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PROJECT 1 ABSTRACT

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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 since the outbreaks in the 1990's. These tactics represent two of the most direct means that a producer can use to manage this 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 is testing cultivars of soft red winter wheat that are adapted to the Mid-Atlantic region and are of typical maturity (flowering dates) for this region. The main experiment will consist of 4 cultivars. Three cultivars, 'Bess', 'Coker 9511' and 'McCormick' have at best moderate resistance, and 'Chesapeake' is a new well-adapted high-yielding cultivar that is susceptible to FHB. The fungicide treatment has been standardized for all cooperators in the multi-state trial and will be a combination of the active ingredients prothioconazole and tebuconazole. This combination has been the best treatment 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 two locations within the state and in two different crop residues (corn or soybean) at each location, representative of typical rotations in the region. An additional trial will be conducted with artificial inoculation and irrigation. The inoculated and irrigated trial is included as a demonstration tool in the event disease development in the main trials is low. In Maryland, severe epidemics develop naturally, but because flowering occurs when temperatures and moisture patterns are highly variable epidemics do not always develop. 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.