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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 on FHB and DON accumulation in spring malting barley. This switch was made because extreme fall 2018 weather conditions did not allow for the planting of winter wheat. We will follow the Standard Protocol except that solo tebuconazole treatments, not registered in New York, will be excluded. In 2019 we will evaluate the efficacy of the new Syngenta product, Miravis Ace®. The experiment will be conducted at the Cornell University Musgrave Research Farm in Aurora, New York and will involve no-till planting of barley into soybean stubble. The design is a randomized complete block with a split-plot arrangement of two cultivars as the whole plots and 10 fungicide treatment 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 (30º 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 one non-inoculated treatment) will be inoculated with a *Fusarium graminearum* spore suspension (40,000 spores/ml or more based on cooperators' experience) at Feekes 10.51 and again 5-7 days later, in each case 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.