Project Abstract

Project Title:	**Screening for Scab Resistance in Barley Lines Adapted for South Dakota**	
Principal Investigator:	**Gazala Ameen**	**South Dakota State University**
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The overall goal of the project is to fulfill the need for locally adapted FHB resistant barley varieties for South Dakota growers. In the state of South Dakota, the eastern region suits for major agricultural crops including barley production. The eastern SD is generally wetter, thus provides a more congenial environment for FHB development in the barley, posing a challenge for quality production. Therefore, there is an urgent need to develop and characterize adapted winter and spring barley varieties suitable for the state with an acceptable level of resistance to FHB, both for feed and food uses to combat this ever-challenging foe.

Specific objectives of the proposed research project are to

(i) Evaluate winter and spring barley lines for FHB resistance response as a breeding trait for growing in the eastern region of South Dakota and neighboring states and,

(ii) Establish a molecular analysis of fungal biomass and *Tri5* gene quantification in the selected breeding lines for a rapid molecular diagnostic approach.

FHB epidemics are frequent in the state; thus, scab resistance is an essential trait in the breeding of new cultivars to minimize the impact of FHB on barley production. In the current project duration, we expect to address scab resistance status in upcoming barley varieties and disseminate the information with the growers and stakeholders in a timely manner. Field FHB severity assay will be employed for the evaluation of 25-30 barley lines identified by the SDSU breeding program. Furthermore, this project will support a graduate student who will also carry out a DNA-based approach to analyze the fungal biomass relative to the resistance genotypes for rapid diagnosis of better-performing breeding lines. The research work undertaking in the proposed project is of vital interest to the barley breeders and growers given their shared responsibility to provide superior quality and scab free barley grain to the end-users.