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Project Title: The Targeting of Residues as a Management Strategy for FHB of Wheat and Barley.

PROJECT 2 ABSTRACT

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Fusarium head blight (FHB) of wheat and barley continues to be a serious problem in the U.S. and Canada. The most effective management of this disease occurs when an integrated approach is taken that combines a resistant variety, appropriately timed fungicide application, and the management of in-field inoculum. However, the currently available tools are not feasible in all situations, nor completely effective at limiting disease or mycotoxin accumulation in grain; therefore, additional strategies need to be investigated in order to reduce the impacts of this disease on wheat and barley production.

It is well documented that cereal residues (especially corn) are the primary source of inoculum for this disease. If producers were able to manage residues in such a way as to reduce fungal survival and/or inoculum production, the frequency and severity of FHB epidemics and/or deoxynivalenol contamination of grain might be effectively reduced. Research is proposed that investigates the influence of 'physical' and 'biological' treatments on colonization of cereal residues by microorganisms (including *Gibberella zeae*), FHB severity, and DON. Residues of corn, wheat, and/or barley will be harvested normally, further chopped, or buried. Additional treatments of biological control agents, fungicides, or compounds that are known to increase microbial activity (e.g. urea), will be applied to sub-plots of these residues. Wheat or barley will be planted into these plots and evaluated for FHB severity and deoxynivalenol (DON) contamination of the grain. Additional studies attempting to identify candidate biological control agents will also be conducted. We expect that further processing of cereal residues, alone and in combination with other treatments, will reduce disease severity and DON.

The objective of this proposal is directly relevant to the goals and priorities of the USWBSI, and specifically the MGMT RAC, in that it attempts to identify additional tools that could be incorporated into an integrated approach to reduce disease and mycotoxin accumulation (Develop the next generation of management tools for FHB/DON control). Additionally, this project also evaluates a novel use of Biological Control agents by measuring the impact of these treatments upon *G. zeae* already present in plant residues.