PI: Jerry Johnson **PI's E-mail: jjohnso@uga.edu**

Project ID: FY14-SW-004 **ARS Agreement #: 59-0206-4-033**

Research Category: **VDHR-SWW** **Duration of Award: 1 Year**

Project Title: Developing Doubled Haploids to Expedite Variety Development in SRWW.

PROJECT 2 ABSTRACT

(1 Page Limit)

Our goal is to increase the efficiency of coordinated project breeding programs in developing and releasing FHB-resistant varieties. Doubled haploids (DH) shorten variety development time in fall-sown small grains by approximately four years. Our objective is to expand the use of this technique for the whole Southern Winter Wheat region by the coordinated development of at least five breeding populations and one mapping population through DH production followed by collaborative phenotyping across the region once the DH lines are developed and seed is increased for testing. This proposal will quickly provide inbred breeding lines having several diverse FHB resistance genes (exotic and native) to six breeding programs for testing in the Southern Winter Wheat (SWW) region and also provide useful markers for selecting the Catbird resistance that has been one of the most effective sources of FHB resistance in the SWW region. The doubled haploid facility at Kansas State University (Plant Innovations Facility) will be used to produce the approximately 200 DH lines per cross.

Three of the populations will utilize University of Maryland parents containing three QTL for FHB resistance (*Fhb1, FHB5AS, and FHB2DL).* The pedigree of the MD lines is SS8641 // McCormick*2 / Ning7840, developed through a collaborative effort funded by the initiative to produce lines adapted to the eastern US expressing good levels of resistance to FHB introgressed from exotic sources. The lines exhibit some of the best levels of resistance observed in adapted germplasm. This project will be in cooperation with all the breeding programs in the Southern region and will be a source of outstanding SRWW lines selected for FHB resistance that will be available and shared with other wheat breeders.