

Project Abstract

Project 1 Title:	Determining FHB Susceptibility in Barley Cultivars in the Western US	
Principal Investigator:	Juliet M. Marshall	University of Idaho
Co-Investigator:	Belayneh Yimer	University of Idaho

The project goals are to increase knowledge of barley variety performance when infected with FHB, providing PNW producers, researchers, and breeders with variety response to infection and DON accumulation. Our specific objectives for this proposal are to: 1) determine the degree of susceptibility in currently grown varieties and advanced lines to local *Fusarium graminearum* isolates, and 2) provide DON data to breeders and growers to increase the ability to select the best varieties for breeding and production. This research addresses VDHR research priorities #1 Increase and document the number of varieties with improved FHB resistance and high grain yield and grain quality that are tested in statewide variety trials and available to farmers, to reduce DON in the US grain supply and #2 Increase efficiency of coordinated project breeding programs to develop and release FHB resistant varieties; and Barley CP Objective #4 Develop new barley varieties with enhanced resistance to FHB and lower mycotoxins. Testing of current varieties and newly released lines is required to provide suggestions to the growers on variety selection. Regular screening of advanced lines in barley breeding programs will assist in the release of varieties with improved levels of FHB resistance.

Expected outcomes include having FHB and DON data available to rank new variety releases and advanced breeding material against PNW industry standards. Using local isolates of *F. graminearum*, area barley breeders will be able to select varieties that have the greatest level of tolerance or resistance to these fungal strains.

Utilizing screening evaluations from 2014-2021, we have identified those lines of barley exhibiting a range of susceptibility and accumulation of DON under Idaho's environmental conditions to serve as checks. Included are recommended checks from the coordinating committee. New this year, we are participating in the winter NABSEN. We will continue screening released cultivars and advanced lines of barley from several public breeding programs as well as private breeding programs. Screening was enhanced with the addition of a secondary misting system at Aberdeen, wind reduction within the nursery with triticale borders to increase a favorable environment for disease development in barley, and the addition of a screening nursery in Kimberly, Idaho where favorable temperatures increase the ability to screen winter varieties.