Jakrapong Buakla 2007: Plant Diversity and Soil Properties in Smallholding Rubber-Based Agroforestry Plantations in Phatthalung and Nakhon Si Thammarat Provinces. Master of Science (Forestry), Major Field: Silviculture, Department of Silviculture. Thesis Advisor: Associate Professor Suree Bhumibhamon, D.F. 109 pages.

The present study was conducted in Phatthalung and Nakhon Si Thammarat provinces with the objectives to assess trees and medicinal plant diversity and study the traditional uses of these plant species in the old rubber plantation. Secondly to study the difference in soil properties in the old rubber plantation and monoculture of rubber plantation. And thirdly, to study attitude of rubber smallholders toward rubber intercrop planting. Tree, medicinal plant species, and soil sample were collected from a 40x40 meter plot in each study site. The utilization of tree was investigated by interviewing farmers and parataxonomists. The attitude of rubber smallholder was done by using interview schedule.

In Phatthalung, 37 tree species including 18 species of tree, 28 species of sapling, and 7 species of seedling. Shannon-Wiener's Index of Diversity was 2.58. There were 41 species of medicinal plants with Shannon-Wiener's Index of 4.25. In Nakhon Si Thammrat, the result showed 30 tree species (19 species of tree, 16 species of sapling, and 9 species of seedling). Shannon-Wiener's Index of Diversity was 9.27. There were 49 species of medicinal plant with Shannon-Wiener's Index of 4.04.

The utilization of trees in both study sites can be presented into 2 groups; 1) production species (timber, pole, round wood, latex, fuel wood, medicinal plant, food and fodder) and 2) conservational species (soil and water conservation, shelter, shade and aesthetic).

Soil texture in the old rubber plantation and in the monoculture of rubber plantation in Phatthalung was sandy loam whereas in Nakhon Si Thammarat soil texture in the old rubber plantation was loam and clay loam. Soil in the monoculture of rubber plantation was silt loam. Bulk density of soil in the old rubber plantation of both study sites was lower than monoculture of rubber plantation whereas porosity of soil in the old rubber plantation was higher than monoculture of rubber plantation.

In term of the chemical analysis of soil including nutrients (nitrogen, phosphorus, potassium, calcium and magnesium), organic matter, CEC, and %BS in the old rubber plantation of both study sites had higher than those in monoculture of rubber plantation. In conclusion, the soil property of old rubber plantation was better than the soil of rubber monoculture as porosity caused by the accumulation of organic matter from their litter falls.

Concerning the attitude of rubber smallholders of both study sites, gender was significantly related to attitude of rubber smallholders toward rubber intercrop planting at 0.05 statistic significant level. While age, education level, secondary occupation, household income, debt, and rubber plantation area were insignificantly related to attitude of rubber smallholders toward rubber intercrop planting.

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