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**Project ID: FY07-HO-121**

**FY06 ARS Agreement #: 59-0790-4-106**

**Research Area: VDUN**

**Duration of Award: 1 Year**

**Project Title: Development of Scab Resistant Six-Rowed Barley Varieties for North Dakota.**

### **PROJECT 3 ABSTRACT**

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The overall goal of our project is to develop six-rowed malting barley cultivars that are resistant to Fusarium head blight (FHB) and accumulate less deoxynivalenol (DON). These cultivars must be acceptable to producers in North Dakota and adjacent states and acceptable to those who use and process barley. In FY07, our goals will be: 1) continued development and screening of six-rowed barley lines in our breeding program for reduced FHB and DON, 2) grow the uniform FHB screening nursery (i.e., NABSEN) at our Osnabrock, ND location, and 3) collect FHB and DON data on cultivars and advanced breeding lines that can be used by growers for making decisions on which cultivar(s) to grow. Our approach for development of FHB resistant cultivars with low DON includes use of a modified pedigree breeding methodology, an off-season FHB screening nursery in China, and off-season nurseries for seed increase in New Zealand and Arizona. Sources of FHB resistance used in our project come from two sources; unadapted FHB-resistant accessions incorporated into Midwest malting barley germplasm using pre-breeding activities by our project and adapted germplasm from Midwest barley improvement programs. The NABSEN nursery is grown under non-inoculated, dryland conditions at our Osnabrock research site in northeast North Dakota. This environment provides the same conditions growers in the region might experience on their own farms. FHB and DON data are collected on cultivars and advanced breeding lines grown in mist irrigated FHB nurseries in Langdon and Osnabrock. Data from these nurseries are made available to growers and researchers. Our project specifically addresses the research priorities of the Variety Development and Uniform Nurseries research program of i) breeding and release of FHB-resistant barley cultivars and germplasm adapted to FHB-threatened states, ii) participation in the uniform FHB screening nursery for barley (i.e., NABSEN), and iii) collecting FHB and DON data on current cultivars and advanced breeding lines that can be used by growers.