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Project Title: Male Sterile Facilitated Recurrent Selection for FHB Resistance (MPI-5).

PROJECT 2 ABSTRACT

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Recurrent selection is a breeding procedure with the objective of increasing the frequency of desirable alleles for one or more traits while maintaining a high level of variability in the population. Inter-mating among the selected parents each generation allows recombination to occur thus combining genes from different sources. The objective of this project is to advance male-sterile facilitated recurrent selection populations that have been developed to combine genes for FHB resistance from multiple sources in soft winter wheat backgrounds adapted to the eastern U.S. The goal is for this project to further develop several pools of adapted breeding lines with genes for FHB resistance derived from multiple sources. This project is a continuation of the project that was begun in 2009 to generate FHB male sterile facilitated recurrent selection populations with FHB resistance in the eastern soft wheat region. The populations use a dominant male sterile gene. Preliminary work on development of male-sterile populations was conducted at Wooster, Ohio by Ed Souza, Mary Guttieri and Clay Sneller. They grew these populations each year from 2006 - 2010 using various soft red winter and soft white winter wheat breeding lines, germplasm and varieties as pollinators. Some of these lines and varieties were included as sources of FHB resistance and others were included as sources of adaptation and genes for high yield potential. Different generations of the male-sterile populations were grown in the field at Wooster, Ohio in 2009. In the 2012-2013 season the MSFRS populations were space-planted at six locations (one location is grown by each cooperator in Illinois, Indiana, Kentucky, Missouri, New York and Ohio) usually in an inoculated, and mist-irrigated FHB field evaluation nursery. Locally selected lines with FHB resistance were planted adjacent to the MSFRS population to serve as pollinators. Five lines have been derived from MSU populations and advanced to headrow nurseries.