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ARS Agreement #: 59-0206-4-009

Research Category: BAR-CP

Duration of Award: 1 Year

Project Title: Developing 6- and 2-rowed Malting Barley Cultivars with Reduced FHB and DON.

PROJECT 1 ABSTRACT

(1 Page Limit)

This project addresses objective 4 of the Barley Coordinated Project (BAR-CP), *Develop new barley varieties with enhanced resistance to FHB and lower DON*. The overall goal of our project is to develop six- and two-rowed malting barley cultivars with enhanced resistance to FHB and reduced DON accumulation. The process of developing improved varieties is continuous, with lines in all stages of the breeding pipeline each year. Our breeding scheme includes two seasons of off-season nurseries and marker-assisted selection for DON accumulation in the F₅ generation using markers on chromosomes 2H and 6H. In FY 16-17, we expect to submit eight advanced breeding lines each year to the American Malting Barley Association's (AMBA) Pilot Scale evaluation program. Lines found acceptable in this testing will be submitted to the final stage of AMBA testing, Plant Scale evaluation. New cultivars must be acceptable to producers in North Dakota and adjacent states and acceptable to those who use and process barley. In FY16, our goals will be: 1) continued development and screening of six- and two-rowed barley lines in our breeding program for reduced FHB and DON, 2) grow the North American Barley Scab Evaluation Nursery (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. In addition to our efforts to develop six- and two-rowed malting barley for North Dakota, we will assist others in the BAR-CP by growing and evaluating advanced breeding lines from the University of Minnesota, Busch Agricultural Resources (BAR), Montana State University, and the USDA-ARS Aberdeen, ID breeding programs in our FHB nurseries in Langdon and Osnabrock. Data from these nurseries will be made available to growers and researchers. Finally, we will upload data from CP-funded research to the T3 database and the Datafarm database once it is available for barley.