

Impact of Foliar Fungicide on Corn under Induced Drought Stress

Author: Matthew J Osterholt

Co-Presenters:

Major: Sustainable Plant Systems

Research Advisor: Alexander Lindsey

Since 2007, over 20 percent of the corn (*Zea mays* L.) hectares across the Midwest received an in-season foliar fungicide application. Along with protecting plants against fungal pathogens, agrichemical companies claim that fungicides may improve plant tolerance to abiotic stress. The objective of this project was to evaluate the impact of a commercial fungicide (prothioconazole + trifloxystrobin) on corn growth and development in the presence and absence of drought. A greenhouse experiment was conducted from October through December 2015 in Columbus, OH. Pioneer corn hybrid P0965AM1 was planted in three gallon, plastic pots, and received one of four fungicide treatments (none, or application at V4, V6 or V4 and V6). Half the plants in each fungicide treatment were exposed to a 15-day drought event beginning at V8. Height, relative chlorophyll content, and leaf stage were measured weekly, and biomass and yield potential was determined at R1 growth stage. Plant biomass was greater in the non-drought plants over the drought plants (109.7 g and 96.6 g, respectively), which may be attributed to a delay in growth caused by the drought event. Fungicide treatment did not influence plant biomass. Yield potential was similar for fungicide treatments, and was greater for plants under drought due to an increased number of kernel rows (prior to V5) rather than a change in kernels per row (determined after V6). The fungicide application did not improve relative chlorophyll content, biomass, or yield potential of plants exposed to the drought event. This study will be repeated in time to validate the observed results.