MODERN GEOSPATIAL TECHNOLOGIES FOR COTTON IRRIGATION MANAGMEMENT

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Abstract

Several geospatial technologies are now available for applications in precision cotton irrigation, including soil property mapping, remote imaging from drones, spatial crop evapotranspiration modeling, and site-specific irrigation application technology. However, the potential contribution of different geospatial technologies toward improving crop production and water use efficiency remains unclear. The objective was to determine agronomic outcomes using a cascade of increasingly complex geospatial technologies to assist cotton irrigation decisions and applications. The four treatments from least to greatest complexity were 1) an FAO-56 water balance model with field-average soil data, 2) #1 applied geospatially with site-specific soil information, 3) #2 with FAO-56 basal crop coefficients (Kcb) estimated from weekly drone images, and 4) #3 with irrigation applications via commercial, map-based, site-specific irrigation technology. Results on irrigation amounts, yield, and water use efficiency will be presented for field investigations during the 2019 and 2020 cotton seasons at Maricopa, Arizona.