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Research Category: MGMT

Duration of Award: 1 Year

Project Title: Integrated Management of FHB in Arkansas.

PROJECT 1 ABSTRACT

(1 Page Limit)

No single strategy consistently provides adequate control of FHB when disease pressure is high. A field experiment will be conducted at the U of A Vegetable Substation near Kibler, AR, to determine the effects of variety resistance and fungicide application on FHB and DON accumulation in soft red winter wheat. This location is in the Arkansas River Valley where FHB has been a more consistent problem in commercial fields compared to other regions in Arkansas. The design will be a split-plot, with four varieties having a range of resistance to FHB [26R22 (VS), Coker 9553 (S), Oakes (MS), and Progeny 166 (MR)] as the whole-plots, and a 2 x 2 factorial of inoculation (inoculated or not) and fungicide (Prosaro or not) as the sub-plot. Each plot will be 5 ft x 17 ft. There will be four or more replicates. Each plot will be bordered on the sides with a 5-ft-wide strip of wheat to reduce interplot interference. The plots will be managed according to the standard agronomic practices for wheat in Arkansas, except that enhanced controls for BYD will be used. Plots to be treated will be sprayed with Prosaro (6.5 fl oz/A + 0.125% Induce) at early anthesis (Feekes GS 10.5.1) for each variety using a sprayer equipped with paired flat fan XR8001 nozzles, mounted at an angle (30° from the horizontal) forward and backward and calibrated to deliver at a rate of 20 gallons per acre. The plots to be inoculated will be inoculated with a spore suspension (approx. 50,000 macroconidia/ml and 20 gallons per acre) 2 days after the fungicide application for each variety. A mixture of DON-chemotype isolates of *Fusarium graminearum* from Arkansas will be used for inoculum.

At the soft dough growth stage (Feekes 11.2), FHB severity will be determined visually for each plot, and 50 heads per plot will be harvested at random and rated for incidence and diseased head severity in order to calculate the FHB index. The severity of other diseases present will be recorded as the percentage of flag leaf area diseased. Plots will be harvested with a plot combine, and yield and test weight determined. Grain from all plots will be rated to determine the percentage of *Fusarium* damaged kernels (FDK). Grain samples will be sent to the USWBSI-funded DON Testing Lab in Minnesota for DON analysis. Data will be analyzed and sent to the coordinator of this CP. The outcome of the coordinated project will provide science-based information for making FHB management recommendations to wheat growers.