

Forest genetic resources and management in Sri Lanka – status, needs, challenges and actions required

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Introduction

Genetic conservation is a priority aspect in the conservation of forest resources in Sri Lanka. Declining natural forest cover due to impact of growing human population is becoming a threat to biodiversity of forests and hence for genetic conservation (Weerawardane 2000). Genetic resources are the basis of biological existence and diversity. Diversity provides buffer against changing in the climate and the environment and thus maintaining the balance of ecosystems. Conservation of genetic resources in perpetuity is essential for continued management and improvement of forest resources. Sri Lanka is endowed with valuable forest resources; however, natural forest cover has declined over the last few decades, and constitutes only about 23.9% of the total land area at present. Various new measures have been suggested in the New Forestry Master Plan (Anon. 1995) to cope up with this situation and to manage existing forests to ensure benefits of forest products and services to the society.

Table 1. Organizations relevant for FGR

Name of organization	Level of resources available
Forest Department	Forest researchers, forest areas, Forest managers, field research stations
Wildlife Conservation Department	Forest resources, researchers, forest managers
University of Peradeniya	Forest researchers, research assistants, laboratories
University of Sri Jayawardanapura	Forest researchers, research assistants, laboratories
University of Ruhuna	Forest researchers, research assistants
University of Colombo	Forest researchers, research assistants
Plant Genetic Resources Center (Agriculture Department)	Researchers, research assistants
Royal Botanic Gardens (Agriculture Department)	Forest researchers, research assistants
IUCN	Forest researchers, field assistants

Forest Department and Wildlife Conservation Department are mainly responsible for forest genetic conservation in the country since they conserve and manage a large majority of forests in the country.

National Task Forces

National coordination body / task force for FGR conservation is not available in the country. National forum for discussing these matters is also not available.

National policies relevant for FGR conservation and management

National forest policy in Sri Lanka identifies the importance of forests with respect to biodiversity conservation, productivity improvement and welfare of rural people, which are directly related to forest genetic conservation (Anon. 1995). Priority has been given to conservation of biodiversity and protection of watersheds in forest ecosystems (Anon. 2003). It also emphasizes the importance of sustainable management of forest resources, conservation of natural forests and related activities.

For implementing the policies, funding has been provided mainly from the Asian Development Bank (ADB). The Forest Resources Management Project is being implemented throughout the country under this programme, which started several years back. With aids from Australia, the Sri Lanka Australia Natural Resource Management Project is also underway in two districts under pilot scale and will be extended to other districts as well in the future.

Updates and happenings

A seed center was established in 2003 at the Forest Research Center to distribute high quality seeds to forest managers mainly within the Forest Department.

Genetic improvement programmes of commercial timber species are being implemented.

Ex situ and *in situ* genetic conservation measures are being taken with respect to timber, medicinal and fruit species.

Tree domestication project was initiated recently with the help of ICRAF regional office to make genetic improvements on selected timber, medicinal and fruit species.

Examples and case studies

Importance of forest genetic diversity has been well recognized within the country. Forests with high genetic diversity have been well protected due to their value to the people in terms of timber, medicinal products, non-timber forest products, etc. Highly diverse natural forests have always contributed to environmental conservation, mainly ensuring the supply of water. Genetic diversity matters because of various threats to genetic diversity.

Illicit felling of superior trees has caused genetic diversity to gradually decline in important species. Indirect destruction of such species by fire and other damages is also important.

Harvesting of commercial species, such as teak and mahogany, without proper genetic conservation programme may lead to genetic erosion of these species in future.

For the medicinal species found in the forest, gradual destruction of species may ultimately lead to reduction in genetic diversity which in turn may lead to gradual decline in vigour and desirable characteristics. This may affect local livelihood of people who depend on these species.

Therefore maintenance of genetic diversity by way of *in situ* and *ex situ* conservation of important species, establishment of seed orchards, etc., is important.

Species conservation strategy

A strategy has been developed for the conservation of genetic resources of several threatened species such as nedun (*Pericopsis mooniana*) and gammalu (*Pterocarpus marsupium*). Germplasm collection has been done from natural range of distribution and planted as gene banks in several locations. Vegetative propagation techniques are being developed for some medicinal, fruit and timber species (e.g. *Phyllanthus emblica*, *Khaya senegalensis*).

Suggestions for new forest genetic resources-related initiatives that could involve regional collaboration in FGR

- a) Exchange of germplasm of important commercial species, particularly to improve genetic base of existing species.
- b) Importation of promising plantation species which are not presently grown in the country.
- c) Development of a network of relevant scientists to share information.
- d) An effective regional collaborative programme on genetic conservation should be developed.

References

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