

## Summary

**Grant Number** : SIDA/98/BT/04

**Title of Project** : Phenology of *Nypa fruticans* in relation to environmental factors and genetic diversity for conservation and management

**Institute where the research was carried out** : Department of Botany  
University of Ruhuna  
Matara.

**Chief Scientific investigator** : Dr. Sanath Hettiarachi

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*Nypa fruticans* is morphologically interesting, evolutionary astonishing, ecologically very significant, economically one of the most valuable, taxonomically distinct mangrove element, found in a small patch of tropical world including Sri Lanka. It has been declared as a protected plant in Sri Lanka, probably due to the above facts and its limited distribution in the country. Among its high economic potentials, the possibility of tapping inflorescence to collect a sugary sap, which can be used to get treacle, jaggery, alcohol and vinegar, is foremost. This has never been attempted scientifically in Sri Lanka. If any measure is going to be taken to introduce this industry to Sri Lanka, it is necessary to increase the population of *N. fruticans* by establishing plantations, as its present distribution is very limited. In such attempts, knowledge on the genetic variability, phenology and effects of environmental factors on growth performances are prerequisites. This study is an attempt to fill this gap at least in some measure.

Population of *N. fruticans* in Sri Lanka is fragmented in to 14 separate sites distributed on the southern and western coast from Kahandamodara to Neimadama representing intermediate zone and wet zone of Sri Lanka. Out of these 14 sites, four sites as two from the wet zone and two from the intermediate zone were selected for the study. Genetic variability was studied using RAPD analysis. Fifteen primers were selected after initial screening and the banding patterns did not show any variability within and between stands.

Phenology of cycles of leafing and flowering and fruiting in mature individuals of *N. fruticans* were studied. Frequencies of leafing and flowering of *N. fruticans* were very low in all the sites (i.e. two leaves and one inflorescence per year per mature individual). Peaks of leafing in populations of *N. fruticans* appear to be initiated by onset of the rainy period or higher fresh water inflow to the system. Performances in vegetative growth of *N. fruticans* were higher in sites with soils rich in nitrogen, phosphorus and calcium.

When all these facts are taken into consideration, any major obstacle to start tapping *Nypa*, inflorescence, cannot be seen. Therefore it is suggested to introduce this industry, firstly on experimental basis, using trained personnel. Comparison of harvests, under managed and non-managed natural conditions will furnish required information for further development of the industry. The success of this industry will affect positively on the conservation of this species.

However the trees and the inflorescences in *Nypa* plantations in other countries are larger than those in Sri Lanka (Wickramasinghe, personal communication). Therefore a genetic study should be extended to compare the genetics those individuals and of local individuals.