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PROJECT 2 ABSTRACT
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The central goal of the cooperative epidemiology group, consisting of researchers at PA, OH, IN, ND, and SD, is to provide growers and agricultural industry with timely and reliable disease predictions for Fusarium head blight. The efforts of this cooperative project have already produced two forecasting models that are currently being used in at least nine states, and a second generation of models is nearing completion. These new models appear have increased the accuracy of forecasts based on pre-flowering weather variables by 10% (70% to 80%).

We propose here that further improvements in model accuracy should be possible when variables describing the relationship between inoculum and weather are more fully integrated into the model. To accomplish this goal we propose to use replicated field plots to investigate the role of inoculum density and weather in the development of disease epidemics. We will also evaluate the role of environment in the development of *G. zeae* perithecia under controlled and wheat field conditions. Results of these objectives will be incorporated into the prediction models for FHB. In addition, we propose to initiate a modeling effort that will specifically target Deoxynivalenol (DON) contamination in barley and wheat. This effort will use existing data to either adjust the parameters of the existing forecasting model or to develop entirely new models that can be used to predict both disease and DON levels.

Penn State will continue to work closely with members of the cooperative epidemiology group to achieve our mutual goals. We will continue to contribute to this effort by coordination of data compilation and analysis. We are confident that this cooperative effort will continue to improve the accuracy of disease forecasts that the results can be used to more effectively manage Fusarium head blight of wheat and barley.