PI: Phil Bregitzer
PI's E-mail: Phil.Bregitzer@ARS.USDA.GOV

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ARS Agreement #: *N/A*

Research Category: BAR-CP
Duration of Award: 1 Year

Project Title: Identification, Characterization and Development of Widely-Adapted FHB-Resistant Germplasm.

PROJECT 1 ABSTRACT

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Overall project goals: To broaden the adaptability of Aberdeen barley germplasm by producing elite spring and winter germplasm with broad spectrum disease resistance with an emphasis on Fusarium head blight resistance.

Project objectives:
1) Identify resistant lines in elite winter germplasm;
2) utilize existing spring resistance sources for new crosses to a) create mapping populations and b) broaden the adaptability of Aberdeen FHB-resistant malting germplasm by introducing broad-spectrum disease resistance.

Plans to accomplish project goals:
The level of resistance within Aberdeen elite winter germplasm is unknown. As these resources cannot be tested in spring-planted FHB mist nurseries, screening will be conducted in the fall-planted FHB nursery at Virginia Tech. Preliminary tests at Aberdeen indicated that hills of vernalized seedlings can be transplanted and tested in the spring-planted FHB mist nursery, thus providing a second location to allow more rapid germplasm assessment. Concurrent with these efforts to identify resistance within the winter population, spring germplasm identified with resistance to DON accumulation will be crossed to FHB-susceptible germplasm to create mapping populations with the eventual goal of mapping the architecture of resistance in Aberdeen germplasm. These crosses will also bring in alleles for resistance to scald, net blotch, and spot blotch.

Statement of mutual interest:
Identifying and incorporating resistance to FHB and other diseases will broaden the area of adaptation of elite germplasm within the Aberdeen barley breeding program. This will increase the utility of this germplasm for regions with high levels of disease, as well as protecting barley from the increasing threat of FHB in the Intermountain West. The result will be easier incorporation of this germplasm into breeding programs in the Midwest and Eastern U. S., and potentially produce varieties adapted to these regions. The beneficiaries of such germplasm would be other breeders, growers, and users of barley in the areas traditionally served by the Aberdeen breeding program as well as areas where Aberdeen germplasm has fared poorly because of insufficient disease resistance.