



## RESEARCH HIGHLIGHTS



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## Introduction

Directorate of Research at ICFRE Headquarters plan, coordinate and monitor the forestry research in all the eight research institute and four centres of the Council and evaluate the progress of various research projects. The Council represents the nation through Biodiversity Conservation and Climate Change Division at international echelon at various platforms in this field.

**The Biodiversity and Climate Change (BCC) Division** is actively engaged in capacity building programmes by conducting various national and international workshops, and training programmes on climate change, Clean Development Mechanism (CDM) and forestry for forest officers and other stakeholders. The Division is working on forestry and climate change related policy issues leading to international negotiations under United Nations Framework Convention on Climate Change (UNFCCC). The Division is actively involved in providing technical inputs to “Forestry Sub Group on Climate Change” to the Ministry of Environment and Forests (MoEF), Government of India and contributes towards the development of country submissions to the UNFCCC. Biodiversity and Climate Change (BCC) Division, ICFRE has also undertaken several short and long term policy programmes to address the problems of Biodiversity Conservation and Climate Change.

### **ICFRE Accredited by UNFCCC as First Designated Operational Entity (DOE) from India for Clean Development Mechanism**

The CDM Assessment team (CDM-AT) from UNFCCC visited ICFRE Hqs 30<sup>th</sup> April and 1<sup>st</sup> May 2010 for on-site assessment of ICFRE for accreditation as Designated Operational Entity (DOE) for Clean Development Mechanism projects.



CDM Assessment Team (CDM-AT)

On the successful assessment and recommendation by CDM –AT, ICFRE became the first Indian Designated Operational Entity (DOE). It has also accredited by the Executive Board of Clean Development Mechanism of the United Nations Framework Convention on Climate Change (UNFCCC), as DOE for validation and verification/certification functions for the sectoral scope, Afforestation and Reforestation in its fifty ninth meeting held at Bonn, Germany from 14<sup>th</sup> to 18<sup>th</sup> February 2011.

BCC Division has also compiled and prepared a report of ICFRE on celebration of International Day for Biological Diversity on 22<sup>nd</sup> May 2010 under the theme “Biodiversity, Development and Poverty Alleviation” given by Convention on Biological Diversity (CBD) and submitted to MoEF for onward transmission to the CBD Secretariat, Montreal, Canada.

The BCC Division undertook two externally aided projects related to climate change:

#### **i. Research Needs, and the Financial, Technological and Capacity Needs and Constraints to Address Climate Change Concern vis-a-vis Forests and Forest Products in India':**

The project was subcontracted to ICFRE by the Ministry of Environment and Forests, Government of India through Winrock International India. The project was completed and project report submitted to donor agency.



**ii. Measurement of Forest Carbon Exchange Using Eddy Covariance and CDM Potential Studies in India:**

The project is a partnership study between the Department of Forest Science and Resources (DISAFRI), University of Tuscia (Italy), Indian Institute of Remote Sensing, Indian Council of Forestry Research and Education, and Uttarakhand Forest Department. Under this project, BCC Division of ICFRE is developed curriculum on climate change and CDM aspects for FRI University students and state forest department and FAQ About CDM A/R Project under preparation.

**Research Planning Division** under the Directorate of Research deals with the planning,

formulation and finalization of ICFRE plan funded forestry projects. It coordinates the stakeholders meets, Research Advisory Group (RAG ) meetings at each institute and Research Policy Committee (RPC) meeting at National level at ICFRE Hqs. following bottom-up, transparent and participatory approach. It also reviews the ongoing projects under five years rolling plan.

During the year 2010-11, following achievements were made by this division:

**Stakeholders Meet:** Coordinated with the institutes for following stakeholders meets in each of SFD headquarters to facilitate a meaningful and continuous exchange of research information, and project implementation.

S.N.	Name of Institute	Details of Stakeholders meet held	
		Venue	Date
1	IWST, Bangalore	Karnataka	28 <sup>th</sup> May 2010
		Goa	4 <sup>th</sup> June 2010
		Andhra Pradesh	19 <sup>th</sup> May 2010
2	RFRI, Jorhat	Assam, Arunachal Pradesh, Meghalaya and Sikkim	31 <sup>st</sup> May 2010
		Mizoram	03 <sup>rd</sup> June 2010
		Tripura	07 <sup>th</sup> June 2010
		Nagaland and Manipur	29 <sup>th</sup> June 2010
3	IFGTB, Coimbatore	Tamil Nadu	28 <sup>th</sup> April 2010
		Kerala	19 <sup>th</sup> May 2010
		Andaman & Nicobar Islands	31 <sup>st</sup> May 2010
4	AFRI, Jodhpur	Gujarat	19 <sup>th</sup> July 2010
		Rajasthan	09 <sup>th</sup> June 2010
5	HFRI, Shimla	Himachal Pradesh	
		Jammu & Kashmir	01 <sup>th</sup> July 2010
6	IFP, Ranchi	Jharkhand	25 <sup>th</sup> May 2010
		Bihar	15 <sup>th</sup> June 2010
		West Bengal	23 <sup>rd</sup> August 2010
7	TFRI, Jabalpur	Madhya Pradesh	05 <sup>th</sup> April 2010
		Chhattisgarh	23 <sup>rd</sup> April 2010
		Maharashtra	13 <sup>th</sup> May 2010
		Orissa	24 <sup>th</sup> May 2010
8	FRI, Dehradun	Uttarakhand	03 <sup>rd</sup> May 2010
		Haryana	18 <sup>th</sup> May 2010
		Chandigarh	15 <sup>th</sup> June 2010
		Uttar Pradesh	21 <sup>st</sup> May 2010
		Delhi	
Punjab	15 <sup>th</sup> June 2010		



**Research Advisory Group (RAG)** meetings of each of the eight ICFRE institutes were convened at Institute level on the dates mentioned below:

<b>IFGTB, Coimbatore</b>	12 <sup>th</sup> and 13 <sup>th</sup> October 2010
<b>AFRI, Jodhpur</b>	28 <sup>th</sup> and 29 <sup>th</sup> October 2010
<b>HFRI, Shimla</b>	1 <sup>st</sup> and 2 <sup>nd</sup> November 2010
<b>IFP, Ranchi</b>	8 <sup>th</sup> and 9 <sup>th</sup> November 2010
<b>FRI, Dehradun</b>	11 <sup>th</sup> and 12 <sup>th</sup> November 2010
<b>IWST, Bangalore</b>	18 <sup>th</sup> and 19 <sup>th</sup> November 2010
<b>TFRI, Jabalpur</b>	24 <sup>th</sup> and 25 <sup>th</sup> November 2010
<b>RFRI, Jorhat</b>	25 <sup>th</sup> and 26 <sup>th</sup> November 2010

Research Advisory Groups were chaired by PCCFs of the concerned states and attended by members from different strata of scientists, forest officials, stakeholders viz. NGOs, industries, progressive farmers and Universities. The proposals were evaluated by two subject

experts/referees and accordingly projects were modified for the consideration of RAG and RPC.

### **Research Policy Committee (RPC) Meeting**

Research Policy Committee (RPC) is the apex body at ICFRE that prioritize the ICFRE funded projects of eight research institutes and four research centres of ICFRE recommended by RAG of the institute and ensure balance among international, national, regional and state research requirements and decide investment in high quality forestry research.

ICFRE research has been broadly categorized in to seven thrust areas and thirty two themes. All the new projects were categorized accordingly as given below:

<b>S.N.</b>	<b>Thrust Area</b>	<b>Theme</b>
1	Forest Productivity	1. Improvement of Forest Productivity 2. Social Forestry, Agro/Farm Forestry 3. Vegetative Propagation 4. Nursery Techniques/Seed Technology
2	Ecosystem Research	1. Control of weeds and invasive species, 2. Natural regeneration of imp. species, 3. Fire Management, Planted Forests and forest harvesting practices, Community based approaches, 4. Protection of endangered species, 5. Shifting cultivation, 6. Wetlands and mangrove forests, 7. Soil and water conservation including integrated, Renewal bioenergy, 8. Preservation plots, 9. Indigenous knowledge system, 10. Phytodiversity network, 11. Bioremediation and Pollution Control, 12. Ecorestoration of degraded lands, 13. Environment Impact Assessment/development,
3	Genetic Improvement	1. Tissue Culture 2. Conservation of Forest Genetic Resources 3. Tree Improvement
4	Forest Management and Protection	1. Watershed Management 2. Participatory/Joint Forest Management, 3. Control of Pests and Diseases
5	Climate Change	4. CO <sub>2</sub> Sequestration 5. Mitigation and Adoption and Carbon Pool Assessment
6	Forest Wood Products	1. Wood/Plantation Species Utilization, 2. Timber Statistics, Bamboos.
7	Non Wood Forest Product	3. Biofuel, <i>in situ/ex situ</i> conservation of NWFPs 4. Medicinal Plants, 5. Utilization of NWFPs



However, these seven thrust areas are under thought process for further refinement into following four thrust areas having thirty two themes.

- **Managing forests and forest products for livelihood support**
- **Biodiversity conservation and ecological security**
- **Forestry interventions for climate change mitigation and adaptation**
- **Management and improvement of forest genetic resources**

**Directors' Meet:** The V Directors' Meet was organized on 26<sup>th</sup> October 2010, in the Board Room of ICFRE hqrs, under the chairmanship of DG, ICFRE. The Directors' Meet was organized to discuss some of the important issues for which agenda was fixed by different directorates in consultation with the Directors of the Institutes.

#### **Bamboo Technical Support Group (BTSG) – ICFRE:**

Bamboo Technical Support Group (BTSG)- Indian Council of Forestry Research and Education (ICFRE), Dehradun constituted by National Bamboo Mission, Ministry of Agriculture, Govt. of India caters to the research and technology based needs of eleven States of the country viz., Jammu & Kashmir, Punjab, Haryana, Himachal Pradesh, Uttarakhand, Uttar Pradesh, Bihar, Madhya Pradesh, Chhattisgarh, Rajasthan and Gujarat to facilitate the implementation of the programmes of National Bamboo Mission. BTSG-ICFRE had come into existence in July 2007. Activities of BTSG include organizing trainings to the farmers and field functionaries; Publication of bamboo literature; Promotional Campaign through Electronic Media; Organizing seminars, etc.

**Five Days' Training Programme for Farmers and Field Functionaries:** Principal Chief Conservators of Forests and State Mission

Directors of concerned States nominate farmers and field functionaries of their respective states for organizing training programmes by following ICFRE institutes/centre:

- Forest Research Institute (FRI), Dehradun
- Tropical Forest Research Institute (TFRI), Jabalpur
- Arid Forest Research Institute (AFRI), Jodhpur
- Himalayan Forest Research Institute (HFRI), Shimla
- Institute of Forest Productivity (IFP), Ranchi
- Centre of Social Forestry and Eco-Rehabilitation (CSFER), Allahabad

#### **Training Programme for Farmers and Field Functionaries:**

During 2010-11, BTSG-ICFRE organized a five Days Training programme for the Farmers and Field Functionaries of Punjab from 07 to 11 February 2011. This training programme was organized by FRI, Dehradun.

#### **Promotional Campaign Through Electronic Media:**

A full-page coloured advertisement of BTSG-ICFRE, Dehradun depicting the objectives and strategies of National Bamboo Mission has been published on the back jacket (back page) of the **Indian Forester** during the year.

#### **Bamboo Literature:**

Six hundred copies of the hindi book titled **“Baans Ropan Evam Upyogita”** and 100 copies of hindi poster **“Bans Aajeevika Ka Ek Saadhan”** published by BTSG-ICFRE, were provided to different concerned ICFRE Institutes and State Bamboo Missions for free distribution among the participants of training programmes under National Bamboo Mission.

**Monitoring and Evaluation Division** deals with the review and evaluation of all the



ongoing research projects of ICFRE institutes and suggests corrective measures for timely completion & achieving the objectives with perfection and objectives. Also independent evaluation of some research projects of ICFRE Institutes through independent external evaluators/ subject matter specialist/ experts/ agency for improvement in the quality of research and transfer of technology developed to the stakeholders is being done. Project Completion Reports (PCRs) are scrutinized and accepted as

per the Format Guide of ICFRE. Seventy Seven such ICFRE funded projects have been received and scrutinized.

Quarterly Progress Reports of individual projects from Directors are scrutinized for conformity with the approved action plan and corrective measures are suggested for timely achieving the objectives.

During 2010-11, 436 ongoing research projects including 86 externally aided were reviewed and evaluated as per schedule.

### Institute-wise Ongoing Research Projects Reviewed During 2010-11

S.No.	Name of Institute	Date of Review	No. of Ongoing Projects Reviewed		
			ICFRE funded	EAP	Total
1	AFRI, Jodhpur	25 <sup>th</sup> and 26 <sup>th</sup> August 2010	24	10	34
2	FRI, Dehradun and CSF & ER, Allahabad	13 <sup>th</sup> to 17 <sup>th</sup> September 2010	104	23	127
3	HFRI, Shimla	01 <sup>st</sup> to 03 <sup>rd</sup> June 2010	22	6	28
4	IFGTB, Coimbatore	15 <sup>th</sup> to 18 <sup>th</sup> June 2010	62	11	73
5	IFP, Ranchi	15 <sup>th</sup> to 17 <sup>th</sup> July 2010	23	2	25
6	IWST, Bangalore and FRC, Hyderabad	29 <sup>th</sup> to 30 <sup>th</sup> June 2010	48	13	61
7	RFRI, Jorhat	19 <sup>th</sup> to 21 <sup>st</sup> July 2010	41	5	46
8	TFRI, Jabalpur and FHRDC, Chhindwara	09 <sup>th</sup> to 13 <sup>th</sup> August 2010	26	16	42
<b>Total</b>			<b>350</b>	<b>86</b>	<b>436</b>

Independent External Evaluation (IEE) of 30 projects randomly selected from each institute was carried out through independent external evaluators/ subject matter specialist/ experts/ agencies from out side ICFRE system. Evaluation reports of 26 research project have been received, scrutinized and accepted by the competent authority. Evaluation for other projects is in the process.

**Project Formulation Division** functions as a facilitator between the ICFRE institutes/ centres and the potential donor agencies; for the

formulation of research projects in the identified thrust areas and seeking funding for various national and international donor agencies. It also coordinated the implementation of the research projects by ICFRE institutes/ centres and of status report.

Collaborated project are being carried out with a number of National and International donor agencies for project funding. The total no of ongoing Externally Aided Projects (EAP) in 2010-11 are 79 with the sanctioned worth of ₹ 1477.06/- lakh. Project proposals on



“Community based sustainable natural resource management for poverty alleviation in the ten states of Uttarakhand, West Bengal, Madhya Pradesh, Chhattisgarh, Jharkhand, Gujarat, Rajasthan, Andhra Pradesh, Maharashtra and Orissa” submitted jointly by ICFRE and Tapobhoomi Trust and “Quantification, value addition of NTFP and improved agricultural productivity to enhance livelihood opportunities in tribal belt of Sirohi District of Rajasthan” have been submitted for seeking financial support.

The international funding agencies like World Bank through ICAR, International Foundation for Science, Sweden and CSIRO funded the ICFRE Institutes. Eleven externally aided projects worth of ₹ 149.09 lakh have been completed in this year. Six internationally funded projects with the sanctioned worth of ₹ 84.31 lakh are under implementation. Some important International projects namely, project on “New bio-control opportunity for prickly Acacia - Exploration in India”, funded by Alan Fletcher Research Station, Australia; “A Value Chain on Industrial Agroforestry in Tamil Nadu” by World Bank through ICAR; “Improving the accessibility and affordability of improved seeds from breeding programmes to benefit large numbers of smallholder tree farms and rural communities in Tamil Nadu and Puducherry” funded by CSIRO, Australia and “New bio-control opportunities for prickly Acacia: Exploration in India” funded by Alan Fletcher Research Station, Australia are under implementation in AFRI, IFGTB and other Institutes of ICFRE.

Several MoUs and agreements for the execution of collaborative projects/ programmes by ICFRE institutes were finalized with renowned institutions, such as IFGTB, Coimbatore with and TNPL undertaken project on “Production and testing of control pollinated *Eucalyptus* hybrids with improved biomass and pulp yield to support industrial forestry in Tamil Nadu”,

IFGTB, Coimbatore and ITC R&D Centre, Hyderabad project on “Development of an inter specific hybrid *Corymbia* hybrid *Corymbia torelliana* x *Corymbia citriodora*” and IWST, Bangalore and IINRG, Ranchi project on “Termite and borer resistance of shellac-based varnishes”.

**Bihar Project** - Samudai Adharit Samanvit Van Prabandhan Evam Sanrakhshan Yojna (SASVPESY) to Address Livelihood Issues: Samudai Adharit Samanvit Van Prabandhan Evam Sanrakhshan Yojna (SASVPESY) of Bihar State sponsored by Planning Commission, Govt. of India launched during 2006 and being implemented by ICFRE, Dehradun. Actual physical activity started in January 2007 in Vaishali district of Bihar with focus on well being on each and every section of the farming community including landless laborers, small, marginal and big farmers by involving them into nursery raising, uprooting and seedling transporting & planting in farmlands. The project will be completed in two phases. In Phase-I, Vaishali district has been taken up and in the II<sup>nd</sup> phase remaining districts of North Bihar will be taken up.

The project has main objective of the socio-economic development of the Vaishali district of Bihar through poplar based agroforestry and capacity building of the farmers by providing technology and services, quality planting stock material, training and extension, establishment of Hi-tech Nurseries/Kisan Nursery, agroforestry demonstration trials and technological exposure etc. in the area.



Poplar Kisan Nursery Village Loma, Jandaha, Bihar



Uprooting of Poplar in Kisan Nursery at Patepur Vaishali

Since January 2007 a total of 74.00 lakh ETPs/seedlings were distributed for nursery raising and for preparation of planting stock and

farmers created wood lots on their fields. The major wood yield would start coming gradually from year 2013-14 onwards. The process oriented activities mainly Kisan Nursery and planting operations has generated lot of economic activity among different stakeholders in the form of farmers, landless laborers, water pump set owners, tractor owners, fertilizer and hardware shops and fuel stations. Apart from that approx 100 families/ individuals worked with the project since last 4 years as Extension Workers.

**Table Showing the Amount of Mandays Generate Under the Project Activity**

S.N.	Nature of work	Executing agency	Duration	Man days creation (in Lac)
1	Engagement of technical and semi skilled staff	ICFRE	2007 to 2011	1.71
2	Uprooting and transporting	ICFRE	2007 to 2011	0.90
3	Provision for nursery planting material	ICFRE	2007 to 2011	0.16
4	Demonstration plot	ICFRE	2007 to 2011	0.08
5	Kisan Nursery	Farmers	2007 to 2011	1.08
6	Planting operations	Farmers	2007 to 2011	2.96
7	Maintenance of plantations	Farmers	2007 to 2011	1.32
			TOTAL	8.21

Besides Poplar, species of teak, mahogani, gamhar, kadamb, semal, jamun, arjun, kathal etc. were raised. Meanwhile, more than 24 lakh quality plants of poplar and around 12 lakh of non poplar species were distributed in all 16 blocks of Vaishali & adjoining areas. Species which are produced in Kisan nurseries are being distributed free of cost to the farmers of Vaishali and adjoining villages in the nearby districts of Muzzaffarpur, Samastipur, Saran and Patna. Training on VAM inoculation was imparted by Scientist from FRI Dehradun.



Raising of Teak in Model Nursery, Jadua





Demonstration centres were established at Jadua and Goraul and these centres provide on the spot technical knowledge to farmers. Capacity building trainings at Jadua training centre and field training at different villages of Vaishali, Rahimpur Vaishali and Rahsa Pachiyari, Bhagwanpur had been organized and under this programme, around 6281 farmers were trained on planting & nursery raising techniques of poplar.



ICFRE Demo Plot at Goraul



Kisan Study Tour for Haldwani



Extension material/field manuals, Pamphlets on Agroforestry, Booklets on poplar, bamboo, Kisan Nursery, Krishi Vaniki ki Pramukh Prajati and documentary film on “Silent Revolution” have been developed in Hindi for beneficiaries. To develop marketing linkages between Forest based industries and the farmers of Vaishali district “Buyer Seller Meet” was organized under the SASVPESY of Bihar State.

The acceptability of farming community to allow tree crop along with agriculture crop was most important breakthrough. Year after year the message of adoption of agroforestry is going deeper and deeper in mind of farmers and spreading like wild fire. Farmers are interested in taking this calculated risk for getting 3-4 fold increased revenue return from the same piece of

land. Poplar is replacing semal, the traditional industrial wood raw material of the area aggressively. The initial strategy of “Push” the poplar has gradually turned into “Pull” (demand) driven stage. Approach of farmers towards tree farming has gone a sea change and they are trying to stick to irrigation and pruning and other tending activities in the tree crops. The project activities have already been started bringing in socio-economic changes in the area in a very short period by eliciting community participation, by providing research and technological inputs by ICFRE and is being seen as a future industrial development based on generation of raw material for wood based industries.

Theme based research achievements of the Council follow in the sub-chapters ahead.