

New projects initiated during 2010-2011-IFGTB

Project S.No.	Title of the project	PI	Thrust Area	Current Status
1	Biotransformation of some secondary metabolites by sporulate surface cultures of <i>Frankia</i> strains for nodulation capacity in <i>C. equisetifolia</i> and <i>C. junghuhniana</i> (April-2010, 2010-13)	Dr. S. Murgesan	Forest Protection (Mycorrhizae, rhizobia and other useful microbes)	A Frankia strain of 15 th , 25 th , 30 th day culture was isolated from the surface-sterilized root nodules of Casuarina seedlings, and the standard procedure was established. Lyophilized Frankia strain was purified, and the quantified fractions for the variation of signaling compounds of different nature which will modulate root physiology and root growth is in progress.
2	Capacity building among tree farmers for handling farm forestry planting stock on large scale (April-2010, 2010-12)	Shri V.K. W. Bachpai	Forest Management (Participatory Forest Management)	Three trainings were for farmers on Capacity building among tree farmers for handling farm forestry planting stock on large scale. First training imparted to 22 farmers from Dharmapuri, Krishnagiri and Villupuram districts of Tamil Nadu. Second training was imparted to farmers nominated by NABARD bank from the districts of Coimbatore, Tiruppur and Periyar. Third training was imparted to 30 farmers from Theni District
3	Chemotyping of <i>Sapindus emarginatus</i> - A potential NTFP of Tamil Nadu for saponins (April-2010, 2010-15)	Smt R. Anandakumari	Genetic Improvement (Conservation of Forest Genetic Resources)	Population of soapnut in Tamil Nadu was identified in areas such as Pillur, Dhimbham, Thengumarada, Aliyar. Collected seeds from Pillur and Thengumarada, processed and conducted germination test. Stem cuttings did not respond well for rooting. The no. of fruits per metre length of branch was taken as selection criteria. Raised stock for grafting. Various concentrations of IBA being tried for root induction. Measured seedling parameters in the germinated seedlings. Air layering experiment was carried out in trees found in forest campus.

				Studies are in progress.
4	Determination of the target genes in <i>Leptocybe invasa</i> for engineering resistance in Eucalyptus through gene-silencing approaches (April-2010, 2010-14)	Dr. Mathi sh Namb iar-Veetil	Genetic Improve ment (Biotech nology)	DNA isolation and RNA isolation protocols were standardized for <i>Leptocybe invasa</i> . <i>In silico</i> analysis of selected genes were carried out and the chitin synthase gene was partially sequenced.
5	Developing clonal technology for raising clonal Plantation of indigenous species <i>Ailanthus excelsa</i> and <i>Ailanthus triphysa</i> in Tamilnadu and Kerala (May-2010, 2010-14)	D. Rajas uguna sekar	Genetic Improve ment (Vegetat ive Propagat ion)	CPTs selection: The survey has been undertaken in the western zone and the southern zone of Tamilnadu. 38 CPTs have been identified and documented (TN TS 1-38). Cuttings were prepared for standardizing the vegetative propagation is in progress. (Selected cuttings were treated with 2000ppm of IBA in powder method) Periodical Biometric data are being collected in <i>Ailanthus excelsa</i> Germplasm assemblage at Salem, Chennai and Tirupati field.
6	Development of appropriate integrated management methods for the <i>Eucalyptus</i> Gall wasp problem in nurseries. (April-2010, 2010-12)	Dr. John Prasa nth Jacob	Forest Protectio n (Insects pests, diseases and control)	Completes one year by March 2011. Pest Management experiments laid out at Nuseries in Pudukotati, Karur and Coimbatore and assessment in progress. Life table experiments in progress. Assessment of impact of gall damage on nursery seedlings studied
7	Development of inter and intra specific hybrids in <i>Eucalyptus camaldulensis</i> . (April-2010, 2010-13)	Dr.B. Nagar ajan	Genetic Improve ment (Tree Improve ment)	Mother trees have been selected. Mechanical pruning carried out and flowering phenology is being recorded. A shift in flowering pattern of over 8 weeks is noticed. Control pollination is to be initiated during the last week of April, 2011.

8	Development of Tree DNA Fingerprint database (April-2010, 2010-13)	R.Vivekandan, Scientist-E	Genetic Improvement (Biotechnology)	Collected DNA fingerprint data from different researchers and also it is being done continuously. Standardization of format has been done. Design and development of the database is in progress.
9	Documentation of Agroforestry Systems and wood flow to Wood based industries in Tamil Nadu” (June-2010, 2010-13)	Shri K. Ravichandran	Forest Productivity (Social Forestry, Agroforestry /Farm Forestry)	Documented the various agroforestry systems and collected data on wood flow from wood based industries in the districts of Coimbatore, Cuddalore, Sivaganga, Pudukkottai and puducherry. Also collected data on the wood flow to pulp and paper industries. District wise details of saw mills,its demand and supply of timber have also been documented. Studied the supply chain existing between farmers and industries particularly paper and matchwood industries
10	Evaluation and identification of optimal parameters for flowering and fruit set in different Tamarind (<i>Tamarindus indica</i> L.) orchards. (April-2010, 2010-13)	Shri A. Mayavel	Genetic Improvement (Tree Improvement)	Evaluated five different tamarind clonal seed orchards namely Theni,Neyveli,Vringipuram,Thoppur and Mullangadu for flowering was completed. Analysis of sample for micro and macronutrient was completed for Neyveli and Theni orchards. Request made for collection metrological data.
11	Evaluation of <i>Calophyllum inophyllum</i> populations for high oil yield (April-2010, 2010-14)	Smt R. Anandalakshmi	Genetic Improvement (Tree Improvement)	Identified populations of <i>Calophyllum inophyllum</i> in Aliyar, Courtrallam, Pondicherry, Kanyakumari, Anaikatti, Noyyal, Kollam, Kazhargode and Alicode areas. Selection of trees with high fruit count per foot length branch was taken as a selection criteria. Collected fruits from Nagercoil collected and initiated germination studies. Grafting showed 50% success. Standardization of vegetative multiplication using different concentrations of IBA on stem cuttings, is in progress.
12	Evaluation of certain flora based on ethnobotanical	Dr. N. Senthil	Forest Protection	Based on ethnobotanical records plants such as <i>Adhatoda vasica</i> ,

	records for their pesticidal properties against important forestry insect pests. (April-2010, 2010-13)	Ikumar	n (Insects pests, diseases and control)	<i>Melia dubia, Pongamia pinnata, Vitex negundo, Briedelia scandens, Murraya koenigii, Aristolochia bracteata</i> and <i>Strychnos nuxvomica</i> were selected to screen their insecticidal properties against some important forestry insect pests. Plants samples were collected, processed and extractions were made with different solvents. Bioassay of those extractions with selected insect pest, <i>H. purea</i> was made and found promising results. <i>A. vasica, B. scandens</i> and <i>S. nuxvomica</i> were found to be very effective against teak defoliator. Characterization of bioactive principles in the extracts of aforementioned plants is in progress.
13	Evaluation of <i>Gmelina arborea</i> Roxb. selections from North Eastern and Southern Regions (April-2010, 2010-13)	Shri V.K. W. Bachpai	Genetic Improvement (Tree Improvement)	8 seed lots from Andhra Pradesh Forest Department, One from Tamil nadu Forest Department, One from Karnataka Forest Department and 21 seed lots from RFRI Jorhat have been received. Seed variations are recorded using image analyzer. Seeds sown in nursery beds and after germination studies the seedlings are being maintained in the nursery.
14	Evaluation of selected phenotypes of Casuarina for establishment of windbreaks in farmlands (April-2010, 2010-13)	Dr. Buvan eswaran	Forest Productivity (Social Forestry, Agro-forestry /Farm Forestry)	25 phenotypes has been selected and ramets collected from these phenotypes are rooted. This will act as stock for further multiplication for establishment of field trials.
15	Exploration of potential native natural enemies with a special emphasis on microbial biocontrol agents for management of casuarina hairy caterpillar, <i>Lymantria ampla</i> and Ailanthus defoliators, <i>Eligma narcissus</i> and <i>Atteva fabriciella</i> (April-2010,	Dr.A. Balu	Forest Protection (Insects pests, diseases and control)	Ongoing. 9 sites are identified ideal for regular surveys. 14 rounds of surveys (11for <i>Ailanthus</i> pests and 3 for <i>Casuarina</i> pest) were carried out. Two species of entomopathogenic fungus and three species of bacteria, 2 species of parasites and a species of predatory bug on <i>casuarinas</i> hairy caterpillar,

	2010-13)			<i>Lymantria ampla</i> and two species of bacteria, a species of dipteran parasite and a species of predatory bug on <i>Ailanthus</i> defoliators so far recorded from the field.
16	Impact of forest plantations on ground flora diversity and soil characteristics including the prescription of management practices. (April-2010, 2010-13)	Dr.C. Kunhikannan, Scientist D	Ecosystem Conservation and Management (Ecology and Environment)	<p>Three teak plantations in Nilambur, Kerala and one in Sadivayal in Taminadu are selected for the study.</p> <p>Ground flora species inventory in three teak plantations in Nilambur, Kerala and two in Sadivayal in Tamilnadu has been completed.</p> <p>Soli samples were collected from these plantations were analysed for soil microbial population. Analysis for soil nutrient status is in progress.</p>
17	Influence of beneficial microbes in conferring salt tolerance to <i>Casuarina</i> clones (April-2010, 2010-13)	Dr.V. Mohan	Forest Protection (Mycorrhizae, Rhizobia and other useful microbes)	<p>The project is aimed to isolate and identify the beneficial microbes from salt affected soils and also to select the most effective isolates of these beneficial microbes for conferring salt tolerance to <i>Casuarina</i> clones under <i>in vitro</i>, nursery and field. The salient findings and current status of the project are as follows:</p> <ul style="list-style-type: none"> • Project was initiated during April, 2010. • Soil samples were collected from different salt affected sites in Tamil Nadu and Puducherry. All the samples were analyzed and estimated the physico-chemical properties such as pH, E.C., and macro nutrients. • 51 isolates of PGPRs (PSB 18 isolates, <i>Azotobacter</i> 16 isolates and <i>Azospirillum</i> sp. 17 isolates) were isolated and identified and pure cultures of these strains are maintained in the Institute's germ plasm for further studies. • Estimated population

				<p>density of all the PGPRs isolated from various samples of selected saline areas.</p> <ul style="list-style-type: none"> • Screening of efficient PGPR isolates was done by IAA production and phosphate solubilization. • Spore population of AM fungi was observed in high frequency in different samples screened. • Screening of effective PGPR isolates for conferring salt tolerance was done under <i>in vitro</i>. • Presented a research paper on “Status of Beneficial Microflora in Saline Soils of Tamilnadu and Puducherry.” In: National Seminar on Tropical Ecosystems: Structure, Function and Services (TESFS-2010) held at Institute of Forest Genetics and Tree Breeding, Coimbatore. <p>Further studies are under progress.</p>
18	Influence of <i>Eucalyptus</i> species on the natural enemies incidence on the gall wasp <i>Leptocybe invasa</i> . (April-2010, 2010-13)	Dr. Prasan	Forest Protection (Insects pests, diseases and control)	<p>Completes one year by March 2011. Culture of eucalyptus gall wasp population and the parasites <i>Megastigmus</i> sp. and <i>Quadrastichus</i> sp. in nursery plants in breeding chamber carried out. Biology and parasitisation efficiency of <i>Megastigmus</i> sp. and <i>Quadrastichus</i> sp. carried out.</p>
19	Introduction and evaluation of fast growing tree species under Agroforestry systems in different agro-climatic zones of Tamil Nadu. (June-2010, 2010-15)	Shri. S. Saravanan,	Forest Productivity (Social Forestry, Agro-forestry /Farm Forestry)	<p>Established agroforestry trial with fast growing tree species of <i>Melia dubia</i>, <i>Gmelina arborea</i> and <i>Sweitenia macrophylla</i> based system under 15 ha in three agroclimatic zones of Tamil Nadu (Northeastern , Cauvery delta and Southern zone) completed the allelopathic study with the different extracts of the above four tree species with Sorghum and Bajara species. In all the</p>

				established agroforestry fields, intercropping activities have been carried out and assessed the yield of the annual crops.
20	Management of pre and post harvest pests and diseases on seeds of fast growing native tree species. (April-2010, 2010-13)	Dr. John Prasanth Jacob	Forest Protection (Insects pests, diseases and control)	Completes one year by March 2011. Identification of flowering and fruiting periods of <i>Pongamia</i> , <i>Melia</i> and <i>Neolamarkia cadamba</i> done. Monitoring of stored seeds with traps carried out. Damage assessment in terms of nature and intensity of attack by 2 species if insects in <i>Pongamia</i> studied. Seed treatments with pesticides and plant based extracts carried out.
21	Molecular analysis for population differentiation and mating system in <i>Acacia auriculiformis</i> using dominant and codominant markers (April-2010, 2010-13)	Dr.A. Shanthi	Genetic Improvement (Biotechnology)	Thirty families of <i>Acacia auriculiformis</i> with two individual per family were collected from the orchard established at Panampalli, Kerala and was studied using ten ISSR primers. The data analysis is in progress for diversity study. Further twenty family individuals are in progress for screening ISSR- PCR.
22	Orthopteran diversity of the Nilgiri Biosphere Reserve (April-2010, 2010-13)	Dr. N. Senthil Kumar	Ecosystem Conservation and Management (Biodiversity)	Surveys were made under various habitat types in the selected sites of NBR for orthopteran diversity viz., Scrub jungle - Masinakudi, Deciduous forest -Mudumalai, Umbrella Vayal and Ottamala. Ten species of Orthoptera belonging to eight genera and three families are recorded in various habitat types. Some of the commonly available Orthopteran insects in NBR are <i>Orthacris maindroni</i> Bolivar, <i>Acrida exaltata</i> (Walker) and <i>Xenocatantops brachycerus</i> (Willemse). Impact of landscape changes on Orthopteran species assemblages is in progress.
23	Selection and Vegetative Propagation of <i>Neolamarkia cadamba</i> (Roxb.)Miq – An alternative species for Pencil , Match Wood and Ply Wood Industries (June-2010, 2010-14)	Dr. A. Vijayaravan	Genetic Improvement (Tree Improvement)	Visited the 100 acre plantation in the Narasipuram, Coimbatore and short listed the traits to be taken for the selection of CPT's in evenaged stand. Short listed the location to be surveyed for this financial year with HOD-FLUCC. Accordingly this year we are going to survey in the natural stands of Tamil Nadu Forest and Kerala Forest and the

				<p>available plantations in both the state.</p> <p>We got permission from the CCF (Research) Kerala Forest Department and we surveyed in the natural population of Konni division .</p> <p>Visited the 70 acre plantation in the Devarayapuram, Coimbatore and taken the gbh for the selection of CPT's in evenaged stand</p> <p>Selected around 25 candiadate plus trees in Narasipuram and 15 in Devarayapuram</p> <p>Standardization of the vegetative propagation technique is in progress.</p> <p>Initiated the standardization of Seed handling technique</p> <p>Till date around 1.50 lakhs has been spent</p>
24	<p>Selection of clones of <i>Acacia auriculiformis</i> with desirable stem form and wood properties for short rotation timber production. (August-2010, 2010-15)</p>	<p>Dr. Mahe shwar Hegde</p>	<p>Genetic Improve ment (Tree Improve ment)</p>	<p>Visits were made to the trial and trees were selected</p> <p>Maintenance work has been undertaken in all progeny trials. Superior trees based on stem form and growth have been selected in Wadkkancherry (15), Panampally (30) and Nilambur (17) trees have been initially coppiced in Panampally for young shoot production for further rooting. Initial rooting experiments have shown that good percentage of rooting can be obtained with 2-3 months old terminal cuttings obtained by coppicing. The clonal propagation is under progress 3 trees per 132 families in the progeny trial at Panampally were cut and 2ft wood pieces have been sent to IWST Bangaloire for further wood property studies. Selected Trees in Nilambur have been coppiced. SSO at Nilambur was evaluated. All the trials have been maintained.</p>

25	Species recovery using diversity estimate and control pollination in <i>Bruguiera sexangula</i> . (April-2010, 2010-13)	Dr.B. Nagarajan	Genetic Improvement (Conservation of Forest Genetic Resources)	Mother trees have been selected. Mechanical pruning carried out and flowering phenology is being recorded. A shift in flowering pattern of over 8 weeks is noticed. Control pollination is to be initiated during the last week of April, 2011.
26	Studies on essential oils chemical consequence and toxicity assessment of the leaf oil of Lantana camara from Tamilnadu (April-2010, 2010-13)	Dr. S. Murugesan	Non-wood Forest Products (Chemistry of NWFPs, Value Addition and Utilization)	Essential oil was extracted from the leaves of <i>L.camara</i> differing in flower colour (orange, pink, white pink, pink yellow, orange yellow), and the oil percentage varied from 0.3 % for the leaf collected from Courtrallam to 1.2 % for the leaf collected from Valparai. Oil percentage was high for leaves collected from <i>L.camara</i> with rose colour flower compared with plant with yellow colour flower. Bioefficacy of the essential oil against teak defoliator and fungal pathogens is in progress.
27	Studies on oil: chemical composition, antifeedant, insecticidal and antifungal activities of tree borne oil seeds (April-2010, 2010-13)	Dr. S. Murugesan	Non-wood Forest Products (Chemistry of NWFPs, Value Addition and Utilization)	Seeds of TBO's <i>Sapindus emarginatus</i> , <i>Calophyllum inophyllum</i> , <i>Hydnocarpus pentantra</i> were subjected to two different extraction procedures (hot and cold extraction procedures) using non-polar solvent for the extraction of oil. Overall hot extraction yields more oil than cold method. The preliminary bioassay studies of the oil, extracted from TBO's using two different extraction procedures were conducted on the teak defoliator at laboratory level in different concentrations ranging from 200 ppm to 1000ppm and observed that almost all TBO's showed 50-80 % larval mortality after 24 hours of treatment.
28	Study of genetic variation in <i>Pterocarpus santalinus</i> in Tamilnadu for growth and heartwood content (August 2010, 2010-15)	Dr. Mareshwar Hegde	Genetic Improvement (Conservation of Forest Genetic Resources)	The Field Assistant has joined during December-2010 The PCCF accorded permission to visit various red sanders plantations in Tamil Nadu on December 15. A mixed plantation of <i>Albizia</i> and <i>Pterocarpus santalinus</i>

			es)	<p>(planted in 1977) near Mettupalyam was visited and growth was recorded. Soil samples were collected in 2 plantations and analysis is in progress.</p> <p>5% trees were sampled and tested for heartwood formation. 80% trees found to contain heartwood in 33 year old plantation. Seed samples were also collected</p>
29	<p>Study on reproductive biology and breeding systems in <i>Ailanthus excelsa</i> and <i>Ailanthus triphysa</i> (May-2010, 2010-13)</p>	<p>D. Rajasugunasekar</p>	<p>Genetic Improvement (Tree Improvement)</p>	<p>The survey has been undertaken in Palakkad and Trissur districts of Kerala, Trinelveli district of Tamilnadu.</p> <p><i>Ailanthus triphysa</i> Seeds have been collected from KFD, 2000 seedlings have been raised in the silviculture nursery, IFGTB.</p> <p><i>Ailanthus triphysa</i> plantations established by KFD (kerala Forest department) details have been collected for further survey.</p> <p>Data sheet is being prepared for recording the crosses.</p> <p>1acre, <i>Ailanthus triphysa</i> Germplasm assemblage has been established in Panamplali field research station.</p> <p>Karyotyping of <i>Ailanthus triphysa</i> has been done for the first time.</p>