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Land Use and Land Cover Mapping for Watershed Scale Evaluation of Agricultural Practices

The Southern Coastal Plan is an agriculturally intensive area where general land use practices are row crops and forestry. Land use and land Cover (LULC) for row crops is much more volatile than silviculture and can have a larger and more frequent impact on the hydrologic characteristic of a watershed. Tracking LULC changes on a monthly or semi-monthly time scale can help evaluate the effectiveness of Best Management Practices and the total impact on the hydrologic characteristics in a watershed. This study was conducted as collaboration between the Flint River Water Planning and Policy Center at Albany State University and the USDA-ARS Southeast Watershed Research Lab (SEWRL). The objectives of this study were to developed methods to create LULC maps on a semi-monthly to monthly time scale from airborne imagery; and develop a schema for detecting changes in LULC using accepted photogrammetry techniques. Airborne imagery of the 130 square mile Little River Experimental Watershed (LREW) in south-central Georgia was collected using an aircraft mounted SpectraView„µ Multi-Spectral Imaging System. LULC were classified using techniques including change detection and supervised image classification. Monthly land use surveys in three sub-watersheds were being used to provide additional ground cover information and assess the accuracy of derived land use maps. This will allow additional LULC classifications as to active growing crop, crop residue cover, and tillage practices. These classifications can be linked to conservation practices as well as stream gage and precipitation stations at each of seven sub-watersheds. These LULC maps can be used to calibrate watershed models. Most importantly, data will provide policy makers with the most accurate information regarding the agronomic and economic effects of conservation practices within a southern Coastal Plain watershed.

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