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Project Title: Effects of Post-anthesis Moisture, Late Infection and Cultivar on DON in Wheat.

PROJECT 1 ABSTRACT

(1 Page Limit)

This collaborative pre-proposal seeks funding for the second year of a two-year field and greenhouse study. The experiment has three major objectives: (1) to examine the effects of post-anthesis moisture on FHB development and DON accumulation in wheat; (2) to examine the effects of late infection on FHB development and DON accumulation in wheat; and (3) to investigate the cultural implications of a delay in harvest of two weeks on the DON content of mature grain.

Inoculated, mist-irrigated field experiments examining FHB development and DON accumulation will be established at the Minnesota Agricultural Experiment Station in St Paul, MN and the Cunningham Research Station in Kinston, NC. Two field experiments will be conducted. The first, which will be planted in NC and MN, will examine the effects of post-anthesis moisture and late infections on DON accumulation in winter and spring wheat cultivars, respectively. The goals of this experiment are to confirm previous findings on the influence of host resistance, pathogen aggressiveness and moisture duration on the development of FHB and accumulation of DON in wheat; to illuminate the influence of host-pathogen genotype interactions on fungal colonization and DON production in different tissues; and to detect differences in the relative ranking of cultivars under different infection-timing-by-mist-duration treatments. The second experiment, to be planted in NC, will investigate the cultural implications of our findings on DON development during the grain-fill period under different durations of post-anthesis moisture. Main plots in this experiment will be 0 and 21 days of post-anthesis misting, and sub-plots will be different durations of moisture during the harvest period. The purpose of this experiment is to explore our previous finding that grain DON decreases near normal harvest time, and to determine how the trend is affected by different numbers of moist days during a potential harvest-delay period.

In addition, greenhouse experiments will be conducted in MN. These experiments are designed to confirm the effect of moisture (using wetting events applied between 7 and 28 days after inoculation) on the development of FHB symptoms and the accumulation of DON in wheat floret tissues. The impact of wetting events applied both before and after the full expression of symptoms will be determined.

The proposed research is directly aimed at MGMT's core goal of developing effective management practices that reduce FHB severity and DON in harvested grain.