

Applied Irrigation Demand: A Comparison of Theoretical Crop Irrigation Demand to Metered Irrigation Water Use

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Reference: McDowell RJ, CA Pruitt, RA Bahn (eds.), *Proceedings of the 2015 Georgia Water Resources Conference*, April 28-29, 2015, University of Georgia, Athens.

Abstract. Spatial and temporal distribution of agricultural withdrawals is essential to understanding and managing water resources. For the Apalachicola-Chattahoochee-Flint (ACF) River basin pilot study of the National Water Census, methods to estimate agricultural water use were developed. One method estimates agricultural water use using a demand-based approach that assumes only enough water is pumped onto a crop to satisfy the deficit between evapotranspiration and precipitation (theoretical crop demand). This method uses nationally available datasets, which are transferable to other geographic regions of agricultural production. A dataset of metered agricultural water use in the southeast part of the ACF River Basin was provided by the Georgia Agricultural Metering Program, a cooperative study between the Georgia Soil and Water Conservation Commission and the U.S. Geological Survey, for testing the validity of the theoretical crop demand method. Applied irrigation demand is defined as the difference between the theoretical crop demand irrigation rate and water actually applied to a field which is recorded through the metering program. This value was developed for major crop types throughout the growing season in the southeast part of the ACF basin.