

## Abstract

Multipurpose trees and shrubs (MPTs) are a key element in alleviating several of the most urgent environmental and poverty-related problems of the tropical developing countries. The inclusion of productive timber and fruit trees on small-scale farms, particularly on degraded lands, provides important sources of income while offering crucial environmental services. Multipurpose tree cultivation by small farmers can provide a superior means of reforesting large areas of degraded Imperata grasslands in Southeast Asia with ecologically- and socially-important species. At the same time, these trees may provide the major source of timber and fuelwood for countries whose stock of natural forests is now virtually exhausted.

As has been proven in crop plants, and in plantation forestry in the temperate regions, the genetic improvement of MPTs by the collection and domestication of the existing germplasm may provide cultivars with enormously greater (40-90%) productive potential than those currently available. Unfortunately, sustained attention to this aspect of tropical development has been greatly neglected.

In order to help realize some of the potential of the MPTs in the humid tropics of Asia, ICRAF proposes to initiate a research project in the region, as part of its Multipurpose Tree Improvement Programme (Programme 2). The project (the Multipurpose Tree Improvement Project for the Humid Tropics of Asia) will be a critical component of ICRAF's mission to mitigate tropical deforestation, land depletion, and rural poverty through improved agroforestry systems. The work will build upon the strong foundation of MPT improvement that the Network has achieved, and foster new intensity in this important work. The proposed work will advance the research carried out through the Network. It will initiate MPT improvement to address urgent current concerns related to sustainable natural resources management and the conservation of biodiversity through the identification and dissemination of tree germplasm suited to small-scale farmers in fragile environments on the margins of protected forests, in degraded grasslands, and in hilly, erodible farmlands.

The project will develop multipurpose tree cultivars that will provide profitable, sustainable, and ecologically-superior alternatives to slash-and-burn agriculture. It will also identify tree cultivars that enable small-scale farmers to effectively rehabilitate degraded grasslands and hilly farmlands in the humid tropics of Asia. It will place particular emphasis on the indigenous fruit, timber and fodder MPTs within each of the major eco-geographic zones of the humid tropics. The research will emphasize clonal selection and propagation systems that accelerate the identification and dissemination of improved cultivars to farmers. Such non-conventional systems are an efficient means to capture genetic variation for rapid dissemination of outstanding cultivars.

The strategy is to focus on two key eco-geographic regions within the humid tropics: The equatorial tropics represented by Indonesia, Malaysia, and southern Philippines; and the northern tropical belt represented by northern Thailand and adjacent countries (Vietnam, Laos, Myanmar and Southern China). Each has unique environmental and socioeconomic circumstances.

The work will involve the selection of several priority species based on an understanding of the key agroforestry systems in the threatened upland ecosystems. This will be followed by intensive collection of the germplasm of these species; evaluation and domestication of the most promising material, and the development and dissemination of the outstanding cultivars identified. Innovative improvement methods will be employed for evaluating and utilizing germplasm through seed or clonal propagation, depending upon the species.