

Genetic diversity of Fagaceae in Chiang Mai, northern Thailand

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Beach family (Fagaceae) of northern Thailand consists mainly of three genera: *Castanopsis*, *Lithocarpus* and *Quercus*. The species diversity is impressive, i.e. nearly ten percent of the total species number occurs in this region. We have selected areas of study in Chiang Mai province, 18.5 N/98.6 E, where Fagaceae can be found in different habitats and forest types. Samples were collected from 146 randomly selected trees for taxonomic identification and molecular analysis. Based on leaf, fruit and flower characters, 30 species were identified from this collection. Twelve species of *Castanopsis* were discovered, with *C. acuminatissima* being the most dominant species especially in hill evergreen forests. *Quercus* had eleven species and were found essentially at lower altitudes mainly in deciduous dipterocarp forests, with *Q. kerrii* being the most common. *Lithocarpus* included seven species but the genus was found in all forest types. Genetic diversity and species relationship was analysed using data on restriction fragment length polymorphism (RFLP) in the 16S-28S ribosomal genes (rDNA) and inter-simple sequence repeats (ISSR) in the whole genome. The rDNA-RFLP phenogram based on 25 *Bam*HI, *Hind*III and *Eco*RI fragments from 52 trees revealed close relationship within each genus, but the species variability overlapped considerably especially within forests thus indicating gene flow. The ISSR phenogram based on 173 fragments from 76 trees showed clear taxonomic separation of the genera and good species grouping within each genus. Information about genetic diversity of major tree species will help making the management and conservation of the rain forests in this region effective.