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Project Title: Developing Practical and Economic Disease Management Strategies for FHB in MN.

PROJECT 3 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 experiment sites within the Red River Valley representing different agroecosystems. Experiment locations near Fisher and Crookston are expected. Commercial production fields will be selected whereby sugar beet or wheat residues are present. A total of six spring wheat cultivars with varied levels of FHB disease resistance will be tested. Field test organization will be a split-plot design with four replicates where fungicide treatment is the main factor and cultivar is the sub-factor. Fungicide treatments will consist of a nontreated control and Prosaro which will be applied at early-flowering (Feekes 10.51).

The objectives of these experiments will be to: 1) identify best disease management approaches for producing wheat in the Minnesota Red River Valley, and 2) determine if strategies are agronomically and 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.