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Project Title: Introgression of Fusarium Head Blight Resistance from Hexaploid Wheat to Durum.

PROJECT 1 ABSTRACT

(1 Page Limit)

The biggest challenge of managing FHB in durum wheat is still the lack of an effective resistance source. Here we propose to transfer FHB resistance from hexaploid bread wheat to tetraploid durum wheat. The specific objectives of this proposed project are:

- 1) Introgress FHB resistance QTL from hexaploid wheat into adapted durum wheat backgrounds;
- 2) Develop durum germplasm with improved resistance to FHB;
- 3) Validate the molecular markers tagging the resistance QTL in durum germplasm.

Both bread and durum wheat share A and B genomes although bread wheat contains an additional D genome. Both A- and B-genome chromosomes from bread and durum wheat can normally recombine during meiosis in the hybrids of these two wheat species. Subsequent backcrosses of the hybrids to the durum parents leads to the elimination of D-genome chromosomes in the progeny. Molecular marker analysis, disease screening, and cytogenetic characterization will be performed to select resistant individuals without D-genome chromosomes. Resistance genes on the D-genome chromosomes could also be introgressed into durum A or B genome through chromosome translocation. We anticipate developing durum germplasm with FHB resistance derived from hexaploid wheat in this project. The breeder-friendly durum germplasm with enhanced FHB resistance and reduced DON accumulation will be immediately utilized in the development of superior durum cultivars.