

PROJECT PROFILE

Title:	Germplasm Assemblage of Medicinal Plants, <i>Caesalpinia bonduc</i> and <i>Annona muricata</i> – their Characterization and Utilization
Principal Investigator:	Dr. D. Thangamani, Scientist-E
Co PI :	Dr. K.R. Sasidharan, Scientist F Smt. S. Lalitha, Chief Technical Officer
Starts and Completion dates :	2019-2022
Objectives	1. To assemble genetic resources of <i>Annona muricata</i> and <i>Caesalpinia bonduc</i> 2. To study the variation and evaluate the genetic resources 3. To conserve the genetic resources in field gene bank and seed bank
Funding Agency	Tamil Nadu Forest Department
Total budget outlay:	Rs. 10.00 lakhs

SUMMARY

Surveys have been conducted in Tamil Nadu and Kerala and identified 25 superior *Annona muricata* trees and 20 superior *Caesalpinia bonduc* trees. Soft stem cuttings with apical buds of *A. muricata* showed 46 % rooting in 2000ppm IBA in vermiculite (46%) and 40% rooting was observed in *C. bonduc* in 1500 IBA treatment.

Seed dormancy-breaking treatments revealed that:

- ✚ *A. muricata* seeds exhibited a maximum germination rate of 85% under 50% H₂SO₄ scarification, followed by 75% with 24-hour tap water soaking.
- ✚ *C. bonduc* seeds showed 80% germination with 50% H₂SO₄ treatment and 70% with mechanical scarification and 48-hour water soaking.

The seeds were stored in seed bank of TNFD genetic circle, Coimbatore and in IFGTB in -20 degree. GC-MS analysis of *A. muricata* identified 42 compounds of which 6 compounds viz., Stigmasterol (1.96%), Lanosterol (0.21%), Hexadecanoic acid methyl ester (1.90%), Stigmast-5-en-3-ol, (3.β.)- (19.96%) and Octadecanoic acid methyl ester (0.30%), Squalene (0.25) with noted antioxidant properties and methanolic seed extract of *C. bonduc* revealed 14 compounds. Concentration of mineral contents was abundant in *A. muricata* fruits collected from Kanyakumari and acetogenins

content was rich in fruits collected from Pechiparai 3.40 µg/g followed by Kadayalumoodu 3.29 µg/g.

Germplasm banks were established one in Thalamalai field of KVK, Myrada, Erode (11°37'45.6"N, 77°00'09.7"E) and second in Pethikuttai, TNFD genetic circle Research station, Mettupalayam (11°20'57.9"N, 77°01'35.6"E). A value added product "Anolly" was made as an out put of the project

Publications:

Journals

D. Thangamani, O. M. Mohamed Nawas, S. Lalitha, T. Arul Prakash, S. Poopathi Rajan, (2020) Biochemical Characterization, Antioxidant and Cytotoxic Activity of *Annona muricata* L. Accessions Fruit, International Journal for Research in Applied Science & Engineering Technology (IJRASET) ISSN: 2321-9653.

National and International conferences

D. Thangamani, S. Poopathi Rajan, T. Arul Prakash, J.J. Jenisha and S. Lalitha. Vegetative propagation of Soft stem cuttings with apical tip for rapid propagation of *Annona muricata*, virtual workshop on 'Clonal Propagation of Tree Species' on 7th October 2020, Institute of Wood Science and Technology, Bengaluru.

Book chapters

D. Thangamani, T. Arul Prakash, S. Poopathi Rajan and S. Lalitha (2024) LakshmanPhal (*Annona muricata*): Soursop - The magical big fruit plant, Shashwat Publications, ISBN: 978-81-19908-30-1.