Project FY22-DU-010: Developing FHB Resistant Durum Wheat Germplasm

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1. **What are the major goals and objectives of the research project?**
   The ultimate objective of this project is to enhance the resistance in durum cultivars by removal of persistent suppression mechanism. The only objective of proposed project approved for continuation by the EC was to develop backcross derived nested association mapping (NAM) panel for the top five resistant mutants

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

   What were the major activities?
   We crossed five M4 lines (41708-72, E.25.11, E.25.32, E.25.23, and E.25.10) with two NDSU advanced varieties (ND Grano, and ND Stanley), as was recommended by Dr. Elias Elias (the durum wheat breeder at NDSU). Seed setting was low in some of the crossing sets and were repeated to generate adequate seed for development of NAM lines. Currently over 2,000 lines (at least 200 lines per cross) are in the BC1F4 stage. They will be advanced to BC1F5 stage and seeds increased in the Spring 2026 greenhouse for planting in the summer field for disease evaluation.

   What were the significant results? List key outcomes or other achievements.

   Identification of candidate FHB resistant genes
   Development of a large NAM population for genetic characterization and introgression of identified FHB resistance loci.

3. **What opportunities for training and professional development has the project provided?**
   There was a part-time postdoctoral scientist on this project who performed all of the initial RNAseq and gene identification work. He accepted a position with Bayer Crop Sci. and has moved to a much larger crop improvement effort. Since then all the work is being conducted by a part-time student technician.

4. **How have the results been disseminated to communities of interest?**
   Through meeting presentations.

5. **What do you plan to do during the next reporting period to accomplish the goals and objectives?**
   Advance the NAM population and increase seeds for field evaluation in the summer of 2026. We did not request and will not be requesting any funding for this work from the USWBSI.