

NFRP (ICFRE FUNDED PROJECTS)

Continued ICFRE Funded Project 2013-14

Project Sl. No.	Name of Project	PI	Thrust Area	Current Status
1	Progeny testing of selected clones for establishment of clonal and seedling seed orchards in <i>Eucalyptus</i> . (IFGTB/RP 55/2008-2014)	Dr. V. Sivakumar	Tree Improvement	Seeds were collected from about 50 best clones and subjected to progeny testing. Progeny test trials were established in Hyderabad and Puthukottai and trials assessed. CSOs were established in Salem and Nellore. SSOs were also established in Nellore, Madukarai, Chennai and Coimbatore. Genetic gain trials have been established at Udumalpet, Kandiyur and Arimalam. All the trials are maintained and growth observations were taken in progeny trial at Hyderabad, Chennai, Pudukottai, Coimbatore, Thiyagadurgam, Marakkanam and Karaikudi. Culling need to be carried based on the growth performance of the progenies.
2	Genetic improvement of Casuarina species through second generation orchards. (IFGTB/RP 56/2008-2014)	Dr. A. Nicodemus	Genetic Improvement and Tree Improvement	This project is a continuation of the ongoing Casuarina breeding programme initiated in the year 1998. The overall aim of the project is to capture additional genetic gain in terms of growth, form and wood traits over and above what has been obtained in the first generation breeding. The first generation orchards located in the States /UT of Andhra Pradesh, Tamil Nadu and Puducherry have been assessed and outstanding trees selected. Using open-pollinated seeds collected from the selected trees 14 ha of second generation progeny tests cum second generation SSOs have been established in the States / UT of Andhra Pradesh, Tamil Nadu and Puducherry. Maintenance of all field trials plots and periodic assessment for survival and growth is progressing. Progeny tests that have reached the age of 3 years have been marked for thinning of inferior families and individuals. Thinning of inferior trees in progress. Sample seed collections

				have been made and subjected to germination tests. Outstanding trees have been identified and their clonal propagation is in progress.
3	Development of advanced generation seed orchard of <i>A. mangium</i> based on biomass and wood density. (IFGTB-RP-77/2009-2014)	Dr. Maheshwar Hegde	Forest Genetic Resource Management and Tree Improvement	Project is being continued. Progeny trial have been established which need to be thinned during current year.
4	Study of variation in <i>Pterocarpus santalinus</i> for growth and heartwood content according to edaphic and climatic factors in Tamil Nadu. (IFGTB-RP-106/2010-2015)	Dr. Maheshwar Hegde	Forest Genetic Resource Management and Tree Improvement	To study the variation in heartwood content in trees according to edaphic and other site factors ²³ plantations across Tamil Nadu and Andhra Pradesh have been visited and growth data, corewood samples have been collected. In each sampled plantations soil has been collected and soil analysis regarding nutrients and PH, EC has been done. About 100 CPTs have been selected in plantations. In all the plantations core wood samples were collected heartwood content and grain pattern has been studied. At present seedlings obtained from pus trees have been raised and morphological characterization is being done.
5	Selection of clones of <i>Acacia auriculiformis</i> with desirable stem form and wood properties for short rotation timber production. (IFGTB-RP-85/2010-2015)	Dr. Maheshwar Hegde	Forest Genetic Resource Management and Tree Improvement	Project is being continued. CPTs of <i>Acacia auriculiformis</i> were selected in progeny trials which have been converted to second generation orchards. Vegetative multiplication has been taken up. A VMG with 65 clones has been established. 8000 ramets of these clones are being rooted for further clonal trials.
6	Developing clonal technology for	D. Rajasugunasekar	Genetic Improvement	Survey has been made to western zone, sothern Zone and Cauvery

	<p>raising clonal plantation of indigenous species of <i>Ailanthus excels</i> and <i>Ailanthus malabarica</i> in Tamilnadu and Kerala.</p> <p>(IFGTB-RP-87/2010-2015)</p>		(Tree improvement)	<p>delta zone of Tamilnadu. (male and female trees of <i>Ailanthus excelsa</i> have been marked with GPS)</p> <p>Periodical biometric data are being collected from and Soil profile& nutrient studies are being done in Tirupati, Chennai and Salem <i>Ailanthus excelsa</i> Germplasm assemblage</p> <p>Of the Field research station.</p> <p><i>Ailanthus triphysa</i> 120 CPT's have been identified in Kerala and Tamilnadu with GPS marking.</p> <p>Serial cuttings and Coppice cuttings are being tried for developing clonal propagation.</p> <p>Vegetative propagation has been standardized and VMG has been established for mass multiplication.</p>
7	<p>Evaluation and identification of optimal parameters for flowering and fruit set in different Tamarind (<i>Tamarindus indica</i> L.) orchards.</p> <p>(IFGTB-RP-98/2010-2013)</p>	A. Mayavel	Genetic Improvement (Tree improvement)	<p>Tamarind orchards located at Neyveli, Thoppur, Theni & Mullangaddu have been evaluated for flowering and fruiting. Soil sample were collected and analyzed micro and macro nutrients status different tamarind orchards. Analysis of phenol, carbohydrates, protein and CN ratio from non flowering and flowering tree have been completed. The data on flowering and fruiting behaviour of different tamarind orchards have been recorded. Two tamarind CSO and SSO have been imposed 30 different treatments. Among different treatments soil drenching of cultar 3000 ppm and spraying of 2% KNO₃ found more effective for enhancing flowering and fruiting of tamarind orchards.</p>
8	Genetic Improvement of <i>Gmelina arborea</i> Roxb. through	A. Mayavel	Genetic Improvement (Tree improvement)	<p>Intensive survey conducted in the natural forest of Tamil nadu, Kerala and Farmers plantation. Identified natural population of <i>Gmelina arborea</i> in different parts of southern india and selected 65 CPTs based on growth</p>

	<p>selection and clonal evaluation.</p> <p>(IFGTB-RP-115/2011-2016)</p>			<p>superiority, clear bole and pest and disease resistance. The data collected on bio-metric, phenology characters of <i>Gmelina arborea</i>. The reproductive traits like flowering phenology, pollen fertility, pollen germination on stigma and pollinator interaction in <i>Gmelina arborea</i> have been studied. The Wood sample (core) collected and analyzed wood parameters. The seed material collected from different CPTs and studied variation among different population. The terminal cutting collected from selected CPTs of <i>Gmelina</i> and imposed different concentration of IBA. Among different concentration highest rooting have observed in 750 PPM of IBA .</p>
9	<p>Selection and Screening of germplasm of <i>Thespesia populnea</i> for improving productivity.</p> <p>(IFGTB-RP-114/2011-2016)</p>	Dr. Kannan C.S. Warriar	Forest Genetic Resource Management and Tree Improvement	<p>Extensive field surveys were undertaken in the Western, North Western, Cauvery Delta Southern, North Eastern and High Rainfall Zones of Tamil Nadu and selected 118 CPTs of <i>Thespesia populnea</i>. Cuttings from these trees were collected and kept for rooting in the vegetative propagation complex of IFGTB. Bud sprout could be observed in all the cuttings and the rooting percentage was 60. No pest attack was observed till September 2011. However, 3 clones were affected by Mealy bug later. Control measures and prophylactic measures have been adopted. Established a Clonal Multiplication Area (CMA) of <i>Thespesia</i> at Panampally, Kerala with 70 clones.</p>
10	<p>Establishment of second generation seed orchards and selection of clones for high productivity in eucalyptus.</p> <p>(IFGTB-RP/AICP - 130/2012-2017)</p>	Dr. V. Sivakumar	Genetic Improvement – Tree Improvement	<p>Seeds were collected from the first generation (FG) seed orchard trials at Karunya and Puthukottai from 45 single trees. Growth data collected from Chennai, Hyderabad, Nellore have been analysed for selection of SG plus trees. The analysis was completed and 13 trees were selected from Progeny trial at Chennai. Action have been taken for coppicing the trees and collect cuttings.</p>

11	<p>Developing breeding populations of teak with broad genetic base for long term genetic improvement.</p> <p>(IFGTB-RP/AICP-132/2012-2015)</p>	Dr. B. Gurudev Singh	Forest Genetic Resource Management and Tree Improvement	Selected 193 CPTs in different parts of southern India and collected seeds. About 8000 seedling have been produced and data collection on morphological characters is under progress.
12	<p>Molecular analysis for population differentiation and mating system studies in <i>Acacia auriculiformis</i> using dominant and codominant markers.</p> <p>(IFGTB-RP-109/2010-2013)</p>	Dr. A. Shanthi	Forest genetics resource management and tree improvement (Theme: Biotechnology)	<p><i>Acacia auriculiformis</i> populations in the orchard (Panampalli) was studied for the diversity analysis using ten ISSR primers. Ten SSR loci were optimized. Single tree collections were made from twenty five trees in the orchard of two locations.(Coimbatore & Kerala). DNA extraction of 150 individual progenies were completed and also five SSR loci profiling work was completed. Further SSR profiling work is in progress. Five cross amplified SSRs were confirmed through sequencing. Data analysis through BLAST showed SSRs. Three sequences were deposited in NCBI. Collection of Seeds from fifteen individuals trees in two locations viz, Panampalli, Wadakancherry, Kerala from second generation orchards were completed. All the seeds were sown in nursery. DNA extraction in Second generation samples is in progress.</p>
13	<p>Evaluation of <i>Gmelina arborea</i> Roxb. selections from North Eastern Central and Southern Regions.</p> <p>(IFGTB-RP-</p>	Dr.V.K.W. Bachpai	Genetic Improvement	The project has been extended for one year. Planting stock of 33 CPTs has been raised. Projeny trails will be established during the current monsoon period

	94/2010-2013)			
14	<p>Development of methods for functional analysis of genes involved in salt tolerance in Eucalyptus.</p> <p>(IFGTB -RP-72/2009-2014)</p>	Dr. N.V. Mathish	Applied Genomic Research and Genetic engineering for desirable traits	<p>Root's being a major portal of entry for sodium offers a good system for understanding genes involved in salt tolerance. The present project attempts to study the feasibility of screening major sodium transporter genes like HKT1 in Eucalyptus by combining gene silencing via RNAi with the ease of development of composite plants having transgenic hairy roots. <i>In vitro</i> process for generation of transgenic composite plants in Eucalyptus for rapid functional analysis of genes and promoters was developed. Various parameters influencing the development of composite plants, like the suitability of different Agrobacterium strains, presence of acetosyringone, buffers, basal media, temperature, duration of co-cultivation were evaluated for optimizing the composite plant strategy. Different media suitable for hardening of the composite plants were evaluated and composite plants were shown to tolerate up to 300 mM NaCl, (Balasubramanian et al., BMC Proceedings, 2011, 5(Suppl 7):O45.)</p>
15	<p>Determination of the target genes in <i>Leptocybe invasa</i> for engineering resistance in Eucalyptus through gene-silencing approaches.</p> <p>(IFGTB-RP-102/2010-2014)</p>	Dr. N.V. Mathish	Applied Genomic Research and Genetic engineering for desirable traits	<p>HKT1 gene from salt tolerant <i>E. camaldulensis</i> Clone 7 and salt susceptible <i>E. tereticornis</i> clone 88 were amplified and partially sequenced.</p> <p>The Unique RNAi target region for ECHKT1 was identified and is being cloned into pHELLSGATE 12 vector. The media composition, type of explants, humidity conditions, light conditions and explants, were evaluated for enhancing whole plant regeneration from cotyledons and hypocotyls of Eucalyptus. Putative <i>AtNHX1</i> transgenics of <i>E. camaldulensis</i> were transferred and hardened in the Functional Genetics Experimental Facility.</p>
16	Genetic	Dr. Rekha R.	FGR	Ongoing

	diversity assessment for management of Eucalyptus seed orchards. (IFGTB-RP/AICP - 129/2012-2017)	Warrier		
17	Incorporating resistance in Eucalyptus to <i>Leptocybe invasa</i> fisher & La Salle (Hymenoptera: Eulophidae) through expression of insect specific dsRNA. (IFGTB-RP/AICP - 131/2012-2016)	Dr. N.V. Mathish	Applied Genomic Research and Genetic engineering for desirable traits	Current strategies towards control of <i>L. invasa</i> include selected deployment of <i>Eucalyptus</i> clones tolerant to the pest. This has resulted in several productive <i>Eucalyptus</i> genetic resources, not being considered for plantation programmes, as in the case of the widely planted <i>Eucalyptus</i> clone, ITC10. The securely ensconced grub within the galls makes it refractory to pesticide applications. This feature, however, makes transgene encoded protectants, a potential strategy for engineering resistance to <i>L. invasa</i> , especially in breeding resources selected for high biomass. We are working towards identification of full-length sequence of <i>L. invasa</i> chitin synthase gene. This will be followed by identification of a species-specific region of the gene for generation of hpRNAi constructs. Transformation of susceptible clones with this construct is expected to result in transgenic events resistant to <i>L. invasa</i> infestation.
18	Evaluation of genetic resources of <i>Melia dubia</i> in Tamil nadu and Kerala for productivity enhancement in tree farming (Under AICP of Melia – FRI) (IFGTB-	Dr. Rekha R. Warrier	FGR	Ongoing

	RP/AICP - 134/2012-2017)			
19	Introduction and evaluation of fast growing tree species in different agroclimatic zones of Tamil Nadu. (IFGTB/NFRP-84/2010-2015)	Shri. S. Saravanan	Agroforestry	On-going.
20	Evaluation of <i>Calophyllum inophyllum</i> populations for high oil yield Evaluation of <i>Calophyllum inophyllum</i> populations for high oil yield. (IFGTB-RP-89/2010-2014)	Dr. R.Anandalakshmi	Genetic Improvement (Conservation of Forest Genetic Resources & Tree Improvement)	Identified 151 CPTs collected passport data. Standardized vegetative multiplication through stem cuttings and produced rooted clones of selected CPTs Conducted germination tests, recorded seedling parameters, raised stock and standardized nursery management practices Standardized seed processing for oil extraction from <i>Calophyllum inophyllum</i> kernels and oil analysis by Soxhlet method Established Clone bank and Half-sib Progeny trial at Panampally. Carried out maintenance of the trials. Established one clonal multilocation trial in 1 ha at Gudalur research station near Chennai. Identified 151 CPTs collected passport data. Standardized vegetative multiplication through stem cuttings and produced rooted clones of selected CPTs Conducted germination tests, recorded seedling parameters, raised stock and standardized nursery management practices Standardized seed processing for oil extraction from <i>Calophyllum inophyllum</i> kernels and oil analysis

				<p>by Soxhlet method</p> <p>Established Clone bank and Half-sib Progeny trial at Panampally. Carried out maintenance of the trials.</p> <p>Established one clonal multilocation trial in 1 ha at Gudalur research station near Chennai.</p>
21	<p>Chemotyping of <i>Sapindus emarginatus</i>- A potential NTFP of Tamil Nadu for saponins.</p> <p>(IFGTB-RP-91/2010-2015)</p>	<p>Dr. R. Anandalakshmi</p>	<p>Genetic Improvement (Conservation of Forest Genetic Resources & Tree Improvement)</p>	<p>Populations of soapnut in Tamil Nadu was identified in areas such as Mettupalayam, Sarkarpathy, Palani, Thirumurthyhills, Thalavadi, Pillur, Dhimbham, Thengumarada, Hogennakal, Aliyar, Srivilliputtur and Rajapalayam.</p> <p>The no. of fruits per metre length of branch was taken as selection criteria.</p> <p>Collected seeds processed and conducted germination test. Recorded seedling parameters.</p> <p>Various concentrations of IBA were tried for root induction. Shooting was profuse but rooting response was poor. Rooting experiment on apical shoot cuttings with low concentration of rooting hormones gave promising results.</p> <p>Standardized separation of saponins from fruit rind and carried out estimation.</p> <p>Tree-wise saponin content was estimated and threshold for shortlisting high saponin yielding CPTs was identified to be 13%.</p> <p>Nursery diseases and pest of soapnut seedlings were addressed and maintained seedlings for outplanting.</p> <p>Established germplasm bank cum VMG of soapnut in 0.5 ha at Panampally and maintained the same.</p> <p>Established a multilocation trial in 1 ha at Gudalur research station near Chennai.</p>
22	<p>Evaluation of <i>E. camaldulensis</i> and <i>E. tereticornis</i></p>	<p>Dr. A. Vijayaraghavan</p>	<p>Tree Improvement</p>	<p>Final year of the project</p>

	in different agroclimatic zones of south India. (IFGTB/RP 58/2008-2013)			
23	Selection and vegetative propagation of <i>Neolamarckia cadamba</i> - An alternative species for pencil, match stick and plywood. (IFGTB-RP-90/2010-2014)	Dr. A. Vijayaraghavan	Forest Genetic Resource Management and Tree Improvement	Final year of the project
24	Influence of <i>Eucalyptus</i> species on the natural enemies incidence on the gall wasp <i>Leptocybe invasa</i> . (IFGTB-RP-100/2010-2013)	Dr. J.P. Jacob		Ongoing
25	Screening for blister bark disease resistance in <i>Casuarina equisetifolia</i> clones. (IFGTB-RP - 80/2009-2014)	Dr. A. Karthikeyan	Insect pests, diseases and control	On going
26	Response of mycorrhizase and other microbial symbionts to elevated CO ₂ in commercially important tree	Dr. A. Karthikeyan	Mycorrhiza and other beneficial microbes	On going

	species. (IFGTB-RP-126/2011-2015)			
27	An improved holistic approach for development of database on fast growing tree species targeting stakeholders in Tamilnadu and Kerala. (IFGTB-RP-124/2011-2014)	R. Vivekanandan	Database -FGR	The project aims to develop a database elated to all aspects of fast growing species.
28	Mapping and monitoring of Casuarinas and Eucalyptus Plantations in Tamilnadu using RS and GIS. (IFGTB-RP - 138/2013 - 2016)	R. Vivekanandan	Geo-informatics	The project aims to Mapping Casuarinas and Eucalyptus plantations in Tamilnadu and estimate the yield for the species and to study change in the plantation area after three years in few selected areas.
29	Anti-insect secondary metabolites from fungal endophytes of selected tree species. (IFGTB/RP-116/2011-2014)	Dr.N.Senthilkumar	Managing Forests and forest products for livelihood support and economic growth(Integrated pests and disease management)	Healthy young and mature leaves of teak and ailanthus were collected and processed for isolation of endophytic fungi. Endophytes such as <i>Phoma</i> sp. and <i>Phomopsis</i> sp. from mature teak leaves; <i>Colletotrichum gloeosporioides</i> and <i>Botryodiplodia theobromae</i> from young and mature teak leaves; <i>Fusarium</i> from mature ailanthus leaves and <i>Phoma</i> sp. from young ailanthus leaves was isolated. Pure cultures of those endophytic fungi were maintained in the laboratory with identity. Thirteen endophytic fungal isolates were subcultured

				and mass cultures of <i>C. gleosporioides</i> , <i>Botryo</i> sp., <i>Phoma</i> sp., <i>Phomopsis</i> sp., <i>Fusarium</i> sp. and <i>Colletrochium</i> sp. were maintained at laboratory. Fungal extracts were made out of culture filtrate for isolation and characterization secondary metabolites. TLC analysis of the extracts has been made to identify the bioactive components. Further GC MS MS characterization of the culture extracts were performed for taxol identification.
30	Tree rich biobooster: A novel approach to synergise growth and pest management in fast growing industrially important tree species. (IFGTB/RP-127/2012-2015)	Dr.S. Murugesan	Biodiversity conservation and ecological security (Biodiversity conservation)	Mass culture of VAM, Azospirillum and Phosphobacteria was established for future activities. About twelve treatments of tree rich biobooster (FYM, effluent compost, vermicompost, and green manure) along with coir pith and vermiculite as base material were prepared to study the effect of bioinoculants with bio manure on casuarina and eucalyptus biomass. FYM, effluent compost, vermicompost, and green manure along with vermiculite and coir pith as base material were prepared for making pellet. <i>Casuarina spp.</i> , <i>Eucalyptus spp.</i> , <i>Tectona grandis</i> , <i>Ailanthus excelsa</i> and <i>Ailanthus triphysa</i> germination studies has been conducted on Tree rich biobooster as coir pith and vermiculite base media to evaluate the germination percentage, and cadamba seeds sown in mother bed. FYM and effluent compost along with coir pith as base material found to enhance the biomass when compared to vermiculite, green manure, all composts and all composts with PGPR as coir pith as base material.

31	<p>Selection and evaluation of high yielding clones of <i>Pongamia pinnata</i> .</p> <p>(IFGTB-RP-117/2011-2015)</p>	Dr. K. Palanisamy	Tree Improvement	<p>A total of 91 high fruit yielding candidate plus trees of <i>Pongamia pinnata</i> were selected from 24 districts in different agro-climatic zones of Tamil Nadu, Pondicherry and are clonally multiplied. GPS data of all the selected trees have been recorded .</p> <p>Flowering and fruit production in selected trees were recorded. The variation on pod and kernel characteristics and oil content of selected trees has been studied. A Vegetative multiplication garden (VMG) with the 91 CPTs is being established for mass multiplication of CPTs and thereafter for establishing clonal plantations.</p>
32	<p>Exploration, Collection and Evaluation of Forest Genetic Resources and Development of National Gene bank.</p> <p>(IFGTB-RP - 133/2012-2017)</p>	Dr. K. Palanisamy	Management and Improvement of Forest Genetic Resources	<p>Teak populations have been selected in different forest divisions of Kerala namely Thrissur, Chalakkudy, Malayatoor and Kothamangalam based on topography, soil factors, and morphological characteristics such as tree form, branching pattern, canopy, leaf, flowering and fruit. The details of Teak and Eucalyptus clones available with various stakeholders have been recorded and the clones will be collected for establishing National gene bank. In addition, a vegetative multiplication garden of teak with 56 clones and clone bank of teak are being maintained. The field trials at Salem, Tirunelveli, Nilambur, Panampally and Karunya are being evaluated.</p>
33	<p>Productivity studies on commonly cultivated bamboo species in different agro climatic zones of Tamil Nadu.</p> <p>(IFGTB-RP/AICP-</p>	M. Maria Dominic Savio	Management and Improvement of Forest Genetic Resources	<p>Details of bamboo plantations, numbering 716, under the management of Tamil Nadu Forest Department, including bamboo bearing areas have been collected from the Working Plans of 17 territorial divisions of Tamil Nadu.</p> <p>Details of bamboo plantations raised by farmers, numbering 543, have been collected by contacting the Forest Extension officers of</p>

	128/2012-2017)			<p>Tamil Nadu Forest Department, Deputy Directors of Horticulture of Tamil Nadu Horticulture Department and the office bearers of Tamil Nadu Tree Growers Association.</p> <p>Details collected on bamboo plantations are being converted into a database for extension activities.</p> <p>Field survey has been carried out in the districts of Kanyakumari, Tirunelveli and Virudhunagar districts of High rainfall and Southern agro climatic zones of Tamil Nadu. Based on field survey, bamboo plantations, numbering 7, have been shortlisted in the Southern Agro climatic zone for productivity studies as there are no bamboo plantations in the farmers' field in High Rainfall Zone.</p>
34	Restoration ecology and species recovery studies in Tsunami impacted mangrove areas in Andaman. (IFGTB/NFRP-112/2011-2016)	Shri. S. Saravanan	Restoration ecology and silviculture	On-going.
35	Development of models for conversion of plantations to secondary forests in Andamans. (IFGTB/NFRP-113/2011-2016)	Dr. A. Vijayaraghavan	Biodiversity conservation and ecological security	Third year of the project
36	Development	Dr. C.	Biodiversity	Four experimental trials were

	of site specific regeneration augmentation plan for potential degraded areas in Western Ghats, Kerala. (IFGTB-RP-73/2009-2014)	Kunhikannan	Conservation and Ecological Security	established at four sites in Attapaddy Reserve Forests and Silent Valley National Park buffer zone with selected pioneer and canopy species. Survival and performance of all the species have been recorded. Soil analysis from the trial and making inventory of species is in progress. The trials are being maintained.
37	Impact of forest plantations on ground flora diversity and soil characteristics including the prescription of management practices. (IFGTB-RP-86/2010-2013)	Dr. C. Kunhikannan	Biodiversity Conservation and Ecological Security	Three Teak plantations in Nilambur (Kerala), two in Sadiyaval (Tamilnadu), two each plantations of <i>Acacia mearnsii</i> and <i>Eucalyptus grandis</i> in Nilgiris, Kodaikanal (Tamilnadu) and Munnar (Kerala) were selected and studied the ground flora diversity, soil properties and soil microflora to know the advantageous effect of plantation on ground flora diversity and soil physical, chemical and biological properties.
38	Population structure, regeneration status and pollination ecology of <i>Dalbergia latifolia</i> and <i>D. sissooides</i> . (IFGTB-RP-122/2011-2016)	Dr. K.R. Sasidharan	Biodiversity Conservation and Ecological Security	In most of the locations studied on the Western Ghats, both <i>D. latifolia</i> and <i>D. sissooides</i> co-existed. In many of the places, the population of trees in the higher girth classes was more, compared to the lower girth classes. The natural regeneration of both the species was found to be very poor. Sapling / pole stages of these species were very less or absent in majority of the sites. The annual occurrence of fire and dense undergrowth of invasive weeds like <i>Lantana camara</i> and <i>Chromolaena odorata</i> were found to have adverse impact on the natural regeneration / establishment of these tree species in the forest areas.

39	<p>Study of biology and conservation management of endemic plants of KMTR, Tamil Nadu.</p> <p>(IFGTB-RP-120/2011-2015)</p>	Shri. K. Rajagopal	Biodiversity Conservation and Ecological Security	<p>The project was aimed to study the five endemic plants and their species recovery programme in the Kalakad Mundanthurai Tiger Reserve, Tamil Nadu. Field surveys were carried out and located the species <i>Eugenia singampattiana</i>, <i>Phyllanthus singampattianus</i>, <i>Palaquium bourdilloni</i> and <i>Sonerila kanniyakumarina</i> in the study area. Phenological observation of all the four species are in progress. In case of <i>Sonerila kanniyakumarina</i>, only few individuals were recorded in the entire project area. <i>Syzygium beddomei</i> could not be recorded during the survey. <i>Phyllanthus singampattianus</i> stem cuttings showed successful rate of rooting, using root hormones. Soil samples were collected and analysed for various physical and chemical properties. The study of microorganisms in the soil is under progress. Collected ethno-medicinal importance of the species. Interim report has been submitted to PCCF & CWLW, Chennai.</p>
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