

Chapter 5

CONCLUSION

Manual land evaluation is time consuming, tedious and error prone during the process of map delineation and matching land characteristics with land use requirement. The application of GIS during this process helps reduce these problems and enhance the analysis capability. In this study the diverse nature of data source requires different softwares including Microstation, Mapinfo and Idrisi to combine spatial data and attribute data for storage, processing and managing databases in GIS environment.

Natural conditions in Dinhquan are characterized by 5 major soil groups including Acrisol, Ferrasol, Luvisol, Gleysol and Andosol which occupy 63.42 %, 21.56 %, 13.71%, 0.77% and 0.54% total investigated area, respectively.

The assessment of existing land uses in Dinhquan district (2003) reveal that there is a transition between annual crops and perennial crops. The annual crops are gradually replaced by perennial crops because of high economic benefits and environmental policies in the study area. Annual crop production systems of the study area are basically a “low input-low output” system, which obviously may not be sustainable from economic and ecological perspectives because the production is decreasing over time due to reduced soil fertility.

For perennial crops, cashew area increased rapidly and occupied previous coffee growing areas because of limited soil condition and unstable market price. The economic return of cashew is not high but the investment is so low such that it attracts resource-poor farmers.

In this study, 77 LMUs were evaluated using their characteristics namely soil drainage, OM, pH, slope, soil depth and rainfall. Land characteristics were described,

analyzed and matched with land use requirement of selected land utilization types both in irrigated area and in rainfed condition.

Multicriteria evaluation was used for rating the land quality in each LMU. The value of land quality in each LMU was considered as factors that affect its suitability for each land use type. The constraints, for the utilization of the land were also incorporated in the analysis. The fuzzy membership function approach was useful to generate standardized factor maps. Combination of these factors and constraints could be achieved in GIS operation and the results were the suitability scores for each LMU that can be converted later into suitability classes.

Distribution of physical land suitability for irrigated rice-rice cropping system indicated that 40.7%, 30.5%, and 20.4% of total irrigated area were classified as S1, S2 and S3.

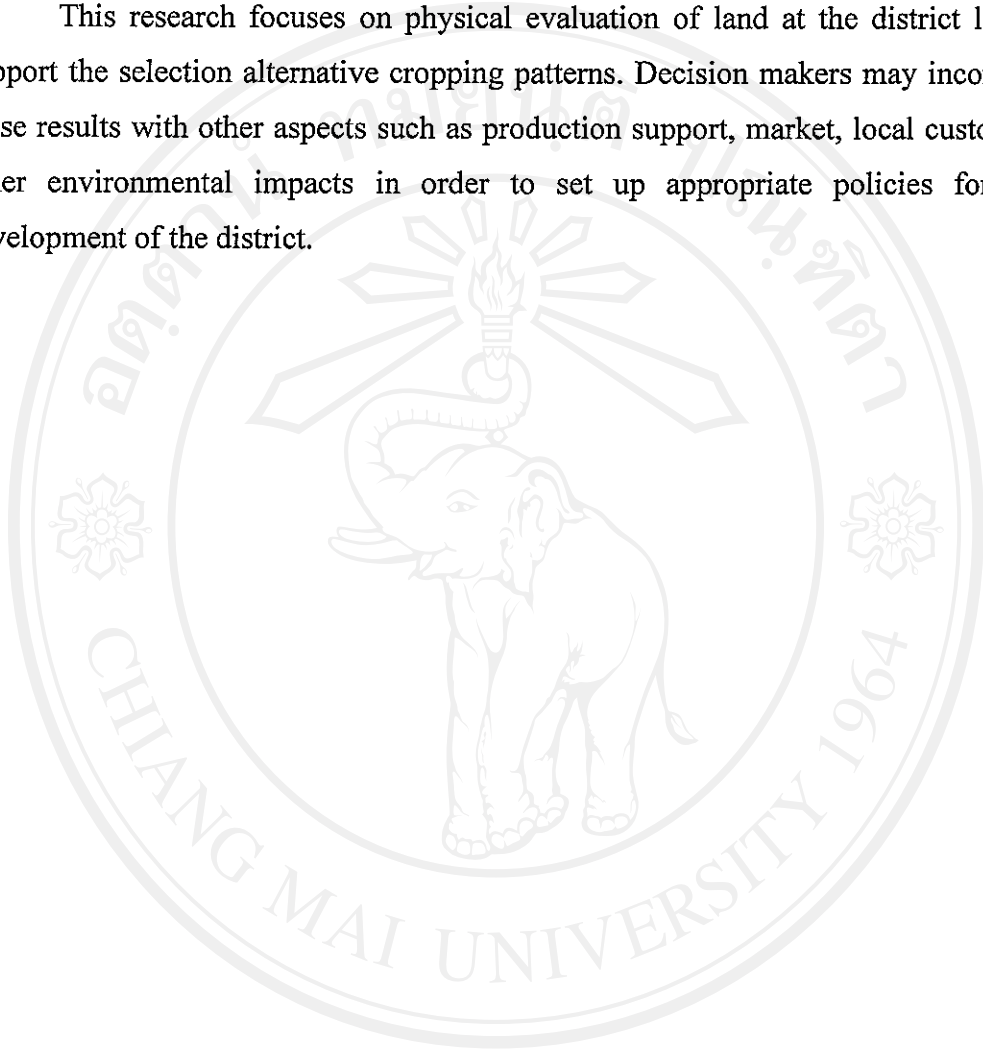
For the rainfed LUTs, the study showed that 20.4%, 15.9%, 17.5%, 20.0%, and 15.3% total arable area were rated as S1 for corn-corn cropping system, sugar cane, rubber, cashew and rambutan. About 20.5%, 18.4%, 20.3%, 22.0% and 16.6% of total arable area were classified as S2 paddy rice, corn, sugar cane, rubber and rambutan, respectively. And about 46.4%, 22.0%, 17.9%, 31.5%, and 20.0% of total arable area were classified as S3 for paddy rice, corn, sugar cane, rubber and rambutan, respectively.

Two scenarios were built to support land use planning. One is the scenario of decreasing corn production area by 20% and the other is the scenario of expanding rambutan production area by 50%. From these scenarios, the most suitable areas for reducing corn and expanding rambutan were identified using MCE and GIS to reach the target areas. The results can be visualized and served as a tool for discussion among the stakeholders before implementing the plan.

The study provides general alternatives for local farmers and government officers to decide for their agricultural activities and land use planning. Valuable information produced by land evaluation will be useful for future studies of land

distribution for LUTs in Dinhquan district. The method employed in this study can be taken as an example for similar regions in Dongnai or in the neighboring provinces.

This research focuses on physical evaluation of land at the district level to support the selection alternative cropping patterns. Decision makers may incorporate these results with other aspects such as production support, market, local custom and other environmental impacts in order to set up appropriate policies for rural development of the district.



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