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**Project ID:** FY18-SP-001

**ARS Agreement #:** *New*

**Research Category:** VDHR-SPR

**Duration of Award:** 1 Year

**Project Title:** Developing FHB Resistant Wheat Cultivars for Idaho and the Western US.

### PROJECT 1 ABSTRACT

(1 Page Limit)

FHB causes losses annually in Washington's irrigated wheat production areas, primarily on spring wheat, but occasionally on winter wheat. The number of acres affected has not been well-documented, though irrigated hard red spring wheat growers and seed dealers serving the irrigated areas list FHB among their primary concerns, and the most important pathogen in irrigated production systems, in spite of severe annual stripe rust epidemics. Widespread infection was again reported in 2018, and received more press coverage than in past years, presumably due to increased prevalence and severity. There are no active pathology programs working on FHB resistance evaluation in Washington. To date, there have been no efforts to objectively compare FHB resistance phenotypes in commercially produced varieties in Washington, which are somewhat distinct from varieties in S. Idaho. Through this project we will evaluate variety trial entries, elite advanced yield trial entries from the WSU and UI spring wheat breeding programs in 2019, and continue marker and phenotype based backcrossing of *Fhb1* into elite breeding materials. To support UI's research, we will phenotype an association mapping panel in 2019. The WSU breeding effort focused on FHB will be limited to hard spring wheat germplasm, as soft white spring wheat is produced on rainfed, not irrigated acres. To date, 20 single backcross or three-way F1 populations made for selection of irrigated germplasm have been genotyped to enrich for *Fhb1*+*Sr2* progeny (donor from J. Anderson, UMN). An average of 15 single-backcross/three-way progeny per population were recovered heterozygous for *Fhb1*+*Sr2* and populations derived from these enriched plants are being advanced by single seed descent. After genotyping derived lines in spring 2019, BC1/three-way F4-derived lines homozygous for *Fhb1* will be evaluated in FHB screening nurseries in Washington and Idaho.