Project Abstract

Project Title:	Evaluation of Winter Barley Commercial Cultivars and Breeding Lines for FHB	
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Evaluation of Fusarium head blight (FHB) reaction in local commercial varieties of barley is critical for growers. At the same time, barley breeders need to evaluate their breeding germplasm for FHB resistance and DON accumulation for developing resistant varieties. PI will conduct misted nursery to evaluate local commercial cultivars and breeding germplasm for their response to FHB and DON accumulation. Barley is most susceptible to FHB at heading stage. However, heading times of barley genotypes/cultivars vary in natural conditions due to differences in their genetic background. Moreover, weather conditions may not be favorable for FHB every year. The misted nursery will help to avoid these issues by consistently maintaining favorable conditions for FHB infection over a longer period. The overall project goal is to analyze barley breeding germplasm and commercial cultivars for their genetic resistance to FHB and DON accumulation.

Project Objectives:

1. Conduct misted nursery for evaluating FHB resistance and DON accumulation in NABSEN barley breeding lines
2. Evaluate local barley varieties from the Mid-Atlantic region in the misted nursery.

The misted nursery data generated will help: a)-breeders in selecting FHB resistant breeding germplasm, and b)- growers in the Mid-Atlantic region in selecting high-yielding barley varieties with moderate resistance to FHB and DON.

Barley breeding germplasm for FHB and DON evaluations will be provided by the Barley NABSEN group led by Dr. Tom Baldwin. Commercial barley varieties will be procured from the Maryland statewide variety yield trials participant seed companies. Barley cultivars Thoroughbred, Violetta and Calypso will be used as controls. The tests will be conducted at UMD's Beltsville research facility in replicated head-rows for the breeding germplasm, and 13x5 sq feet plots in triplicate for the commercial varieties. Corn seeds heavily infested with local *Fusarium graminearum* isolates will be used as inoculum. High humidity conditions will be maintained using the misted irrigation system. FHB severity, incidences, and indices will be recorded by the PI. At maturity, harvested seeds will be analyzed for *Fusarium* damaged kernels (FDK), test weight, and DON content. Statistical analysis will be done, and results will be shared with breeders and growers.