PI: Clay Sneller **PI's E-mail: sneller.5@osu.edu**

Project ID: FY12-NW-011 **ARS Agreement #: 59-0206-9-086**

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

Project Title: Improved Breeding for FHB Resistance by Advanced Genetic and Phenotypic Characterization of Soft Winter Wheat.

PROJECT 3 ABSTRACT

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Breeding for FHB resistance is inherently inefficient and slow due to 1) resistance is primarily controlled by genes with small effects, 2) location genes and magnitude of effects are poorly understood, and 3) need for multi-environment phenotyping of inbred lines. In this project we address these issues by developing knowledge of the genetics and types of FHB resistance, effective elite populations, and breeding methodologies for rapid improvement of FHB resistance in soft winter wheat (SWW). Our specific objectives are:

1. Conducting an association analysis to determine the genetic structure of FHB in soft winter wheat
2. Develop genomic selection models that will be used to select superior individuals and shorten breeding cycles.

The project will phenotype 649 lines over three year. Each will be genotyped with 1,000s of SNP markers. The data will be combined and used in an association analysis and in genomic selection.