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Agricultural water demand forecasts for predictions of surface water withdrawals in Georgia

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Abstract:

In much of the humid Southeastern US, agricultural irrigation grew with little regulatory oversight and little support for infrastructure or water development. Investments were made and water sources developed and used on individual farms. In areas where water supplies have made irrigation reliable and profitable, irrigation has grown. However, only recently have state regulators and planners begun to take a comprehensive look at the impact of current and projected future withdrawals on streams and river systems. Current Georgia water plans require an assessment of future agricultural water demand with enough specificity that regional water planners can anticipate when during the year water will be needed, what sources will be used for those withdrawals, and how much water will likely be used. Planning for withdrawals for this level of detail begins with an assessment of where current withdrawals are made. In creating this assessment we pulled maps from several sources, including the state's agricultural water metering effort, its water permitting records, and farmers themselves who identified many of their irrigated areas and water sources. Additionally, using 2007 aerial imagery, we identified additional irrigation systems that were not included on previous records. The result is a comprehensive baseline for irrigated fields. Each irrigated area was connected with a water source allowing determination proportion of withdrawals from surface and groundwater supplies by watershed and county. Since most installed irrigation in Georgia is done with systems that have a 20 to 30 year lifespan, these areas represent the most likely areas for future withdrawals. Our report outlines the procedures used in establishing the irrigation baseline and presents preliminary results for irrigated withdrawals from surface streams and ponds by watershed and county. Onto this baseline, future cropping patterns and probable irrigation amounts will be projected for agricultural water demand forecasts of the Georgia State Water Plan.

Impact Statement:

Georgia's state agencies including its Environmental Protection Division, Department of Agriculture, and Soil and Water Conservation Commissions have been charged with preparing assessments of the state's water resources, current and future users, and quantities of water that will be demanded in the future to sustain the state's economy. The University of Georgia College of Agricultural and Environmental Sciences has been asked to develop an assessment of future water needs that will sustain the preeminence of Georgia's $92 billion agriculture economy. The results of this and other state water assessments will be supplied to the eleven Regional Water Planning districts recently created in the state.

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