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**Project Title: Integrated FHB Management of Winter Barley in the Mid-Atlantic USA.**

### **PROJECT 1 ABSTRACT**

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Winter barley cultivation is increasing in the mid-Atlantic and southeast U.S., especially in response to the upsurge of craft brewing and distilling. North Carolina boasts over 125 breweries and brew pubs, more than any other Southern state, and including some larger regional and national brewers. In response, malt houses are springing up in the region. Tolerance for DON in malting barley is extremely low; thus, DON-free barley is key to providing a local grain supply to this rapidly growing industry.

The current project is filling gaps in both breeders' and producers' knowledge. The first objective of this project is to provide data to enhance the selection of Mid-Atlantic barleys with FHB resistance. To date, barley breeding in the southeastern U.S. is conducted exclusively in Virginia and North Carolina. Virginia Tech (Drs. Carl Griffey and Wynse Brooks) screen their barley materials under scab pressure, but before last year there was no scab screening in the Raleigh-based program of Dr. David Marshall.

Starting in 2014-15, several Mid-Atlantic barley nurseries were screened for FHB resistance: the Uniform Winter Barley Yield Trial, Uniform Winter Malting Barley Nursery, Uniform Barley Winterhardiness Nursery, and the ARS Barley Elite Yield Trial. A total of 91 checks and experimental lines were screened for scab resistance in a replicated, inoculated, misted trial. The nursery will be of similar size in 2015-16. Both two- and six-row barleys are accepted in all the nurseries; currently, most entries are six-row. The P.I. collaborates with Dr. Marshall and the Virginia Tech team to provide data, which include disease symptoms and DON.

The second objective is to better understand profitability of integrating cultivar resistance and fungicide applications for scab reduction in Mid-Atlantic winter barley crops. In 2014-15, we conducted the first trial of a three-year experiment. In a split-plot design, main plots consisted of four barley cultivars widely grown in the Mid-Atlantic region and having different levels of FHB resistance. Three levels of spray treatment with Prosaro ("on-time," "late," and an unsprayed check) were the sub-plots. Data are being collected on disease symptoms, yield, test weight, and DON. The experiment will be repeated in 2015-16 and 2016-17.