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Estimating Pine Basal Area Using Landsat Thematic Mapper Satellite Images

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Abstract

The total land area in Georgia classified as timberland¹, in 1997, was 23.8 million acres, a 1% since 1989. Almost 72% of these 23.8 million acres were classified as non-industrial private lands (NIPL) - land owned by private citizens, not industry or the state. The percent land owned by NIPL increased by 6% between 1987 and 1997. Four million, nine hundred thousand acres of timberland in 1997 were on industrial private lands (IPL) - land owned by industry, a 17% since 1989 (Thompson, 1997).

Several trends are evident in these statistics. First, the amount of land in Georgia that has trees growing on it did not significantly increase in the period between 1989 and 1997. Second, there was a decrease in the amount of land to which timber companies can access easily (industrial private lands), while the amount of forested land owned by private citizens increased.

This shift in ownership of timberlands, from companies to private landowners, has impacted the way timber companies procure timber. Several decades ago, most timber companies had a large timber-base, and the procurement foresters could search the company database to locate quality timber within the company's ownership. Now, since many of the fore-mentioned company lands have been sold to private landowners, procurement foresters must locate quality stands off site. Today, these foresters rely on word-of-mouth and time consuming conventional methods such as aerial photo interpretation.

Timber companies are always looking for ways to increase the productivity of their foresters. A company benefits in several ways when employee productivity increases. First, and most importantly, the increased efficiency gives them an advantage over other

competing forestry companies. Second, the company saves money because the forester is working more efficiently.

To aid procurement foresters in locating quality pine timber, we incorporated the use of Landsat Thematic Mapper satellite images into our search for quality pine stands. From these images, we can quickly locate good pine stands in approximately 8.5 million acres. A 9-inch by 9-inch, 1:15,840 aerial photograph covers only 3,200 acres. This paper will contain the background and methods used to put satellite imaging to work for the procurement forester.