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PROJECT 2 ABSTRACT

(1 Page Limit)

Reducing the damage caused by Fusarium head blight (FHB) is a major goal of the U.S. Wheat and Barley Scab Initiative and of vital importance to wheat and barley producers. While FHB resistant varieties are certain to play a major role in the control of damage from FHB, the most likely way to minimize economic losses due to FHB will be through the integrated use of resistant varieties and management. The objective of this experiment is to examine the effectiveness of genetic resistance and fungicide application singly and in combination in reducing FHB symptoms, Fusarium damaged kernels (FDK) and deoxynivalenol (DON) under heavy disease pressure. We will grow this experiment in our mist-irrigated, inoculated nursery so that the level of disease pressure should be severe. Many of the varieties and breeding lines included in this experiment are high yielding and are in commercial production. The three treatments applied to all of the varieties will be: no fungicide, Folicur[®] (tebuconazole), and Prostaro[®] (prothioconazole + tebuconazole). We will use a split-plot design with fungicide treatment as the main plots, and use four replications. We will also place buffer plots between fungicide treatments and thus further minimize undesirable effects due to spray drift. Six FHB susceptible varieties and six FHB resistant varieties or breeding lines will be included in the experiment. The plots will be managed for high yield potential. A fungicide will also be applied to all of the plants at Feekes GS 8 (last leaf just emerged) to control foliar diseases and thus minimize confounding the yield effects due FHB control with effects of foliar diseases. Grain spawn (corn kernels cultured with the fungus that causes Fusarium head blight) will be used to inoculate the nursery which will be mist-irrigated during flowering. A grain sample from each plot will be sent to the DON evaluation lab at the University of Minnesota for determination of the DON level. This experiment will provide data to address the question if either current levels of genetic resistance or fungicide application are able to provide enough protection to minimize losses due to FHB under heavy disease pressure. This experiment will also provide data to determine if strong genetic resistance and fungicide application in combination can provide better protection from losses due to FHB than either provides alone. Excellent data were collected from this experiment in 2008, and the experiment has been planted to collect data in 2009.