

The relationships of soil and plant in Sakaerat dry dipterocarp forest.

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ABSTRACT

The study on the relationships of soil and plant in dry dipterocarp forest was conducted at the SERS by randomly laid out 16 square plots of 2500 m.² to represent 16 stands of the forest. Tree census was made by measuring tree size (DBH and H) and species recorded of trees with DBH > 4.5 cm. Triangular pattern of soil sampling was carried out in each plot and soil samples taken by varying depth of 0 - 5, 10 - 20, 20 - 30 and 30 - 50 cm. Quantitative ecological parameters of plant composing of mean size and basal area, total aboveground biomass, species diversity and its relates, species abundance distribution, interspecific association and covariation, resemblance function and clustering were analyzed. Soil properties were also analyzed in terms of organic matter and nutrient storage in soils down to 50 cm depth of each stand. Discriminant analysis was adopted to relate soil quantities with stand cluster. Trees of the Sakaerat dry dipterocarp forest was found to be composed of 46 species in total and varied among stands with similar patterns of species abundance distribution following the logarithmic series model, less diverse, both positive and negative associations but covaried significantly only for few species. Resemblance functions suggested 2 - 3 groups of clustering by using number of species and number of individuals of the 16 stands studied. Soils of the site were observed to be a sandy clay loam type ranging from slightly to strong acidic properties, loose texture and low in organic matter and nutrient contents. Discriminant analysis suggested that storages of organic matter and calcium in soil profiles were important factors in discriminating between two groups of stands significantly than other nutrients. The high organic matter but low calcium storages group showed high values of mean tree height, basal area, total aboveground biomass and stand density but lower species diversity while the low organic matter but high calcium storages group showed the opposite trends with high species diversity.