

PI: Gina Brown-Guedira

PI's E-mail: gina_brown-guedira@ncsu.edu

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Research Category: VDHR

Duration of Award: 1 Year

Project Title: Developing Next Generation Markers for Genotyping FHB Resistance in Wheat.

PROJECT 1 ABSTRACT

(1 Page Limit)

The long-term goal of this research is to accelerate development of wheat cultivars having improved resistance to FHB to reduce DON in the U.S. wheat crop. The role of the USDA-ARS genotyping labs in this effort is to conduct research into mapping of resistance QTL and to facilitate deployment of FHB resistance genes into improved cultivars via MAS. This proposal focuses on development of low cost, homogeneous assays that will improve the efficiency and throughput of marker-assisted selection for FHB resistance in the Regional Small Grains Genotyping Laboratories. To accomplish our goal, we will initiate population development and marker-enrichment of three FHB resistance QTL mapped in U.S. soft wheat cultivars. The specific objectives are to: 1) Develop the backcross populations needed for mapping the three FHB resistance QTL as Mendelian traits, 2) Link the QTL regions to the deletion map of wheat, and identify syntenic regions in the sequenced rice and *Brachypodium* genomes and 3) Saturate the QTL region with markers and identify new markers suited to gel-free assays. All of these activities are aimed at improving the efficiency of marker-assisted selection for FHB resistance through development of better markers for high throughput genotyping. This research will leverage resources developed through collaborative wheat genomics projects, the results of USWBSI funded research, and new investment in marker technology.