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Project ID: FY08-RA-089 **FY08 ARS Agreement #: 59-0790-6-066**

Research Category: **HWW-CP/VDHR** **Duration of Award: 1 Year**

Project Title: Screening for FHB Resistance in the NHWWSN.

PROJECT 2 ABSTRACT

(1 Page Limit)

Winter wheat is an important crop in North Dakota. Though acreage of winter wheat varies considerably from year to year, the trend is for an increase in acreage; there were 360,000 acres planted in 2007, and a substantial increase is projected in 2008. FHB is frequently a serious constraint to the production of quality winter wheat in North Dakota. FHB damage and high DON levels decimated the crop in 2005 even with the appropriate use of fungicide. No variety grown in North Dakota has a reasonable level of FHB resistance. ND does not have a winter wheat breeding program and uses introductions or joint releases from adjoining states, Nebraska and Canada to ensure new varieties of winter wheat are available for farmers in the state. In the proposed research project, we will screen winter wheat lines as part of the Northern Hard Winter Wheat Scab Nursery from breeding programs in Kansas, Nebraska and South Dakota for FHB resistance in North Dakota. There are two primary objectives of this work, the first to identify lines that may be adapted to North Dakota with FHB resistance that might have the potential for release and/or commercialization in North Dakota. The second is that this nursery will provide an additional location for screening for resistance to FHB to assist breeders in the region to select genotypes with FHB resistance. The North Dakota location can provide an important additional environment to understand resistance and stability of resistance in new lines as natural FHB epidemics are frequent. The screening nursery will be established at Prosper, no-till planted into land previously cropped to spring wheat to ensure some level of natural FHB inoculum. Entries in the screening nursery will be lines provided by the breeding programs in Kansas, Nebraska, and South Dakota that constitute what was the tri-state FHB screening nursery. In addition to these lines and check cultivars with a known level of FHB tolerance, the ND variety Jerry will be included as a local check to provide a point of reference for adaptation and FHB tolerance. Plots will consist of a single row, seven feet in length. In the first year, treatments will be replicated twice. In addition to the natural inoculum provided by the crop residue from the previous year, a water suspension of FHB spores will be applied just prior to anthesis. Dr. Zhong, NDSU Plant Pathologist will assist with the inoculation and in evaluating plots for FHB and DON. Lines will also be evaluated for winter survival and resistance to other foliar diseases.