

Sukanya Chaipong 2014: Landscape Agroforestry Modeling for Sufficiency Economy in Huai Raeng-Khlong Pheed Watershed, Trat Province. Doctor of Philosophy (Forestry), Major Field: Forestry, Faculty of Forestry. Thesis Advisor: Mr. Chongrak Wacharinrat, Ph.D. 271 pages.

This research focused on land use modeling at the landscape scale based on the sufficiency economy philosophy. The main objectives were to determine key performance indicators of agroforestry under a sufficiency economy (SE), to develop landscape agroforestry modeling under an SE, and to apply the derived model to analyze the suitability of the existing land uses in the study area. The key performance indicators were: 1) the agroforestry indices (AFI)—organic matter, soil erosion, mixed species index, income distribution, net present value, using resource, land holding size, and acceptance of land use; and 2) the landscape agroforestry indices (LAFI)—soil type, slope, distance to water resources, capability of accessing to main road, watershed class, and conservation area.

The AFI and LAFI were weighted based on expert judgment and used in weighted linear combinations to develop the landscape agroforestry modeling based on an AFI equation and an LAFI equation. The site observation data were used in the AFI equation to obtain the land use types based on the SE level and the ranked secondary data were then used in the LAFI equation to determine the land suitability classification based on the land suitability (LS) level. Landscape agroforestry index classes (LAFIC) in the study area were identified at 4 levels. The LS levels from the highest to the lowest represented 256.01 (57.20%), 117.37 (26.22%), 42.92 (9.59%), 25.85 (5.78%) and 5.42 (1.21%) km², respectively. The final step of this study analyzed the suitability of the existing land use based on the LAFIC map. The LAFIC map showed that most land use types were categorized as being at the highest and high LS levels.

Student's signature

Thesis Advisor's signature