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Project Title: Enhancing FHB Resistance Screening Capacity for Spring Wheat Breeding Programs.

PROJECT 3 ABSTRACT

(1 Page Limit)

A key element in developing FHB resistance varieties is to evaluate various germplasm and advanced breeding lines for reactions to FHB in disease nurseries. Due to the complexity of factors affecting FHB infection and development, FHB resistance must be tested and validated in multiple locations and multiple years. Therefore, misted nurseries are usually established locally for evaluating field-level resistance to FHB. These local nurseries are very important for FHB resistance screening. However, environmental conditions are not always optimum for FHB development in these nurseries because of the fluctuations in weather conditions during the flowering season each year. Therefore, having another consistent FHB nursery with an optimum disease pressure is crucial for ensuring the success of FHB resistance screening experiments. A FHB nursery located at Jianyang, China, is an excellent place for FHB evaluation because FHB epidemics occur every year under natural infection conditions. This nursery has been used to screen breeding materials for FHB resistance in wheat for more than 25 years and has greatly contributed to the success of developing FHB resistant varieties and germplasm in China. The overall goal of this project is to enhance the capacity and efficiency of FHB resistance screening by adding an oversea FHB nursery for the three spring wheat breeding programs at North Dakota State University (NDSU), South Dakota State University (SDSU) and University of Minnesota (UM). The specific objective is to evaluate advanced breeding lines selected by NDSU, SDSU, and UM for FHB resistance in the FHB nursery located at Jianyang, China. We will collaborate with the Chinese scientists in Jiangsu Academy of Agricultural Sciences and plant the materials in late fall and score FHB in late April or early May next year. The additional nursery will generate more valuable and reliable data for developing breeding wheat varieties with high levels of FHB resistance.