

FY16 USWBSI PROJECT ABSTRACT

PI: Mark Sorrells

PI's E-mail: mes12@cornell.edu

Project ID: FY16-NW-009

ARS Agreement #: 59-0206-4-007

Research Category: VDHR-NWW

Duration of Award: 1 Year

Project Title: Coordinated Phenotyping of Uniform Nurseries and Official Variety Trials.

PROJECT 4 ABSTRACT

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Objectives: 1) Phenotype advanced breeding lines that are candidates for release: 2) place FHB and other agronomic, disease resistance, and quality data in database: 3) report on purification and seed increase of the best lines.

Rationale: Strong FHB resistance must be combined with high-yield to impact the Eastern US wheat industry. Each year the seven breeding programs in this coordinated project (CP) generate breeding lines that are in the advanced stages of development. Due to low to moderate heritability of FHB resistance, multi-location testing is needed to determine the FHB resistance of these lines, as well as their yield, quality, agronomic value, and resistance to other diseases. The breeders in this CP use a series of coordinated nurseries to achieve this objective. These tests also have breeding lines from public and private breeders who are not in this CP. Each state conducts an Official Variety Trial (OVT) of the cultivars that are available to their growers. We evaluate all the entries in all these tests for FHB resistance. Collectively, perhaps 450 unique advanced breeding lines and released cultivars are evaluated for FHB resistance in these trials. This screening encompasses nearly all genotypes that are currently available to growers as well as much of what may be available to them in the next three to five years.

The NUWWSN and PNUWWSN tests were created to specifically test FHB resistance of up to 120 entries and are coordinated by Ohio State University. The entries in these tests come from the seven breeders in this project as well as other public and private winter wheat breeders. In addition to the seven institutions of this CP, the NUWWSN is also evaluated by additional public/private breeders in IN, VA, MD, NE, IL, and Ontario while the PNUWWSN is evaluated by additional breeders in IN, IL and Ontario. Some breeders in the NWW-CP also evaluate the uniform test associated with the SWW-CP (USFHB). In addition to the FHB data, the NUWWSN and PNUWWSN are also evaluated for quality by the USDA Soft Wheat Quality Lab and are assessed for other diseases as they occur.