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Project Title: Pyramiding Three Triticum dicoccoides Derived FHB Resistance QTL in Durum Wheat.

PROJECT 1 ABSTRACT

(1 Page Limit)

Fusarium head blight (FHB) is a devastating disease of durum wheat, and very few sources of resistance have been identified among the tetraploids. However, acceptable levels of resistance have been identified in a few accessions of *Triticum dicoccoides*, a wild tetraploid relative. FHB resistance QTLs derived from *T. dicoccoides* have been identified on chromosome arms 3AS and 6BS in the accession 'Israel A', and on 7AL in the accession PI478742. The objective of this project is to: **Pyramid the three QTL derived from *T. dicoccoides* chromosomes 3A, 6B, and 7A into the background of the durum variety Divide using marker-assisted selection.** The 3A and 6B QTLs have been combined in the Langdon background and preliminary experiments suggest that the resistance effects of these QTL are additive. In this funding cycle, lines possessing both QTL will be crossed with a LDN-DIC 7A recombinant line harboring the 7A QTL. The F_1 progeny will be crossed to the durum variety Divide, and molecular markers will be used to identify progeny heterozygous for all three QTL. Work in subsequent years will involve a second backcross to Divide and the identification of BC_2F_2 progeny homozygous for all three QTLs using molecular markers. Subsequent phenotypic testing for reaction to FHB will be done to determine the effects of the three *T. dicoccoides* derived resistance QTL in the Divide background. This project specifically addresses the research priorities outlined in the Host Genetic Resources Program in that it involves the introgression and pyramiding of novel FHB resistance QTLs not previously deployed into adapted backgrounds using marker-assisted selection.