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INTERNATIONAL SPACE YEAR

THE EVALUATION OF SATELLITE IMAGE MAPS IN A FOREST
MANAGEMENT DISTRICT IN NORTHERN SWEDEN; A
TECHNICAL AND ECONOMICAL ANALYSIS

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SUMMARY

The Swedish Space Corporation (SSC) has carried out a project applying remote sensing in forest management planning as a contribution to the International Space Year.

the project took form as a cooperative effort between Swedish Space Corporation and Mora Forest Management District of Stora Skog.

The objective of the project was to examine the technical quality and the economic aspects of an extensive use of satellite image maps for planning. A comparison with low altitude aerial photos have also been carried out.

The satellite image maps has proven to be an excellent foundation for planning of fertilization and represents a significant time saving device in field work.

The satellite image maps can be utilized for planning of cleaning as well. The time spent in field for planning of hardwood cleaning operations can be reduced with 50%, if satellite image maps are used as an aid in the inventory work.

The low altitude aerial photo has a superior ground resolution, but the satellite image map is a better instrument for updating of clear cuts and roads due to its high quality regarding geometry.

The satellite image map is produced with an exact scale and has an equivalent geometric resolution as maps based on orthophotos. Satellite image maps can be produced in any scale (i.e 1:10,000 and 1:20,000) The maps provide means to gain up to date information on current conditions in the forest.

A great advantage with the satellite image map is the availability of spectral information which facilitates colour production of maps. The satellite image map contains information from the near-infrared section of the spectrum, which provide considerable information for interpretation of vegetation.

The colour information lays the groundwork for the interpretation, but tones, patterns, texture, form, size and shadows add to the interpretation work. Keys have been prepared by SSC in previous projects, which have been used in the project. If satellite image maps are

combined with local knowledge, it is relatively easy to plan different actions on forest land such as cleaning, fertilization, harvesting, and delineation of stands for forest inventory.

Cost calculations, for an area where there would be a need of approximately 20 maps, indicate a price of 6900 SEK per map in scale 1:10,000 and 88500 SEK per map in scale 1:20,000. For smaller areas of dispersed land areas, it would result in a higher price.

The extensive use of satellite image maps is cost effective and the saving can in principle immediately justify the investments in maps.