Thesis Title   Physical Land Evaluation for Sustainable Development
                of Natural Resources and Agriculture : A Methodological
                Study Using Remotely Sensed Data and Geographic
                Information System

Author   Mr. Surachat Amornrattanasak

Thesis Advisory Committee

.... *C. Mongkolsawat* ....Chairman

(Assistant Professor Dr.Charat Mongkolsawat)

.... *P. Pramojanee* ....

(Dr.Paiboon Pramojanee)

Abstract

        The main objective of this study was to evaluate land
suitability for agriculture and to develop the plan for sustainability
of natural resources through the use of remotely sensed data and
GIS. The study area covers an area of approximately 460896 rai in
the upper Nam Phong catchment area. To develop a set of themes for
overlay analysis and ultimately to produce a map showing land units of
the study area, the land components affecting agricultural
productivity were reviewed. As a result, the themes used as data input
for GIS analysis included spatial information of terrain, slope
gradient, landuse/landcover and soil.

        The data input layers were organised thematically. The
thematic layers were assembled and collected from satellite data, soil
maps, topographic map and existing information. The overlay operation
was performed to formulate or find areas where a specified set of
conditions occurs together. The resultant map obtained 18 land
units with associated land types and soil characteristics. Added to
this, legal boundaries of forest reserves and watershed classes were

also included in the 'map. Each land unit was then matched to the land use requirement to produce land suitability for agriculture with respect to sustainability development of natural resources. The most extensive area is potentially low in agricultural use. To develop a sustainable plan of the area, measures for soil and water conservation, and fertility improvement techniques should be under taken. Moreover, forest reserves which are restricted to mountainous areas and high slope gradient are very important; on these disturbances should be prohibited.

GIS technology in combination with updated satellite data has proven to be the most reliable methodology for formulating spatial information. Information obtained could be used to identify problem areas and the methodology studied will enhance the understanding and analytical techniques for natural resources in terms of extent and spatial context.