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Project Title: Preharvest Management Strategies in Barley to Reduce FHB and DON.

PROJECT 1 ABSTRACT

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Fusarium head blight (FHB) has reduced the quality of barley grown in the midwest for the last decade due to fungus infected kernels, pinched grain and the presence of the toxin, deoxynivalenol (DON). Individual cultural and chemical control measures have reduced disease, but have been unsuccessful in getting the level of control necessary for the requirements of the malting barley industry. Production of malting quality barley in this region will require an integrated approach to control of FHB and DON which includes cultural practices, fungicides, and genetic resistance.

The aim of this project is to investigate FHB and DON in barley after use of pre-harvest desiccant herbicides and swathing to speeding maturity of the crop and reduce losses due to lodging and head shattering.

As Fusarium is both a pathogen and saprophyte and is favored by warm temperatures and high humidity the act of swathing a crop could result in an increase in Fusarium levels during the latter stages of crop maturity. As rainfall during grain ripening and maturity are variable between years, simulated rainfall will be achieved by irrigation and rainout canopies over the swath. The amounts of simulated rainfall quantity and frequency will be calculated by analyzing historical rainfall patterns at each trial site. DON, visual infection and microbial analyses will be done on the treatments.

Unexpected effects from combinations of disease and herbicides have been reported for decades so that the reports on herbicide-disease interactions with FHB and glyphosate require critical experimentation to verify their validity. A range of herbicides registered for use as pre-harvest desiccants will be tested over the range of recommended growth stages. Susceptible and moderately resistant cultivars will be tested under a range of environmental conditions. The crop will be assessed for DON, visual infection, microbial analysis and important; yield and quality components.

The outcome of this project will be a series of management recommendations for industry on the use of pre-harvest desiccant herbicides and swathing and their impact on FHB and DON in barley.