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MONITORING REGIONAL WOOD SUPPLIES WITH LANDSAT CLASSIFICATION AND A GEOGRAPHIC INFORMATION SYSTEM

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Abstract

This paper will show "timbershed" analysis, a technique currently being developed by St. Regis Paper for monitoring regional wood supplies. The purpose of the system is to provide management with a comprehensive evaluation of the timber resources surrounding an existing or potential wood processing facility. Evaluations include detailed information regarding the volume and distribution of timber. Analyses can aid in making decisions regarding facility location or expansion, the effects of competition, or the identification of areas likely to benefit from intensive management.

Timbershed studies require compilation of a regional database for analysis by a geographic information system, (GIS). Input to the database consists of Landsat classifications and digitized maps representing the transportation network, land owners, and competitors. Timber resource information comes from classifications of Landsat imagery. Classifications can be verified, by computer, using St. Regis' existing inventory database. Since St. Regis maintains current inventory data on timberlands scattered throughout five Southeastern states, timbershed analysis can be conducted reliably anywhere in the Southeast with little additional fieldwork. Utilizing Landsat data will allow timber usage trends to be followed over a period of several years.

Using the GIS, the quantity and proximity of timber likely to be available to the facility can be estimated. After identifying the resource base, or timbershed, the information is combined with various economic parameters to derive projected wood costs. Typical economic factors considered include haul costs based upon the transportation network, competitive advantage/disadvantage, harvest costs, and open market stumpage prices.

Results and implementation problems drawn from a pilot study of a 72 by 27 mile area in Southwestern Alabama are illustrated and a comparison of classifications of Landsat and Thematic Mapper data as input to the data base will be shown.