

Project 3: Maintenance and Operation of Two Coordinated FHB Nurseries for Spring Wheat

1. What are the major goals and objectives of the research project?

The major goal of this project is to maintain the capacity and efficiency of FHB screening for the spring wheat CP. The specific objective is to: maintain and operate the two FHB nurseries located at Fargo and Langdon for FHB screening of spring wheat materials.

2. What was accomplished under these goals or objectives? (For each major goal/objective, address these three items below.)

a) What were the major activities?

- In the summer season of 2023, we planted a total of 3,120 hill plots of spring wheat materials from multiple researchers working in the spring wheat CP (1,620 hills from Dr. Shaobin Zhong, 1,000 hills from Dr. Steven Xu, and 500 hills from Dr. Xuehui Li) in the FHB nursery at Fargo location. These materials included advanced breeding lines, mapping populations, introgression germplasm, and commercially grown wheat varieties (for variety trials). Among them, 1,200 hill plots were point-inoculated at anthesis and the rest of hill plots were inoculated with Fusarium-infested corn kernels. Overhead misting systems were used for disease development for both inoculation methods.
- We also planted a mapping population with 190 recombinant inbred lines and 63 spring wheat lines from spring wheat breeding programs in the Langdon location. Fusarium-infested corn kernels were spread on the field as inoculum and overhead misting systems were used for disease infection and development at the Langdon location.

b) What were the significant results?

- We collected FHB disease data that will be used for QTL mapping and FHB-resistant germplasm development.

c) List key outcomes or other achievements.

- The FHB data collected from the FHB nurseries are useful for spring wheat variety and germplasm development, QTL mapping of FHB resistance, and development of a guide for farmers to select varieties for planting.

3. What opportunities for training and professional development has the project provided?

Four Ph.D. students obtained trainings in field design and planting, disease inoculation and ratings in the two FHB nurseries.

4. How have the results been disseminated to communities of interest?

Nothing to report.

5. What do you plan to do during the next reporting period to accomplish the goals and objectives?

This project was terminated. Nothing to report.