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Project Title: Uniform Fungicide Trials in ND.

PROJECT 2 ABSTRACT

(1 Page Limit)

The effect of experimental fungicides and fungicide combinations on Fusarium head blight (FHB) and deoxynivalenol (DON) levels will be evaluated across multiple locations and small grain classes. At Fargo, in the east central region of ND, the uniform protocol will be tested on spring wheat and six row spring barley. At Carrington, in Central North Dakota, the uniform protocol will be tested on durum wheat. At Langdon, in the Northeast region of ND, the protocol will be tested on spring wheat. To help ensure development of FHB, plots will be planted into fields that were previously cropped to a FHB-susceptible crop (i.e. corn, wheat, or barley), and/or *Fusarium graminearum* spawn (*F. graminearum* growing on a substrate; i.e. sterile corn or sorghum kernels) will be spread throughout the plots. Irrigation during head development through soft dough (Feekes 11.2) will be used at Carrington and Langdon to supplement natural rainfall to provide a favorable environment for *F. graminearum* infection and disease development. At Fargo, spray inoculum of *F. graminearum* will be applied on the evening following fungicide application.

The experimental design will be a randomized complete block with a minimum of 4 replications. Plot sizes will vary according to each location's equipment and land space available, but plots will be at least 5 ft wide × 10 ft long. Fungicide treatments will be applied with a spray boom equipped with forward- and backward-facing nozzles (30° from the horizontal). The specific fungicide treatments are now defined, with seven core treatments. The major thrust of the experiment will be to evaluate fungicide timings and mixtures to determine effects on disease and DON reductions.

At soft dough (Feekes 11.2), FHB incidence and severity will be assessed for each plot by examining 20 heads at 3 arbitrarily selected locations per plot, and FHB index will be calculated. Additionally, incidence and severity of foliar diseases will be assessed on the flag leaves at the same time. Plots will be harvested to determine yield, and grain samples from each plot will be evaluated for percentage Fusarium-damaged kernels. Grain samples from each plot will be sent to the NDSU Veterinary Science Toxicology laboratory for DON testing. Results will be reported to the USWBSI coordinator of the Uniform fungicide studies, as well as reported to ND producers