

PI: Ruth Dill-Macky

PI's E-mail: ruthdm@umn.edu

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ARS Agreement #: 59-0206-9-117

Research Category: GDER

Duration of Award: 1 Year

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

PROJECT 2 ABSTRACT

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This proposal has the single objective of establishing a central testing facility (field and greenhouse based) for transgenic spring wheat and barley lines developed by researchers in the USWBSI.

The proposed field nursery to screen barley lined will be located at the University of Minnesota's UMore Park in Rosemount Minnesota. Plots will be inoculated with a macroconidia suspension, at heading, and mist-irrigated as necessary to facilitate disease development. The nursery will be conducted so as to conform to federal, state (Minnesota) and institutional (University of Minnesota) regulations for the movement and release of transgenic materials.

My lab has been conducting greenhouse screening and field nurseries to screen wheat and barley and for their reaction to Fusarium head blight since 1994. We have been testing transgenic materials since 1997 and have considerable experience in running these specialized and heavily regulated field nurseries. We do not anticipate any problems in conducting the greenhouse experiments of field nursery or meeting the necessary state and federal regulations. In consultation with our collaborators, we have elected to move all wheat screening to a greenhouse format for the current funding cycle.

Wheat materials will be screened in the greenhouse in the current funding cycle (2020 and 2021). Greenhouse inoculations will be inoculated using either point or spray inoculations as appropriate for the materials being submitted for testing. Collaborators may submit lines for greenhouse screenings in one of two annual cycles, with planting anticipated for these two cycles in early September and January for the two cycles, respectively. Experimental design for greenhouse screening will be developed in conjunction with the collaborator submitting entries.

Anticipated collaborators and host to be submitted in 2020 and 2021 are:

Deanna Funnell-Harris, USDA-ARS Lincoln NE - wheat

Gary Muehlbauer, University of Minnesota, St. Paul MN – wheat and barley

Jyoti Shah, University of North Texas, Denton TX - wheat

Nilgun Tumer (& John McLaughlin), Rutgers, New Brunswick NJ - wheat

Additional entries may also be accommodated from other USWBSI-funded researchers.

The proposed research addresses the needs in the Action Plan by providing data to validate the function of existing and novel alleles in conferring FHB resistance or susceptibility by determining if transgenic lines, developed with the aim of improving FHB resistance and/or reducing DON accumulation, are functional in the field environment.