Project Abstract

Project Title:	Maintenance and Operation of Two Coordinated FHB Nurseries for Spring Wheat	
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Field evaluation of wheat materials for FHB resistance is an essential part of effort to identify FHB resistant sources, map QTL for FHB resistance, and develop FHB resistant cultivars and germplasm. In the past years, the PI has established one FHB nursery at Fargo location, which is mainly used to evaluate introgression wheat lines and mapping populations from multiple spring wheat research groups (Dr. Xiwen Cai, Dr. Steven Xu, Dr. Shiaoman Chao, and Dr. Shaobin Zhong). However, only a limited number of wheat materials could be included for FHB evaluation at the Fargo nursery due to limited capacity of the nursery and lack of enough funding to manage and operate the field plots. Furthermore, one location for FHB screening is not good enough to provide good quality data due to unpredicted weather and environmental conditions (too dry, too hot, flooding and so on), and thus establishing additional nursery is important to ensure the success of FHB screening every year. Langdon, ND, is an excellent location for FHB screening because the weather conditions are conducive for FHB development. With the funding from Scab initiative in 2020 and 2021, we expanded the Fargo nursery and established a new nursery at Langdon with the overall goal of increasing the capacity and efficiency of FHB screening for spring wheat.

In this project, our overall goal is to enhance the capacity and efficiency of two disease nurseries for the spring wheat CP. The specific objectives are to: 1) maintain and operate the FHB nursery at the Fargo location for FHB screening of materials from PIs of the spring wheat CP, 2) Establish and operate the FHB nursery at the Langdon location for spring wheat CP. We will plant spring wheat materials from multiple researchers of the spring wheat CP in the FHB nurseries at Fargo and Langdon in each summer. Fusarium-infested corn inoculum will be applied at the boot stage and overhead misting system will be set up to keep enough moisture for disease development in the disease nurseries. FHB ratings will be conducted at 21 days after anthesis by each of the researcher groups for their own materials. These two coordinated FHB nurseries will be very useful for screening breeding lines, introgression lines, and mapping populations, and will facilitate the PIs of spring wheat CP to fulfill their research goals and objectives.