

**PI: Pierce Paul****PI's E-mail: [paul.661@osu.edu](mailto:paul.661@osu.edu)****Project ID: FY09-IM-043****FY09 ARS Agreement #: 59-0206-9-071****Research Category: MGMT****Duration of Award: 1 Year****Project Title: Integrated Control and Harvesting Tactics to Minimize FHB/DON Losses in SRWW.****PROJECT 2 ABSTRACT**

(1 Page Limit)

Fusarium Head Blight (FHB) continues to be a concern in many wheat and barley production regions of the world. Under favorable weather conditions, no single management practice has been fully effective against FHB and DON. Experiments will be conducted in Ohio, as part of a series of uniform integrated management trials involving researchers from major wheat-growing regions in the US, with the goal of evaluating the efficacy of integrating multiple management strategies to reduce losses due to FHB and DON. The specific objective is to evaluate the integrated effects of fungicide, biocontrol agent, and variety resistance on FHB and DON. This objective will address the MGMT research priority of validating integrated management strategies for FHB and DON. The experimental design will be a split-plot with 6 replicate blocks. In each block, there will be three whole plots, one treated with Prosaro (6.5 fl oz/A + 0.125% Induce) or Proline 3+3 (a tank mix of Folicur and Proline, each at 3 fl. oz/A + 0.125% Induce), one treated with a biocontrol agent (*Cryptococcus flavescens* strain OH 182.9) and the other left untreated. Each whole plot will be subdivided into sub-plots to which six SRWW cultivars with different levels of resistance to FHB ("Cooper" and "Pioneer 25R47", susceptible; "AG101" and "Hopewell", moderately susceptible; and "Truman" and "McCormick", moderately resistant) will be randomly assigned. A single fungicide application will be made on the time of early anthesis (Feekes GS 10.5.1) for each cultivar using a sprayer equipped with paired Twinjet or 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. Biomass of strain OH 182.9 will be produced, quantified, and handled at NCAUR, USDA-ARS laboratories in Peoria, IL. Frozen biomass of OH 182.9 will be thawed in a refrigerator 24 hours prior to being applied and applications will be made at Feekes GS 10.5.1 at a rate of 20 gal/acre at 40 psi. Following treatment application, all plots will be spray-inoculated with a spore suspension of *Fusarium graminearum* (1:1 mixture of ascospores and macroconidia) at a concentration of  $2.5 \times 10^4$  spore/mL. FHB intensity will be assessed by examining 20 spikes at five arbitrarily selected sites in each plot at the soft dough growth stage (Feekes 11.2). At each assessment, FHB severity will be determined visually for each sub-plot, and incidence, diseased head severity, and index calculated. The presence and flag leaf severity (as a percentage) of any foliar diseases will also be determined. Plots will be harvested with a plot combine and yield and test weight determined. Grain samples from all plots will be rated to determine the percentage of Fusarium damaged kernels and subsamples will be sent to one of the USWBSI-funded DON Testing Laboratories for DON analysis. Data from this and similar experiments conducted as part of the MGMT CP will be combined and analyze to determine the overall efficacy of integrating resistance and fungicide for FHB and DON control.