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Land Rehabilitation in the Tropics with Indigenous Tree Species: Economic and Ecological Considerations and Research Needs

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Abstract

In order to restore degraded (grass-)land in the humid tropics, indigenous tree species become increasingly important in agroforestry and other land use systems. The timber tree species still come from forest remnants and have mostly never been cultivated before. Knowledge on their ecology is fragmentary at best, and economic expectations are based on experiences from the exploitation of primary forests. In this contribution we present observations and results from existing plantings in Leyte (Philippines) concerning (a) growth performance, (b) reproduction, and (c) pest susceptibility of trees.

· (a) The description of tree habit and timber properties and quality is based on individuals from primary forests. Especially legumes are described as providing excellent timber. But, when planted - besides slow growth - they perform poorly, tending to develop forked stems and shrubby habits, which do not fulfil the economic expectations. The question arises if this is already the result of genetic erosion or just a matter of management and site selection.

· (b) Maturity and reproduction of tree species occurs relatively late in primary forests. In the Leyte State University's "ecoparc" trees, including dipterocarps, could be observed fruiting at an age of 10–12 years. Early reproduction of valuable species provides the opportunity to sell seeds and seedlings and to be independent from forest sources which are often costly to monitor and harvest. An important and largely unsolved question is how these species are pollinated since the trees are outside their natural forest habitat and far away from the next mother tree. If the species participate in the species' gene flow, this would mean an important contribution to retain the species' genetic diversity.

· (c) It is generally assumed that native species are less susceptible to pests than exotics. Results show that even native species can suffer from relatively high infestation. Again, legume trees seem to be especially prone to damages. To ensure a successful and sustainable production, the responsible pests as well as mechanisms (e.g. species-specific susceptibility, planting stress, wrong habitat selection) need to be analysed and understood.

Keywords: Land rehabilitation, native tree species, performance, pest susceptibility, reproduction