Project FY22-IM-002: Testing Fungicide Efficacy & Timing in a High-performance North Carolina FHB Nursery

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

Based on replicated field data, determine the optimal timing for fungicide applications to reduce FHB in winter 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?

We conducted a 4-year field experiment in our misted, inoculated FHB nursery at Raleigh, North Carolina, using three winter barley cultivars with different levels of resistance to FHB. Inoculation was with *Fusarium*-infected corn spawn applied in three batches at one-week intervals, starting approximately three weeks before anticipated heading of the earliest variety.

We used ten fungicide treatments. The treatments allowed comparisons of the efficacy of Miravis Ace to those of Prosaro and Caramba, and comparisons of three fungicide timings (spikes half emerged, spikes just fully emerged, and 6 days after spikes fully emerged). They allowed estimation of the mean benefits of fungicide application, cultivar resistance, and the combination of the two in terms of yield, test weight, and DON reduction.

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

A four-year field study in Raleigh has resulted in clear recommendations on when to spray winter barley for maximum reduction in FHB damage and DON. "Late" applications (6 days after full heading) are more effective than applications at full heading. "Early" applications (50% heading) are no better than the unsprayed control in terms of DON reduction. So barley producers who are trying to minimize FHB with a fungicide should aim for application several days after heads are fully emerged.

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

The experiment helped in the training of a new technician on how to conduct FHB research in the field, and how to process barley samples.

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

The study was the focus of an edition of USWBSI Tool Talk.

It was also the subject of a press release by USDA-ARS, "Timing Matters When Reducing Fusarium Head Blight in Winter Barley."

Christina Cowger presented research results on the efficacy of fungicides for FHB/DON management in winter barley as part of the spring 2024 USWBSI Scabinar.

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

As appropriate, research results will be communicated to barley producers, extension personnel, and industry professionals.