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Research Category: MGMT

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Project Title: Integrated Management of FHB and DON in Winter Wheat and Malting Barley in New York

PROJECT 1 ABSTRACT

(1 Page Limit)

As part of a multi-state Coordinated Project coordinated by Pierce Paul, field experiments will be conducted to investigate the effects of variety resistance and fungicide application and timing on FHB and DON accumulation in winter wheat and winter malting barley. We will follow the Standard Protocol except that solo tebuconazole treatments, not registered in New York, will be excluded. In 2020-21 we will evaluate the efficacy of the new Syngenta product, Miravis[®] Ace at two timings as well as Miravis[®] Ace applications followed by late applications of Prosaro[®] or Caramba[®]. We will also evaluate two promising biological fungicide treatments for organic producers, Double-Nickel[®] and Phyter[®]. The experiments will be conducted at the Cornell University Musgrave Research Farm in Aurora, New York and will involve no-till planting of wheat and barley into soybean stubble. The design is a randomized complete block with a split-plot arrangement of three cultivars as the whole plots and 10 fungicide treatments as the sub-plots. There will be six replicates with sub-plot size of 10 ft wide × 20 ft. The trial will be managed according to the standard agronomic practices in New York. Fungicide applications will be made using a sprayer equipped with paired Twinjet or flat fan XR8001 nozzles, mounted at an angle (30° from the horizontal) forward and backward and calibrated to deliver at a rate of 10 to 20 gallons per acre. All sub-plots (with the exception of sub-plots of two non-inoculated treatments) will be inoculated with a *Fusarium graminearum* spore suspension (40,000 spores/ml or more based on cooperators' experience) at Feekes 10.51 for wheat or Feekes 10.5 for barley following the application of fungicide and suitable time for drying. FHB intensity will be assessed in each plot at the soft dough growth stage, Feekes 11.2. At each assessment, FHB severity will be determined visually on 60-100 spikes per plot, and incidence, diseased head severity, and index calculated as described previously. The presence and flag leaf severity (as a percentage) of any foliar diseases will also be determined. Plots will be harvested with a plot combine and yield and test weight determined. Grain from all plots will be rated to determine the percentage of *Fusarium* damaged kernels (FDK). Grain samples from each plot will be sent to the USWBSI-funded DON Testing Laboratory of Dr. Dong.