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ARS Agreement #: 59-0206-0-120

Research Category: BAR-CP

Duration of Award: 1 Year

Project Title: Developing Two-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 mycotoxins*. The overall goal of our project is to develop two-rowed malting barley cultivars with enhanced resistance to FHB and reduced mycotoxin 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 genomic selection for DON accumulation and other traits in the F₅ generation. In FY21, we expect to submit up to five 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. Ultimately, new cultivars must be acceptable to growers and to those who use and process barley. In FY21, our goals will be: 1) continued development and screening of two-rowed barley lines in our breeding program for reduced FHB and mycotoxins, 2) grow the North American Barley Scab Evaluation Nursery (NABSEN) at our Osnabrock, ND research location, and 3) collect and make available FHB and mycotoxin 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 two-rowed malting barley for North Dakota, we will assist others in the BAR-CP by growing their materials in our FHB nursery in Osnabrock. In FY18 and FY19, we grew materials for researchers from Busch Agricultural Resources, the USDA-ARS Aberdeen, ID, and Montana State University. Data from our FHB nursery in Osnabrock nursery will be made available to growers and researchers. Finally, we will upload agronomic performance, malt quality, and mycotoxin data from our CP-funded research to the T3 Barley database.