Natural forest dynamics. II. Sampling of tree volume using quadrats in tropical forests of Peninsular Malaysia

ABSTRACT

This study was carried out on a randomly chosen 10-ha (200 × 500 m) forest area within the 50-ha area Demography Project of the Forest Research Institute Malaysia (FRIM) at Pasoh Forest Reserve, Negri Sembilan, Malaysia. A modified minimum-variance method was used to determine statistically the most efficient quadrat size among the eight quadrat sizes used. The minimum sampling intensity associated with each quadrat size, at 90% confidence and 10% error, was determined in estimating tree volume. In general, the 30 × 30 m quadrat was found to be statistically the most efficient in sampling tree volume × 15 cm dbh at 90% confidence and 10% error levels. The percentage sample size requirement differed between species groups, size classes and quadrat sizes used. The implications of the result of the present study are discussed in relation to the current inventory methods used in Malaysia. For example, a 16% sampling intensity is required to inventory all trees × 15 cm dbh with 90% confidence and 10% error levels using 30 × 30 m quadrat, increasing to 24% when using 20 × 50 m quadrat.

Keyword: Dipterocarp; Efficient quadrat size; Non-dipterocarp; Sampling intensity; Tree volume