muehlbauer, University of Minnesota, St. Paul MN - 15 spring wheat lines.

Jyoti Shah, University of Northern Texas, Denton TX - 5 durum lines and spring wheat (in 2010 only).

Ron Skadson - USDA-ARS, Madison WI - 2 2-row barley lines (lines to be submitted by Lynn Dahleen).

Nilgun Tumer - Rutgers, New Brunswick NJ - 22 wheat lines (8-10 lines are anticipated for 2010).

Additional entries (space being the only limiting factor) could also be accepted from these or other USWBSI researchers. Entries for the 2010 nursery are expected to be similar to 2009 unless indicated above.

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: maintain existing capacity for field testing in mist-irrigated inoculated nurseries (VDHR, goal 2); verify new and novel sources of FHB/DON resistance (VDHR, goal 3); and support centralized facilities for field testing transgenic wheat and barley (GDER, goal 2). The project meets the FY09 GDER research priorities by field testing the effectiveness of FHB resistance developed through transgenic strategies.