PI: Grybauskas, Arvydas **PI's E-mail: arvydas@umd.edu**

Project ID: FY07-GR-005 **FY06 ARS Agreement #: 59-0790-4-103**

Research Area: **CBCC** **Duration of Award: 1 Year**

Project Title: Integrated Management of Fusarium Head Blight in Maryland.

PROJECT 1 ABSTRACT

(1 Page Limit)

Fusarium head blight (FHB) caused by *Gibberella zeae* (anamorph, *Fusarium graminearum*) is a disease that cannot be easily managed using single tactics. There have been significant advances made in the development of resistant cultivars and the discovery of effective fungicides. These tactics represent two of the most direct means that a producer can use to manage plant disease. However, in both cases the tactics when used alone have not resulted in acceptable levels of management, especially when severe FHB epidemics develop. This proposal seeks to examine the potential for combining currently available cultivars with varying levels of resistance with the most effective fungicide to determine to what extent the combination can reduce the severity of the disease. This project will be part of a multi-state, multi-year study that has an additional objective of validating and refining the warning system that attempts to forecast disease severity to help producers decide on fungicide need. This Maryland component will select cultivars of soft red winter wheat that are adapted to the Mid-Atlantic region and are of typical maturity (flowering dates) of cultivars grown in this region. The main experiment will consist of 4 cultivars. Three cultivars, 'Bess', 'Coker 9511' and 'McCormick' have some resistance, and 'Chesapeake' is a new well-adapted high-yielding cultivar that is susceptible to FHB. The experimental design is a 6 replicate split-plot with cultivar as the main plot and fungicide treatment as the subplot. The fungicide treatment has been standardized for all cooperators in the multi-state trial and will be Prosaro. Prosaro has been the best fungicide in the USWBSI uniform fungicide trial in the past 4 years. It is registered in Europe and efforts are being made to get full registration in the US. The experiment will be repeated at multiple locations within the state and in different crop residues (corn or soybean), representative of typical practices in the region. An additional version of the experiment will be conducted with artificial inoculation. This version will be separate from the uninoculated trials to ensure that only natural inoculum affects the standard set. The inoculated version is needed to ensure that efficacy data on the combined effect of treatments can be obtained for our region. In Maryland, severe epidemics develop naturally, but are not guaranteed annual events and may not be as frequent as in other regions of the US. It is important that local data be obtained because testing with cultivars, practices and environments that occur in the region will provide the most direct evidence and basis for local grower acceptance of the integrated approach. These plots and the data will be used in field day presentations and at Extension meetings to demonstrate the effectiveness of the practices.

The specific objectives are thus:

1) Evaluate the effectiveness of integration of cultivar resistance with fungicide management on Fusarium Head blight of soft red winter wheat.
2) Provide weather, cultivar development and disease data to cooperators working on validation and modification of the forecast system to ensure applicability to mid-Atlantic production systems.
3) Demonstrate integrated management effectiveness to Maryland producers and thus help reduce losses to FHB.

These project objectives are all specifically stated goals of the USWBSI.