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**Project Title: Investigating Ways to Improve Current Management Strategies for FHB on Wheat and Barley.**

## PROJECT 1 ABSTRACT

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Reducing crop losses caused by Fusarium head blight (FHB) continues to be a challenge. The disease affects the entire agricultural community in the Red River Valley because it reduces grain yields, increases kernel damage, and produces mycotoxins. Producers commonly have less grain to sell and/or a less valuable crop after a FHB epidemic occurs.

FHB of small grains develops when complex interactions occur between susceptible host plants, the environment, and populations of pathogenic *Fusarium* spp., specifically *F. graminearum*. With an increased focus on mycotoxin content of grain, we can expect gaps in our applied knowledge since much of our information is based on FHB symptom development. Disease management research is needed in field environments where interactions and complexities can be identified, measured, and recorded.

This project will investigate interactions between *Fusarium* spp., small grains plant hosts, in-field residue and fungicide application. Our research is focused on answering two disease management questions. Preliminary Minnesota data indicate that a single fungicide application of strobilurin fungicide made immediately prior to plant heading contributes to increased DON content in grain of some susceptible wheat cultivars. Fungicide applications are often made by producers to control common leaf diseases such as tan spot (*Pyrenophora tritici-repentis*) and the rusts (*Puccinia triticina* and *P. striiformis*). Our comprehensive study will determine if fungicide applied on wheat or barley cultivars with different FHB tolerance levels and at alternative growth stages affects DON concentration in grain. Our second objective is to participate in the first annual uniform Integrated Management Strategies trial. We will be testing six wheat cultivars in two different environments under separate FHB management strategies to determine the best disease management practice for each cultivar per environment.

Research conducted in the field continues to play a crucial role in obtaining real world data in identifying complex interactions between FHB fungi, susceptible hosts, and the environment. The information resulting from this project will benefit growers, those responsible for making disease management recommendations, millers, maltsters, brewers, bakers; in short, the small grains industries.