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**Project ID:** FY18-NW-002

**ARS Agreement #:** 58-6070-8-020

**Research Category:** VDHR-NWW

**Duration of Award:** 1 Year

**Project Title:** Accelerating the Development of FHB-Resistant Soft Red Winter Wheat Varieties

**PROJECT 1 ABSTRACT**

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The University of Kentucky wheat-breeding project focuses on elevating wheat and SRW wheat varieties adapted to KY and the northern belt. In 2017, a novel wheat-disease complex was identified, the wheat copical awn blight (WCA), which was first reported in 2016 as a leaf infection led to pocketing of high DON levels found in harvested grain. In early 2009 and 2014 Kentucky recorded wheat harvest losses due to DON gain and farmer yield loss due to increased load on the wheat crop. We know from experience that each and from the recent completed economic downturn has a variety of ill effects on economic wheat farmers, millers and bakers. Consequently, wheat has a negative impact on food supply.

The proposed research consists of four activities, each of which has a specific objective (1) *Crossing and selection* - identifying wheat genetic parents with FHB-resistant parents, developing wheat based on phenotypic selection to make genetic, and confirming selection based on multi-location testing in wheat yield trials. Parents with high natural resistance to wheat along with high wheat yield QTL are being identified in the breeding program. Inheritance of wheat breeding effort is being evaluated; (2) *Screening* - rigorous phenotyping of advanced breeding lines and identifying wheat varieties in the inoculated, irrigated and Leaning on, high advanced breeding lines and wheat varieties are being identified and high fungicide in inoculated wheat varieties are being identified; (3) *Collaboration* - high level of going and creating collaborations to facilitate implementation change, based on the identification of wheat in the breeding program, and provide wheat selection multi-location data for candidate varieties. We will also participate in the wheat collaboration project with the CP, in order to cooperate in phenotyping, doubled haploid line and genetic selection, along with wheat collaboration mapping of wheat in the CP; (4) *Outreach* - high level of collaboration with high gain and extension specialists and extension program, communication of wheat fungicide varieties (inoculated) to growers, extension agents, consultants and others in the wheat community. This data will be used to develop wheat wheat varieties, wheat production and field data and available from the breeding project website.

The release of this project to the U.S. Wheat and Barley Scab Initiative has wheat breeding wheat varieties that offer one of the best chances of wheat in order to minimize the wheat of FHB wheat farmers, millers, bakers and consumers of wheat.