

USING GIS TO ESTIMATE THE IMPACT OF THE CONSERVATION TILLAGE PRACTICES IN GEORGIA

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ABSTRACT

Surface residue management coupled with conservation tillage is a viable management tool for producers in the Coastal Plain region of Georgia. Reduced tillage and residue management improves infiltration and sedimentation, organic carbon sequestration, and plant available water. Yet, there is a general lack of knowledge regarding the regional impact conservation tillage has on water resources and sustainable agricultural practices. The objective of this study was to estimate water savings associated with conservation tillage in two predominant physiographic regions in Georgia. Total acreages by crop (cotton and corn) and tillage (conventional and conservation) were obtained via the Conservation Tillage Information Center (CTIC) for 2004. The CTIC provides estimates of tillage and residue management practices on a county basis. Currently available data regarding the impact of tillage regime on plant available water content was obtained via recent field scale rainfall simulation studies conducted in the Coastal Plain and Piedmont physiographic regions. Rainfall simulations were conducted during minimal canopy cover, using an oscillating nozzle rainfall simulator at a constant intensity (50 mm hr⁻¹). Previous rainfall simulation study results indicate that conservation tillage can improve plant available water contents by 30-50 %. Rainfall simulation data will be integrated with county level tillage estimates in a geographic information system and used to evaluate the potential water savings (as irrigation) that is attributable to adoption of conservation tillage.