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Project ID: FY14-IM-013

ARS Agreement #: New Agreement (Expiring Agreement # 59-0206-9-071)

Research Category: MGMT

Duration of Award: 1 Year

Project Title: Robust Integrated Management Guidelines to Minimize Losses due to FHB in Ohio.

PROJECT 1 ABSTRACT

(1 Page Limit)

The specific objectives of this study are to *1) Evaluate the integrated effects of fungicide and genetic resistance on FHB and DON, with emphasis on different application timings and new genotypes and 2) conduct a comparative assessment of Prosaro and Caramba for post-anthesis application in FHB and DON integrated management programs.* To accomplish these objectives, two separate field experiments will be conducted. For experiment 1, the design will be a randomized complete block, with a split-split plot arrangement of cultivar as whole plot (two moderately resistant [Truman and Malabar], one moderately susceptible [Bromfield] and one susceptible [Hopewell] SRWW cultivars) and fungicide treatment as sub-plot (application of Prosaro at 6.5 fl oz./acre + 0.125% NIS at anthesis and at 2, 4 and 6 days after anthesis). In experiment 2, the design will be a randomized complete block, with a split-plot arrangement of cultivar (Malabar and Hopewell) as the whole-plot, fungicide (Caramba and Prosaro) as sub-plot and application timing (an untreated check, plus applications at anthesis, and 2, 4 and 6 days after anthesis) as sub-sub-plot. There will be four replicate blocks in both experiments. FHB, DON, FDK, yield, and test weight data will be collected and analyzed to determine the effect of fungicide treatment (product, rate and application timing), cultivar resistance, and their interaction on each of the measured response variables. Data from both experiments will be combined with data from other MGMT CP experiments, and a technique called meta-analysis will be used to conduct a quantitative synthesis of the effect of integrated management on FHB, DON, yield, and test weight. The influence of study-specific characteristics (wheat type, weather conditions, residue levels, cropping sequence, and FHB and DON levels) on percent FHB and DON control will be determined. In addition, data from all experiments will be used to conduct an economic analysis of FHB/DON management. Ultimately, the most effective and economically sound combinations of cropping practice, fungicide treatment, and cultivar resistance strategies for minimizing losses due to FHB/DON in each region and grain class will be determined. These practices will be recommended to producers and other stakeholders by way of Scab Smart and extension programs. The proposed research will also generate data to advance the FHB and DON risk prediction effort. This project directly addresses the **FY14-15 Management Research Priority to: “Develop integrated management strategies for FHB and mycotoxins that are robust to conditions experienced in production fields of wheat.**