Project FY22-FS-001: Diagnostic Testing Services for Deoxynivalenol in the Eastern U.S.

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1. **What are the major goals and objectives of the research project?**
   The overall goals of our project were to (1) provide diagnostic testing services for DON for wheat and barley samples associated with USWBSI-supported research projects in the eastern U.S. and (2) reduce DON contamination in wheat and barley.

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 FY23, DON data was delivered for 5,855 wheat and barley samples from the following USWBSI investigators: Bowen (80 samples), Boyles (630 samples), Darby (96 samples), Glover (1,276 samples), Koehler (135 samples), Santantonio (2,588 samples), Toomajian (704), Vaillancourt (296), and Wegulo (50 samples). The testing number does NOT include controls, checks, and re-runs. Most of the samples tested in FY23 were 100g kernel lots from FHB field trials, but some were smaller lots from laboratory experiments. Extraction, clean-up, and quantification of DON were conducted following standard protocols using a GC/MS. Research associate Niki McMaster and graduate student Lola McMullan attended the 2023 USWBSI meeting in Ohio.

   What were the significant results?
   The proposed project provided essential DON testing services for the USWBSI, and supported the only USWBSI-associated DON testing lab in the eastern U.S. Many of the wheat and barley lines had not been tested previously for mycotoxins.

   List key outcomes or other achievements.
   The research has contributed to the development and release of new FHB-resistant wheat and barley varieties and has ensured rigorous testing of both new and historical wheat and barley varieties for mycotoxin contamination. The Schmale Lab at Virginia Tech continues to be committed to the long-term management of a successful and productive mycotoxin testing lab for the USWBSI. DON testing services were coordinated, supported, and managed by research associate Niki McMaster.

3. **What opportunities for training and professional development has the project provided?**
   Research associate Niki McMaster continued to improve her analytical skills in mycotoxin detection and quantification.

4. **How have the results been disseminated to communities of interest?**
   Schmale gave a series of lectures on mycotoxins for about 50 undergraduate students and 9 graduate students at Virginia Tech. McMaster communicated with USWBSI stakeholders via phone and email to coordinate sample collection, processing, and testing. Results were disseminated to stakeholders at the 2023 USWBSI meeting in Ohio.

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

   DON testing services continue to be coordinated, supported, and managed by research associate Niki McMaster. FY24 samples are in the process of being received, logged, and processed for analysis. Quality control data continue to be collected at Virginia Tech through (a) the blind testing of samples with unknown DON levels (coordinated by the USWBSI through Trilogy Analytical Laboratories), and (b) the testing of subsamples of grain lots in each GC/MS run (to test for consistency among GC/MS runs).