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Research Area: VDUN

Project Title: Accelerated Development of Scab Resistant Barley Varieties.

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PROJECT 1 ABSTRACT

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The goal of this project is to develop six-rowed malting barley cultivars resistant to Fusarium head blight (FHB) that are acceptable to producers in North Dakota and adjacent states, and acceptable to those who use and process barley. An accelerated approach for development of FHB resistant cultivars is being used. This approach includes use of doubled-haploid breeding, off-season FHB screening nurseries in China, off-season nurseries for seed increase in New Zealand and Arizona, and the use of molecular marker assisted selection. Sources of FHB resistance used in this project will come from two sources; unadapted accessions identified in barley germplasm collections and adapted germplasm from Midwest barley improvement programs. The greatest levels of resistance are in the unadapted accessions from China and northern Europe; however, these accessions have unacceptable agronomic performance and malt quality. Fusarium head blight has adversely affected the quality of barley grown in eastern North Dakota and northwestern Minnesota the last ten years. Quality of harvested grain was reduced because of blighted kernels and the presence of deoxynivalenol (DON), a mycotoxin produced by the pathogen. Cultural and chemical controls of FHB in barley by themselves have been unsuccessful. Production of barley with low to no FHB symptoms and DON content is going to require an integrated approach that includes use of proper cultural practices, fungicides, and FHB resistant cultivars.