

PI: Steffenson, Brian

PI's E-mail: bsteffen@umn.edu

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Project Title: Screening Hordeum Germplasm for Resistance to Fusarium Head Blight and DON Accumulation.

PROJECT 2 ABSTRACT

(1 Page Limit)

To broaden the genetic base of FHB resistance in barley, additional sources of resistance need to be identified and exploited as soon as possible. We propose an accelerated screening effort of diverse *Hordeum* germplasm from genebank collections around the world. Thus, for the next biennium (FY2008-09 to 2009-2010), we will: 1) evaluate 11,000 previously unscreened *Hordeum* accessions for reaction to FHB; 2) validate putative resistance sources in replicated experiments at multiple locations in North America; 3) characterize the uniqueness of the putative resistance sources with molecular markers; and 4) make crosses between the resistant accessions and adapted breeding lines as part of a pre-breeding program.

In both FY08-09 and FY09-10, we propose to evaluate about 5,500 diverse *Hordeum* accessions for reaction to FHB. The accessions selected for this study will be mostly from the N. I. Vavilov All-Russian Scientific Research Institute of Plant Industry [VIR], International Center for Agriculture in the Dry Areas [ICARDA], and Plant Genetic Resources Canada [PGRC] genebanks and targeted to represent unique germplasm not screened in previous tests. Approximately 3,500 winter, facultative winter, and wild barley accessions will be planted in China (B. Steffenson and Bingxin Zhang). Another 1,500 new spring type accessions will be planted at sites in North America: Crookston, MN (B. Steffenson), and Langdon, North Dakota (S. Neate). Finally, the remaining ~500 accessions will consist of spring and winter type accessions that were previously reported to possess resistance to FHB. Resistant spring type accessions will be re-evaluated in replicated FHB nurseries at all sites (Hangzhou, Langdon, and Crookston plus Fargo and St. Paul) and winter types in Hangzhou and Virginia (~60-100 entries with C. Griffey).