MODELING HEAT STRESS FOR COTTON IN THE HUMID SOUTHEAST USING AIR TEMPERATURE AND VAPOR PRESSURE

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Abstract

Studies have shown that heat stress on cotton can result in numerous negative effects on the crop. These include reduced lint yields, reduced lint quality and altered crop maturity. The ability to forecast heat stress during the growing season would give producers the opportunity to make management decisions that might lessen the negative impacts of heat stress on their crops. The plan of work for this project will involve testing a model developed by Paul Brown for Arizona in which he used air temperature and vapor pressure to predict canopy temperature. The canopy temperatures were then used to calculate what he referred to as Heat Stress Units (HSUs). We will coordinate with John Snider of UGA to obtain canopy temperature data he recorded for the 2013 season at Stripling Irrigation Research Park in Camilla, Georgia to test the model's applicability to southern Georgia (humid southeast). If the model can be used, then we will also test it in a drier/hotter environment, and then apply temperature forecasts to predict canopy temperature and thus HSUs. If the model is not a good fit, then we will work to develop a more suitable relationship for the data.