Application of natural color and color infrared aerial photographs in evaluation of land use : Its change and impact of Sakaerat Environmental Research Station, Amphoe Paktongchai, Nakhon Ratchasima province

SUWIT ONGSOMWANG

Kasetsart University., 1986

ABSTRACT

Land use evaluation is a preliminary data that is necessary source for making policy and criteria for solving natural resource and their environmental impacts. This study is specific on its change and impact in the Sakaerat environmental Research Station (SERS) which is conducted by using natural and infrared color aerial photographs in 1983, 1:50,000 and 1: 15,000, with some ground truth in 1984. The main objectives of this study are to evaluate the existing land use, its change and impact in SERS. The results from this study will be used for land use planing and a master key for photointerpretation index of color photographs in the future.

The results of color test and ground resolution of two different scales aerial photograps showed that large of 1:15,000 color and color infrared photographs provide more details of land use classification than small scale of 1:50,000. Using two types of color aerial photographs at the scale of 1:15,000, land use of the study areas were classified into five categories as the follow : (1) urban and built-up land (institution, paved road, dirt road, track), (2) agricultural land (paddy field, Cassava field, fruit orchard, brush and grassland, grassland), (3) forest land (dry evergreen forest, deciduous dipterocarps forest, bamboo forest, forest plantation), (4) water boties (reservoir, stream), and (5) idle land (rock out crop, gravel and lateritic pits).

For land use changing, the comparision the results of Maninan et. al (1976) and this study, the result showed that in the past 23 years (from 1953 to 1976), the forest land was heavily cleared for agricultural purposes from 73.2823 square kilometer in 1953 to 39.7488 square kilomater in 1976. At present, clearing forest land for agricultural purposes is rarely occurred. Now, SERS can move illegal migrated people from inside SERS area outside SERS area. Evidence of the impact of SERS forest ecosystem show at the beginning that a biotic components of this ecosystem, forest and animals were decreased at alarming rate, but later after SERS had a good protection scheme, the situation is getting better. It was also found out that surface soil erosion occurred seriously at the beginning which caused the present axisting land use appear as a rock out crop on the middle and high slopes.

Land use planning is conducted in the study area. The area. The area suitable for agricultural land is at 0 - 25% slope about 4.90 km2 (6.06%), area that suitable for agroforestry activities is 22.21 km2 (27.40%), and area that should be reserved for natural forest is 53.93 km2 (66.54%). Interpretation keys such as tone, texture, shape and pattern of each land use categories that appeared on both normal color and color infrared photographs were also constructed.