Temporal Analysis of Landsat Data for Land Use Mapping

J.A. Shields
C. Goodfellow

Follow this and additional works at: http://docs.lib.purdue.edu/lars_symp


This document has been made available through Purdue e-Pubs, a service of the Purdue University Libraries. Please contact epubs@purdue.edu for additional information.
TEMPORAL ANALYSIS OF LANDSAT DATA FOR LAND USE MAPPING

J. A. SHIELDS
Agriculture Canada, Canada

C. GOODFELLOW
Canada Centre for Remote Sensing, Canada

Landsat digital data over a period of seven years was used to study the agricultural land use systems of an area in Central Saskatchewan. The study area is situated on the second step of the Great Plains Region about 300 km north of the Canada/U.S. border. It is dominated by Dark Brown and Black Chernozemic Soils on hummocky and undulating morainal materials, although there is a small island of Gray Luvisolic Soils within the area. Local relief ranges from 2 m to 30 m with slope gradients from 2 to 32%.

General land use was mapped by township for the 1976-79 period. The land use classes, were derived by combining the most obvious spectral classes, water and bare soil, from each of the four years. Each year's data was geometrically corrected to the UTM projection to facilitate the mapping procedures. The resultant maps were verified with aerial photography of selected townships and then used to update the land use maps of the area.

Multitemporal analysis of individual farm holdings provided approximate areas of agricultural land use system components and crop rotation lengths. The dominant agricultural system in use in the region was one or two years of wheat or barley followed by one year of summerfallow. The two year rotation of fallow and grain shows a decline from 45% between 1973 and 1975 to 20% between 1976 and 1978. There is a consistent increase in the cultivation of rapeseed from 1973 to 1979, and continuous cropping is rarely practiced in the region.