

Project FY22-DU-003: Maintenance and Operation of FHB Screening Nurseries for Durum Wheat

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

The major goal of this project is to provide large scale disease screening of Durum wheat materials from PIs who are involved in the USWBSI program. The specific objectives of the project are to:

- 1) Maintain and operate the current Fargo nursery for FHB screening of durum materials;
- 2) Establish and operate the FHB nursery at the Langdon location for durum wheat.

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

What were the major activities?

In the past 2024 summer season, we planted ~ 2,860 hill plots of durum wheat materials, submitted by durum wheat researchers in durum wheat CP (1500 hills from Dr. Shaobin Zhong, 800 hills from Dr. Steven Xu, 400 hills from Dr. Xuehui Li, and 160 hills from Dr. Xiwen Cai) at the Fargo location. The materials were inoculated by either the point inoculation method or Fusarium-infested corn inoculum spread on the field in mid-June. Overhead misting systems were used for disease development for both inoculation methods.

In the summer season of 2024, a smaller number of hill plots (200 hill plots) of lines were planted and evaluated for FHB resistance in the nursery at the Langdon location. Fusarium-infested corn inoculum and overhead misting systems were used for disease infection and development.

What were the significant results?

For both Fargo and Langdon locations, we collected FHB data that are useful for germplasm development and QTL mapping of FHB resistance in durum wheat.

List key outcomes or other achievements.

The two FHB nurseries are very valuable for FHB phenotyping of durum wheat materials under two field environmental conditions.

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

The project has provided four Ph.D. students with trainings for FHB phenotyping. The Ph.D. students were involved in the planting, disease inoculation and ratings in the field experiments.

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?

We will continue to screen durum wheat materials selected by the PIs of Durum-CP at both Fargo and Langdon locations. Planting is done on May 14th 2025 at the Fargo nursery and on May 28th at Langdon location. Corn inoculum will be applied to the FHB nurseries in Mid-June and disease readings will be conducted from July-August. Disease data will be organized and analyzed in September.