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Project Title: Genotyping Breeding Lines for FHB Resistance.

PROJECT 3 ABSTRACT

(1 Page Limit)

The USDA Central Small Grain Genotyping Lab is closely working with hard winter wheat breeders in the Great Plains to transfer FHB resistance QTL to new wheat cultivars. Tightly linked markers to QTL and high-throughput marker screening technique are critical to success of such work. We are proposing to continue to participate in coordinated regional effort to develop improved methods for genotyping and better characterize hard winter wheat germplasm utilizing DNA markers. The specific objectives of this proposal are 1) to develop diagnostic markers for Fhb1 to improve selection efficiency; 2) develop tightly linked markers to QTL other than Fhb1 through meta-analysis of multiple mapping populations; 3) develop high-throughput marker screening system using next generation sequencing technology to characterize entries in the southern and northern regional performance nurseries and breeding materials from hard winter breeding programs. This project will provide improved markers to other laboratories for effective genotyping of FHB resistance QTL and data to breeders for selecting lines with better FHB resistance. This project will also increase the capacity of the genotyping lab to genotype wheat samples and result in improved marker screening methods and selection efficiency.