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Project Title: Evaluating Efficacy of Integrated FHB Management Strategies in Wheat & Barley.

PROJECT 1 ABSTRACT

(1 Page Limit)

This project represents Minnesota's participation in the uniform integrated FHB management effort, a multi-state research cooperative that was organized during 2005 to identify best management practices for protecting small grain crops against FHB-related yield and quality losses. This research is focused on correlating FHB disease severities with in-field crop residue, FHB resistance level of cultivars, and fungicide application. Economic outcomes of the wheat research will be determined using local cash-basis market schedules for grain premiums and discounts. This analysis completes the informational thread all the way from cultivar selection to economic outcomes for each disease management strategy, allowing extension plant pathologists to address producer concerns about costly production inputs.

We will have two wheat and one barley experiment sites within the Red River Valley representing different agroecosystems. Experiment locations near Fisher and St. Hilaire are expected. Commercial production fields will be selected whereby soybean residue is present since it is a common rotational crop. A total of six spring wheat cultivars and four malting barley entries with varied levels of FHB disease resistance will be tested. Field test organization will be a split-plot design with three replicates where fungicide treatment is the main factor and cultivar is the sub-factor. Fungicide treatments will consist of a nontreated control and Folicur and Proline mixed to simulate Prosaro which will be applied at early-flowering (wheat) or early heading (barley). Wheat will be exposed to two additional treatments such as a seed-applied systemic fungicide treatment and a seed treatment followed by an early-flowering application of fungicide.

The objectives of these experiments will be to identify best disease management approaches for producing wheat and barley in the Minnesota Red River Valley and to determine if strategies are economically sustainable for producers.

This project addresses research priorities in the FHB Management research area that are focused on supporting research to "reduce FHB severity and DON in harvested grain to meet the immediate and long-term needs of the wheat and barley industries." Specifically, this research addresses two research priorities: i) enhance communication and end user education/outreach, and ii) develop a full understanding of specific environmental and biological factors influencing infection and toxin accumulation.