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**Project ID: FY14-IM-006**

**ARS Agreement #: 59-0206-2-085**

**Research Category: MGMT**

**Duration of Award: 1 Year**

**Project Title: Integrating Strategies to Mitigate Fusarium Head Blight and DON in Winter Wheat.**

### **PROJECT 1 ABSTRACT**

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This project is part of a multi-state cooperative integrated management effort on Fusarium head blight (FHB, scab) of wheat caused primarily by *Fusarium graminearum*. The overall goal of the project is to use an integrated approach to more effectively manage FHB and deoxynivalenol (DON). The specific objectives are to 1) investigate the effect of fungicide (Prosaro = tebuconazole + prothioconazole) application timing and cultivar resistance on FHB/DON in winter wheat, 2) demonstrate that integrating two or more strategies works better than applying a single strategy, 3) collect data to be used in a quantitative synthesis of the integrated effects of fungicide and resistance on FHB/DON and the influence of region-specific factors on the overall efficacy of integrating genetic resistance and fungicide application, and 4) collect environmental data which will be used to support the modeling efforts of the epidemiology/disease forecasting group. To accomplish these objectives, four locally adapted winter wheat cultivars differing in levels of FHB resistance will be planted. The cultivars are Overlay (susceptible), McGill (moderately susceptible), Overland (moderately resistant) and Everest (moderately resistant). Each cultivar will be subjected to the following treatments: 1) Non-fungicide treated, spray-inoculated with spores of *F. graminearum* 24-36 hours after early anthesis, 2) sprayed with the fungicide Prosaro at early anthesis, spray-inoculated with spores of *F. graminearum* 24-36 hours later; 3) sprayed with Prosaro two days after early anthesis, spray-inoculated with spores of *F. graminearum* 24-36 hours later; 4) sprayed with Prosaro four days after early anthesis, spray-inoculated with spores of *F. graminearum* 24-36 hours later; 5) sprayed with Prosaro six days after early anthesis, spray-inoculated with spores of *F. graminearum* 24-36 hours later; and 6) non-sprayed, non-inoculated check. FHB incidence and severity will be visually evaluated at the soft-dough growth stage. At harvest, yield data and the percentage of visually scabby kernels will be recorded, and samples will be analyzed for DON content. Environmental data will be recorded with an automated weather station. These data will be furnished to the epidemiology/disease forecasting group for use in developing FHB/DON prediction models to be used as part of an integrated approach to managing FHB/DON. Project results will be disseminated through electronic and print media and presentations at field days.