

PI: Esten Mason

PI's E-mail: esten@uark.edu

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Project Title: Development of FHB-Resistant Wheat Cultivars for the Midsouth.

PROJECT 1 ABSTRACT

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The Arkansas wheat breeding and pathology programs are working together to incorporate FHB resistance from diverse and reasonably-adapted sources into adapted lines with high yield potential and resistance to other important diseases and are collaborating with other breeding programs in the southern region to evaluate breeding lines and mapping populations for FHB resistance and other important traits. Advanced breeding lines that combine the qualities of a variety and moderate to high levels of FHB resistance continue to be identified at an increasing rate within the Arkansas Wheat Breeding Program. For example, in 2012-2013, 83 lines in advanced replicated yield testing were found to have a severity rating of less than 10% in the Fayetteville inoculated nursery and 25 of these have been advanced for further yield testing in 2013-2014 based on overall performance. AR00179-2-2 (*IL94-6727/Roane*) had a severity rating of 2% and was entered into the Uniform Eastern Soft Red Winter Wheat Nursery and the Uniform Southern Scab nursery. AR05094-4-1 (*TerralTV8450/Beretta*) was the top yielding line in preliminary yield testing in 3 locations and was highly resistant to FHB, with a severity rating of 3% in Fayetteville and 25% under extremely high pressure in the Newport inoculated nursery. This success is a direct result of cooperation and integration of the Wheat Breeding (PI-Mason) and Wheat Pathology (Co-PI Milus) programs along with continued support and cooperation between the members of the United States Wheat and Barley Scab Initiative. Future work will focus on releasing identified lines as varieties and a more targeted focus on introgression and pyramiding of genes and quantitative trait loci for FHB resistance for continued development of resistant germplasm and cultivars.