

0203-AN-089 Determination of Wetness Duration Using Radar-Derived precipitation Estimates: FY2002.

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PROJECT ABSTRACT

Fusarium head blight (FHB) of small grains tends to be associated with certain environmental conditions, especially rain-induced wetness periods occurring near anthesis. The weather radar system deployed by the National Weather Service during the past decade, NEXRAD, provides estimates of precipitation in 4 km grid cells across an area of 230 km radius surrounding each of the radar sites, a spatial resolution not previously attainable for precipitation. A Geographic Information System-based model simulation which incorporates the NEXRAD precipitation estimates into a crop canopy energy balance-based scheme to estimate wetness duration periods for small grains on the 4 km spatial scale has been developed and initially tested, with promising results. Errors found in the data analyzed during the first year of this project with Michigan data were less pronounced than previous studies, with 93.9% of the precipitation-hours correctly classified and an overall mean bias of precipitation amounts of less than +0.1 mm. This method of monitoring wetness duration over large areas should enhance the ability of researchers to correlate specific weather data with the occurrence of FHB epidemics in specific areas, and ultimately allow producers and processors of small grains to make decisions critical to the management and use of grain during epidemics. Primary objectives for the second year of the project include continued development and testing of reliable, unbiased NEXRAD-derived precipitation estimates on a 4km resolution grid on an hourly basis, wetness duration estimates for wheat on the same temporal and spatial scales, and a field study of rainfall interception rates in wheat canopies.