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Project Title: Identify FHB Resistance in Timopheevii Wheats and Introgress it into Durum Wheat.

PROJECT 1 ABSTRACT

(1 Page Limit)

Identification of highly resistant resources is critical for the success of developing wheat varieties with effective Fusarium head blight (FHB) resistance. However, lack of highly resistant sources of FHB resistance is a problem for durum wheat breeding programs. Wild and relative species of durum wheat are important sources of additional genes for resistance to diseases. Among them are two groups of wild and domesticated tetraploid wheats, including the emmer wheats (*Triticum turgidum* L. $2n=28$, AABB) and the timopheevii wheats (*Triticum timopheevii*, $2n=28$, AAGG). Screening of emmer wheats for FHB resistance has been conducted and accessions with some level of FHB resistance have been identified, but the timopheevi wheats have not systematically been evaluated for reaction to FHB. In the past two years, we have screened approximately 120 of the *Triticum timopheevii* accessions obtained from NSGC for their reaction to FHB. Our results indicated that some of the accessions exhibited a good level of resistance to FHB in the greenhouse and field experiments. In this proposal, we will continue to screen the remaining 186 accessions of *Triticum timopheevii* for FHB resistance. Our overall goal is to identify and haplotype new sources of FHB resistance from the whole collection of the Timopheevii wheats and eventually introgress the resistance genes into the cultivated durum varieties as germplasm for breeding FHB resistant durum varieties. The specific objectives of this proposal are to: 1) Continue to screen the *Triticum timopheevii* accessions obtained from NSGC for resistance to FHB in greenhouse; 2) Re-evaluate those accessions exhibiting a high level of resistance in the greenhouse and field nurseries; 3) Haplotype the resistant accessions identified and determine the novelty of the resistance sources. We will use the point inoculation method to identify the type II resistance in these materials in the greenhouse and further confirm the potential resistance sources in greenhouse and field experiments. The FHB timopheevii wheat accessions identified to be resistant to FHB will be used for durum wheat breeding programs.