Project FY22-IM-005: Fungicide and Variety Evaluation for FHB Management in Wheat in South Dakota

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1. **What are the major goals and objectives of the research project?**
   Goal 1: IMT- Screening of South Dakota released winter and spring wheat varieties with selected fungicides to determine how they perform and yield when inoculated with Fusarium Head Blight
   Goal 2: UFT- Screening of panel of fungicides in South Dakota weather conditions on both winter and spring wheat susceptible varieties

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

   What were the major activities?
   Goal 1: Hard red winter wheat (HRWW) cultivars Draper (moderately resistant), Oahe (moderately susceptible) and Thompson (susceptible) were planted at SDSU Volga Research Farm (VRF) on September 21st, 2023. In addition, four hard red spring wheat (HRSW) cultivars, Ascend-SD (moderately resistant), Surpass (moderately resistant), MN-Rothsay (susceptible), and CP3099A (susceptible) were planted at VRF on April 26th, 2024.

   The following treatments were applied at anthesis (Feekes 10.5.1): Prosaro (6.5 fl oz/ac), Miravis Ace (13.7 fl oz/ac), Prosaro Pro (10.3 fl oz/ac) and Sphaerex (7.3 fl oz/ac). An inoculated-untreated and non-inoculated untreated checks were also evaluated.
   Goal 2: Susceptible HRWW and HRSW varieties, Cowboy and CP3188 were planted at VRF on September 21st, 2023, and April 26, 2024, respectively. The efficacies of; 1. Prosaro (6.5 fl oz/ac), 2. Miravis Era (10.3 fl oz/ac), 3. Miravis Ace (13.7 fl oz/ac), 4. Prosaro Pro (10.3 fl oz/ac), 5. Sphaerex (7.3 fl oz/ac) applied at anthesis were evaluated. In addition, three treatments where Miravis Ace applied at Feekes 10.5.1 was followed by; 6. Prosaro Pro (10.3 fl oz/ac), 7. Sphaerex (7.3 fl oz/ac), and 8. Tebuconazole (4 fl oz/ac) 4 to 6 days following the Feekes 10.5.1 Miravis Ace application making a total of nine treatments including a nontreated check.

   What were the significant results?
   Goal 1: Varieties that have inherent host resistance integrated into them performed better than the susceptible and untreated checks.
   Goal 2: There were no statistically significant results between fungicide treatments for severity and FDK.

   List key outcomes or other achievements.
   Goal 1: Resistance to FHB in South Dakota released HRWW and HRSW cultivars is effective at managing losses due to FHB in combination with a fungicide.
   Goal 2: In years that are ideal for FHB development, any type of fungicide to manage FHB seems to be effective.

3. **What opportunities for training and professional development has the project provided?**
   There was one graduate, three graduate students, and one new technician who were trained in various aspects of this project including FHB disease severity data collection, plot maintenance, harvest, and preparing seed for DON analysis.

4. **How have the results been disseminated to communities of interest?**
   These results were communicated at numerous SDSU Extension events and talks over 2024 and 2025, roughly 2000 people were educated about our findings. FHB was also discussed at a research farm field day and IPM field day with in-field demonstrations. We also communicated our results in a poster at the 2024 Scab Forum.

5. **What do you plan to do during the next reporting period to accomplish the goals and objectives?**
   Looking forward to 2025, the two studies are being repeated. For HRWW, Cowboy, Pheasant and Winner are included in the IMT study, which was planted on October 2, 2024, at the VRF. Spring wheat IMT varieties include Ascend-SD, CP3099A, MN-Rothsay and Surpass. These will be planted at VRF and South Shore in South Dakota as soon as conditions are conducive to planting. For HRWW UFT, Cowboy was planted at VRF on October 2, 2024. The spring wheat version of the UFT study has CP3188 seed packaged for planting at VRF and South Shore. We will collect and analyze the data and disseminate updated FHB management recommendations to South Dakota producers through publications and talks.