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PROJECT 2 ABSTRACT
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One of the limiting factors in the development of barley varieties with scab resistance and lower DON accumulation is the availability of resistance sources in the primary barley germplasm pool. Barley Pathology will be evaluating and identifying FHB and DON accumulation resistance and deploying into ND elite malting barley backgrounds by facilitating the screening of elite germplasm in ND scab nurseries as well as working towards the identification and characterization of novel resistance loci from a previous unutilized barley collection and mutant material. Barley Pathology will be utilizing molecular markers to facilitate the development of pre-breeding materials by incorporating these resistances into elite two-row malting barley background via marker assisted selection and genomic selection strategies. A CGN00483 X Harrington cross was made in the greenhouse and the population was advanced to the F_7 generation representing a RIL population consisting 170 F_7 individuals. To acquire robust DON accumulation data and disease severity data, the F_7 population was planted and evaluated at the Langdon and Fargo, ND FHB nursery sites. CGN00483 was crossed with Pinnacle, Conlon and ND-Genesis and a backcrossing marker assisted selection process is being utilized to introduce the QTL into the elite two-rowed backgrounds Pinnacle and ND-Genesis, which are currently at the BC_1F_1 generation. The CGN00483 QTL introduced into the Conlon and ND-Genesis background is at the BC_3F_1 generation. We will continue backcrossing into the elite lines to the BC6 generation in the next biennium of funding and test the most advanced lines each year in the ND FHB nurseries. Making these crosses and populations should contribute to the development of new cultivars with the help of breeders.