

7. Forestry Extension for Taking Research to People

The Council endeavours to transfer simple implementable technologies to the intended target groups, especially the farmers. It also engages in development and dissemination of forestry extension programmes. It coordinates various extension activities of ICFRE institutes and Centres and provides consultancy/technical services in the field of forestry, environment and allied sciences as well as environment impact assessment and other related areas. The Council is committed to disseminate its research outputs to the stakeholders through various schemes, such as, Van Vigyan Kendras, Demo Villages, Networking of VVKs with KVKs, Direct to Consumer Scheme, through organizing and participating in various extension activities and by means of quality publications.

- Eight flyers were published based on the SLEM best practices.
- Semiannual report SLEM-TFO project.

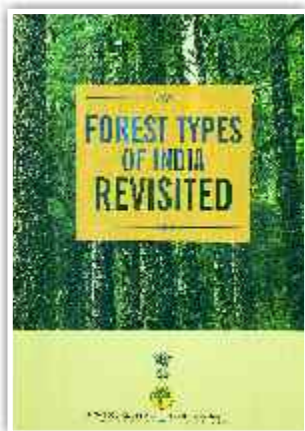


Cover pages of the publications

7.1.1 Collection, compilation and publication of forestry reports/ journals

7.1.1 Research publications: Books and newsletters published by ICFRE Hqs. during the year are viz.:

- Annual Report of ICFRE, 2012-13.
- Bi-annuals - ICFRE Newsletter and 'Vaniki Samachar'.
- Book on 'Forest types of India: Revisited'.
- Proceedings of the workshop on 'Innovations for forest carbon finance in India'.
- Book on 'Soil organic carbon stocks in forests of India'.
- 4 issues of 'ICFRE Climate News' were prepared and uploaded on ICFRE website.
- Publications of SLEM
 - SLEM e-newsletter June 2013 Vol.1, no.5. and December 2013 Vol.6, no.6
 - Proceedings of the one- day seminar on "Drought and water scarcity".



A total of 411 research articles were published by ICFRE institutes in scientific journals of national and international repute and in books. The institute-wise details of the same are given below:

S. N.	Name of Institute	Number of research articles published in scientific journals and books/proceedings		
		National Journals	Foreign Journals	Book Chapter/in Proceedings
1	FRI, Dehradun	53	44	19
2	IWST, Bangalore	22	27	21
3	IFGTB, Coimbatore	21	17	61
4	AFRI, Jodhpur	14	14	26
5	TFRI, Jabalpur	18	1	9
6	RFRI, Jorhat	8	13	6
7	HFRI, Shimla	10	-	2
8	IFB, Hyderabad	2	-	3
Total		148	116	147

Also, a total of 95 research articles were presented in seminars/conferences/ workshops and, 181 abstracts and 25 popular articles were published by ICFRE institutes during the year as per the following details:



S. N.	Name of the Institute	Number of articles presented in seminar/conferences/ workshops along with abstracts & popular articles published		
		Article presented	Abstract published	Popular article
1	IFGTB, Coimbatore	18	54	4
2	FRI, Dehradun	32	7	9
3	TWST, Bangalore	33	6	-
4	RFRI, Jorhat	-	57	4
5	TFRI, Jabalpur	8	28	5
6	AFRI, Jodhpur	-	22	-
7	HFRI, Shimla	4	7	3
Total		95	181	25

Apart from above, 16 books and 16 booklets, brochures/pamphlets were published by the ICFRE institutes during the year as indicated below:

S. No.	Name of the Institute	Number of books and booklet, brochures/pamphlets published	
		Books	Booklets/brochures/ bulletins/ pamphlets
1	IFGTB, Coimbatore	8	6
2	FRI, Dehradun	4	2
3	IWST, Bangalore	2	1
4	IFP, Ranchi	1	-
5	TFRI, Jabalpur	1	-
6	HFRI, Shimla	-	7
Total		16	16

National Forest Library and Information Centre

The National Forest Library and Information Centre (NFLIC) is the richest in document collection on forestry and allied sciences in South and Southeast Asia. It has been providing diverse library and information services, viz, reference, referral, lending, reprography, current awareness, inter-library loan, retrieval of information from the machine readable database, etc. to its users. During the year, 27,117 books were loaned to the users for outside reading. Besides, 57,355 documents were consulted in the library.

The document collection of the NFLIC was enriched by the addition of 2,726 books and other documents, out of which 125 books were purchased at a cost of Rs. 1.83 lakh. The NFLIC subscribed 66 Indian and 89 foreign periodical

titles. It also received 680 issues of the periodicals as gratis. The NFLIC provided online accessibility to 184 e- journals to the regional institutes of ICFRE. A bibliographical database on forest science was also subscribed for providing access to old as well as latest research articles on forestry to all institutes and centres of ICFRE.

The NFLIC has been selling ICFRE publications through its Book Depot and during the year, 564 books and 12 VCDs were sold to the state forest departments, universities, etc. generating revenue of Rs.163,836.

7.1.2 Environmental Information System Centre

The Ministry of Environment, Forests and Climate Change, Government of India established Environmental Information System (ENVIS) Centre on Forestry at NFLIC, FRI. The ENVIS Centre enriched the following five databases by the addition of new references: Indian Forestry Abstracts; Participatory Forest Management; *Prosopis juliflora*; Poplars; and Environment and Forests. The Centre published a book titled: 'Eucalyptus in India' and compiled five issues of *Environment and Forests News Digest*.

7.2 Dissemination of developed technologies

- Demonstration of various developed technologies was made to various stakeholders on World Environment Day, International Day of Forests, Science Day and International Day for Biological-diversity and also in various training programmes by FRI, Dehradun.
- Demonstration of agro-forestry practices, vegetative propagation technologies of important forest tree species was made to the farmers and other stakeholders in Kissan Melas organised at GB Pant University of Agriculture and Technology, Pantnagar (Uttarakhand) by FRI, Dehradun.
- Demonstration of various developed technologies on extraction of essential oil at

pilot scale using hydro distillation as well as steam distillation techniques, quality assessment of essential oil in terms of various physico-chemical properties of essential oil, perfumery & aromatherapy was made to the trainees by FRI, Dehradun.

7.2.1 Van Vigyan Kendras (VVKs) and Demo Villages (DVs)

- FRI, Dehradun till date has established six Van Vigyan Kendras (VVKs) in the States and UTs in its jurisdiction and organised two training programmes under 'Networking of Van Vigyan Kendras and Krishi Vigyan Kendras' at Yamunanagar district. The different technologies developed by FRI on agro-forestry were displayed and lectures delivered in Kissan Mela at KVK, Patiala.
- IFGTB, Coimbatore produced four lakhs quality planting stocks of *Casuarina* and distributed them to the farmers of Villupuram district of Tamil Nadu and Puducherry, affected by the 'Thane' cyclone.
- IFGTB, Coimbatore developed new biopesticidal products (Hy-Act, and Tree PALH) and a growth promoting product (tree rich biobooster) that was commercialized through Prerena shop of IFGTB, Coimbatore, Chinnmaya organisation for rural development, Sri Avinashilingam Kendra at Krishi Vigyan Kendra, Vivekandapuram; KVK of Tamil Nadu & Puducherry, VVK, NGOs and Coimbatore district herbal and tree growers association.
- The Institute organised a workshop on 'Tree cultivation technologies' for transfer of technologies to Krishi Vigyan Kendras (KVKs) of Tamil Nadu and Puducherry in collaboration with Tamil Nadu Agriculture University and Tamil Nadu Forest Department.
- Presentations on practices of *Tectona*, *Casuarina*, *Eucalyptus*, *Melia*, *Ailanthus*, *Gmelina arborea*, *Neolamarckia cadamba* and *Calophyllum inophyllum* and, on the products and techniques developed by IFGTB viz., N-fixer, Hy-Act, tree rich biobooster, tree PAL, windbreak agro-forestry systems, bio-inoculants for native tree species, *Casuarina* ased 'Alley cropping' system, red and sweet tamarind, tree pest management and clonal propagation of *Eucalyptus* and *Casuarina* was made by IFGTB, Coimbatore to various stakeholders.
- IFGTB, Coimbatore established industrial tree based agro-forestry plot in 2 ha and planted 3000 seedlings of *Tectona* and *Gmelina* in 8 farmers' field bunds in Kandiyur, VVK demo village and facilitated the irrigation facility through digging the bore-well.
- IFGTB, Coimbatore organised first interactive meeting of VVK and KVK of Kerala at KVK Thrissur.
- Training programmes were organised by IWST, Bangalore in collaboration with FTATI, Kadogodi at one of its two VVK's, at Kadugodi for frontline staff of the Karnataka Forest Department on aspects of field identification of commercially important timber species, plantation vs. traditional timbers, importance of strength properties of timbers, seasoning and preservation of wood and bamboo, nursery techniques for sandal and bamboo and their insect pests and diseases on 14 and 22 November, 2013; 06 and 13 December, 2013 and 10 January 2014.
- IWST, Bangalore also organised a training programme on 'Sandal based agro-forestry models' for subject matter specialists of KVK's of Karnataka and KVK's of Goa from the 06-08 January 2014 at Bangalore.
- TFRI, Jabalpur has four VVKs, one each in the state of Madhya Pradesh, Chhattisgarh, Maharashtra and Odisha and one Demo village at Moiya Nala in Bijadandi West Mandla Forest Division. Regular training programmes on technologies developed for field staff were conducted at VVKs in which training resource material was also provided to the participants.
- Quality planting stock of *Prosopis cineraria* and *Dalbergia sissoo* was raised at the hi-tech nursery at VVK Bichhwal, Bikaner by AFRI, Jodhpur for demonstration and distribution to farmers for promoting agro-forestry. Besides, a three days training programme on 'Soil and water conservation, silvi-pasture, agro-

forestry, quality seed production and seed storage, production of quality planting stocks, selection of plus tree, cultivation and management of horticulture crops, medicinal plant cultivation, VAM and organic fertilizers' was organised for field staff of Rajasthan Forest Department and farmers of Rajasthan from 28 to 30 January 2014. Thirty four trainees (22 forest officials and 12 farmers) from Jaiselmer; DDP and IGNP Divisions, Barmer, Sirohi, Jalore, Jodhpur and Pali Forest Divisions attended the programme.

- AFRI, Jodhpur in its hi-tech nursery at VVK, Chhipardi Beedi, Rajkot (Gujarat) also raised grafted seedlings of *Emblica officinalis* and *Ziziphus mauritiana* along with superior quality seedlings of *Casuarina equisetifolia*, *Eucalyptus* hybrid for demonstration and distribution to farmers. A three days training programme on 'nursery establishment and management, tree improvement, economic benefits of agro-forestry, improved techniques for agri-horti system for higher production, soil and water conservation and cultivation of medicinal plants in Gujarat' was organised at Gujarat Forest Rangers College, Rajpipla (Gujarat) from 03 to 05 October 2013 attended by forty two participants from Gujarat and Dadra and Nagar Haveli. Hi-tech nursery and demonstration plots at Demo village, Salawas (Jodhpur) were also maintained for raising the quality planting stocks.
- Training programme under Bamboo Technology Support Group on 'Bamboo handicraft' for skill up-gradation of farmers and artisans from the states of Rajasthan and Gujarat was organised by AFRI, Jodhpur from 09 to 13 December 2013.
- Three training programmes on 'Jatropha cultivation' for farmers and other stake holders were organised by AFRI, Jodhpur on 16 January 2014 at Gajpur, Kumbhalgarh; on 17 January 2014 at Dhilodia Janavat, Rajsamand and on 12 February 2014 at Sundercha, Rajsamand. Farmers were sensitized about cultivating *Jatropha curcas*, its importance, cultivation practices and future prospects.

- RFRI, Jorhat has five Van Vigyan Kendras in Assam, Arunachal Pradesh, Mizoram, Nagaland and Tripura. Different activities like training programmes and exposure visit to various forest based industries viz. agarbatti, furniture etc. and research centre were organised.
- RFRI established a demo village through participatory rural appraisal at Melang Grant, a hamlet of three villages on fringe of Hoollongapar Gibbon Wildlife Sanctuary. Villagers adopted the activities like bee



Bhoot Jolokia nursery and its extension in farmer's fields at Demo village under Areca- Bhoot Jolokia Agroforestry model- RFRI, Jorhat

keeping, vermin-compost production, plantation of *Acacia mangium* in farmer's field and bhoot jolokia (*Capsicum chinense*)-Areca nut agro-forestry model. Seedlings of bhoot jolokia were provided to the farmers for the same. The bhoot jolokia – Areca nut agro-forestry model shows encouraging results and has been adopted by the farmers for generating extra income.

- Two nurseries of agar (*Aquilaria malaccensis*) have been established in demo village in Gobindpur and Bhogpur village under demo village programme.
- Training programme on networking of KVKs with VVKs was organised at Shimla by HFRI on 30 July 2013.
- Similarly, a training programme on 'Conservation, utilization and cultivation of medicinal plants' was organized by HFRI,



Establishment of nurseries at farmer's field in demo village – RFRI, Jorhat

Shimla at KVK, Saru, Chamba (H.P.) from 25 to 26 November 2013. for frontline staff of Forest Department and farmers.

- Training programme on 'Application of technological and research interventions for enhancing forest productivity' was organized by HFRI, Shimla at Leh, Laddakh (J&K) on 08 July 2013 under the activities of VVK Janipura, Jammu.
- HFRI, Shimla maintained the demonstration nursery and demonstration plantations at Model Village Lanabanka. Quality planting stock of bamboo species (1000 seedlings) were provided to villagers of Lanabanka Panchayat for plantation.

7.2.2 'Direct to consumer' scheme

'Direct to consumer' scheme was launched in July 2011 as a novel extension strategy to bring the technological advancements made through research breakthroughs in ICFRE at the doorsteps of end-users without loss of time with the intention of widening the outreach of research findings, linking livelihoods of people with forestry. Besides, the State Forest Departments, farmers, industries and rural communities are expected to benefit from the scheme. In the first phase, 16 projects were selected and implemented under the scheme for the year 2012-13. During 2013-14, 6 new projects have been initiated and 9 projects were continued from 2012-13. The, total number of on- going projects during 2013-14 were 15.

FRI, Dehradun conducted following activities under 'Direct to consumer scheme':

- Centre for Bamboo Processing and Training was established.
- Cultivation trails of *Ganoderma lucidum* were established in collaboration with NGOs (Baghban and SPECS) at Shyampur and Kandolli villages, respectively.
- Awareness programme on 'Edible and medicinal mushrooms' were organised in four villages of Dehradun (Shuklapur, Ummedpur, Devipur, Pitambarpur) in collaboration with NGO, Baghban on 19 August 2013.
- Conservation activities at the bambusetum, herbarium and botanical garden in FRI were shown to dignitaries, trainees, students and researchers etc. from different organisations.

AFRI, Jodhpur organised the following activities under the scheme:

- A demonstration trial was laid out to control insect pest attack on mehndi (*Lawsonia inermis*) in farmers' field at Nimaz, Pali wherein treatment of monocrotophos (0.05%) + bavistin (0.01%) + auzin (@ 2 ml/ltr.) and pratirodh (a biopesticide) was applied against leaf defoliator (a semilooper, *Achaea janata* - noctuidae) and leaf spot and blight disease (*Alternaria* sp.). In treated plot, no incidence of any pests/disease was recorded.
- A demonstration trial on management of diseases and pest problems in isabgol (*Plantago* sp.) was laid out at Bilawas (Sojat) Pali in farmers' field. The treatment comprising bavistin (1.5%) or ratan (0.2%) + monocrotophos (0.05%) was given against downy mildew disease (*Peronospora alta*) and aphid attack. In treated plot, no incidence of any pests/diseases was seen.
- Two training-cum-workshops on 'Rainwater harvesting and afforestation for the rehabilitation of degraded hills' were organised at Dahod from 19 to 20 September 2013, and at Jodhpur from 23 to 24 January 2014.

Activities taken up by HFRI, Shimla under 'direct to consumer scheme' of Council included:



IPM strategies developed for protection and enhancing productivity in mehndi and isabgol – AFRI, Jodhpur

- Specific skill of farmers for nursery production and cultivation of *Aconitum heterophyllum* (Atish), and *Angelica glauca* (Chora) was developed through training and demonstration programmes and educational exposure visits.
- One day 'Exposure visit-cum-training programme' on practical demonstration of various techniques for raising temperate medicinal plants at Conifer Campus, Shimla and Potter hills, Shimla was organised on 26 December 2013.

IFP, Ranchi had conducted following activities under this scheme:

- Farmers from district Khunti, Jharkhand were periodically trained for scientific lac cultivation by master trainers who in turn, got trained by experts in the institute.
- Quality planting stocks of lac host *Flemingia semialata* were raised at Ranchi and 19100

plants were distributed to 17 farmers and planted in farmer's field at 0.75 x 2.0 m distance.

- Field training-cum-workshop for promoting lac cultivation on *Flemingia semialata* was organised in association with Life Education & Development Support NGO at West Singhbhum district on 16 July, 2013. Fifteen farmers of Bandgaon block, West Singhbhum district and fifteen farmers of Murhu block of Khunti district participated in it.
- One day training-cum-workshop on 'Non-traditional host *Flemingia* sp. and its possibility in sustainable plantation forestry' for stakeholders was organised at Ranchi on 27 March 2014.

IFGTB, Coimbatore has established 3 ha demonstration plots with superior clones for windbreak agro-forestry system in collaboration with Tamil Nadu State Forest Department under 'direct to consumer scheme' of the Council.

7.2.3 Technologies transferred

- ICFRE is striving to expeditiously disseminate and share research results in an open and accessible manner. At the same time, ICFRE recognizes the importance of protecting its technologies under Indian and other applicable foreign intellectual property laws, and commercializing them in a manner befitting its commitment to public good and welfare. In the process, a comprehensive policy governing the generation and management of intellectual property emanating from ICFRE and its various institutes has been evolved along with Material Transfer Agreement (MTA) and Licence Agreement (LA).
- FRI, Dehradun rendered various technical services to Indian pulp and paper industries and research organisations and tested the physical and optical properties of paper samples received from various Government organisations such as Employment News, Indian Army, NCERT and private industries such as M/s Ayukta Rajya Siksha Kendra, Bhopal, M/s. Distt. Siksha Kendra Betul

(M.P.), M/s. Distt. Siksha Kendra Shivpuri, (M.P.), M/s. Distt. Siksha Kendra Sarv Siksha Abhiyan, Khargon (M.P).

- Technology for production of compost from plant biomass was demonstrated and transferred to M/s Anand Organics Krishi Industries, Nagpur (Maharashtra) on 06 December 2013 with the Licence fee of Rs. 1.20 lakhs.
- The Variety Releasing Committee (VRC) of ICFRE approved public release of two clones of *Casuarina junghuhniana*, three clones of *Casuarina equisetifolia* and seven clones of *Eucalyptus camaldulensis* developed by IFGTB, Coimbatore on 08 March 2014.
- A growth promoting product 'Tree rich biobooster' using eco-friendly organic materials for growth improvement of fast growing trees species such as *Casuarina*, *Gmelina*, *Ailanthus*, *Melia*, *Tectona* and *Eucalyptus* had been developed, introduced and released during the Tree Growers Mela held at IFGTB, Coimbatore in February 2013.
- Technology on wood polymer composite was transferred by IWST, Bangalore to M/s Pointech Pen, Bangalore. The firm had paid the Licence fee of Rs. 10.00 Lakhs to the institute.
- A seminar-cum-workshop on 'Strengthening the network for outreach of research findings developed by ICFRE' was organised by TFRI, Jabalpur at Odisha Forest Ranger's College, Angul from 12 to 13 March 2014, and technologies on processing technique of bael fruits, drum-dryer techniques for NTFPs, development of handmade paper/paper making from *Lantana*, non destructive harvesting techniques of *Terminalia arjuna* bark, agro-techniques of *Asparagus racemosus*, agro-techniques of *Andrographis paniculata*, agro-techniques of *Rauvolfia serpentina* and agro-techniques of *Withania somnifera* were transferred to the stakeholders.
- RFRI, Jorhat transferred technologies on PRA techniques and micro planning, bamboo treatment, vermi-composting, apiculture, patchouli agro-techniques, *Trichoderma* production and field application, mycorrhizal

technology, bio-pesticide production and field application, seed handling - grading and sowing techniques, technology on chili based agro-forestry model, technology on air layering of various economically important tree species using *Sphagnum*, technology on low-cost vermin-compost, and technology on raising of agar (*Aquilaria malaccensis*) plantations and cultivation of muskdana (*Abelmoschus moschatus*) to the fields.

7.3 Evolving and coordinating comprehensive Extension Strategies in Forestry Research

7.3.1 Sustainable Land and Ecosystem Management (SLEM) Project

Different activities as detailed below were carried out under the project during the year:

- Training-cum-workshop on 'Climate change adaptations in the Himalayan region' was organised on 03 & 04 October 2014 at the Himalayan Forest Research Institute, Shimla for capacity building of scientists and forest officials.
- Training programme on 'Bamboo based handicraft for farmers and artisans for livelihood enhancement' for frontline staff of M.P. Forest Department was organised at TFRI, Jabalpur from 03 to 07 February 2014.
- Training programme on 'Land restoration and biodiversity conservation for sustainable livelihood in South India' was arranged from 19 to 21 February 2014 at IFGTB, Coimbatore for frontline staff of Tamil Nadu Forest Department.
- Regional consultative workshops on 'Finalization of the impact indicator for issues related to desertification, land degradation and drought' were organised at Hyderabad on 30 August 2013 and at Kolkata on 29 October 2013, respectively. A group of 25 experts working in the areas of desertification, land degradation and drought attended these workshops.
- National consultative workshop for 'Finalization of impact indicators for issues related to desertification, land degradation



Workshops/seminars organized under SLEM Project

and drought' was organised at New Delhi on 28 January 2014. About 40 participants from line Ministries, R&D institutions, SLEM project partners, UN funding agencies and Civil Society Organisations attended the workshop.

- Seminar was organised to commemorate the World Day on Combat Desertification on 17 June 2013 at ICFRE, Dehradun with the theme 'Drought and water scarcity'. It was attended by about 80 participants including senior officers and scientists from ICFRE and FRI.
- The fourth meeting of the National Steering Committee (NSC) of SLEM Project constituted by the Ministry of Environment, Forests and Climate Change to monitor and evaluate the progress of the projects currently operational under the SLEM programme was held at Hyderabad on 04 & 05 April 2013. Fifth meeting of NSC was held at Bhopal on 13 February 2014.
- Under the thematic area on climate change adaptation of SLEM-TFO, Shri Saibal Dasgupta, Deputy Director General (Extension), Dr. T.P. Singh, Project Director, SLEM Project and Dr. R.S. Rawat, Technical

Manager, SLEM Project participated in the expert group meeting on Geo spatial information systems for multi-scale forest biomass assessment and monitoring of the Hindu-Kush Himalayan Region at International Centre for Integrated Mountain Development (ICIMOD), Kathmandu (Nepal) from 9 to 10 December 2013.

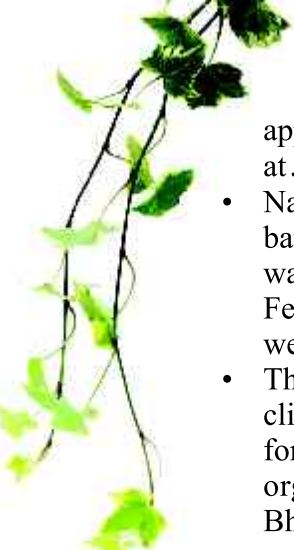
7.3.2 Seminars/Symposia/Workshops Organised

- Workshop on 'Innovation for forest carbon finance in India' was jointly organised by ICFRE, FRI and Welspun Energy Ltd. on 28 May 2013 at FRI, Dehradun. The workshop aimed to deliberate and achieve a broader and inclusive consensus by inviting leading minds in the field of forest carbon from research institutes, scientists, representatives of industry and state and central government.
- Workshop on 'Uttarakhand 6/16: Analysis, lessons and mitigation strategies' was organised by FRI, Dehradun in collaboration with Central Himalayan Environment Association, GIZ on 19 September 2013 at Dehradun.

- Workshop on 'Report writing' was organised by FRI, Dehradun from 09 to 10 October 2013 at Dehradun.
- Workshop cum Kisan Mela on 'Role of agro-forestry in sustainable timber supply to wood based Industries' was organised by FRI, Dehradun on 13 January, 2014 at G.B. Pant University of Agriculture and Technology, Pantnagar.
- BTSG-ICFRE sponsored seminar on 'Bamboo productivity in forest and non-forest areas' was organised by FRI from 30 to 31 January 2014 at Dehradun. Officers from the State Forest Department, farmers, private bamboo growers, NGOs, officials of the National Bamboo Mission, NABARD and scientists of various research institutions participated in the seminar.
- Workshop on 'Current state of knowledge and way forward post June, 2013 tragedy' was organised by FRI, Dehradun in collaboration with CEDAR and Central Himalayan Environment Association on 26 March, 2014 at Dehradun.
- FRI, Dehradun organised a workshop on 'Application of bio-informatics in forestry' from 27 to 29 March 2014 at Dehradun.
- National workshop on 'Forest seed science - recent advances and challenges in seed research' was organised by FRI from 26 to 27 February 2014 at Dehradun.
- Asia Pacific Workshop on 'Water and forest - beyond traditional forest hydrology' was organised by FRI in collaboration with Asia Pacific Association of Forestry Research Institutions and Korea Forest Research Institute, Republic of Korea from 23 to 25 September 2013 at Dehradun.
- National workshop on '*Eucalyptus* gall wasp - present status and future strategies' was organised by IFGTB, Coimbatore on 10 June 2013 at Coimbatore that was attended by stakeholders involved in large scale *Eucalyptus* planting like paper industries, state forest departments, forest development corporations, farmers and researchers actively working in the gall wasp and its management.
- National workshop on 'Tree seed science and silviculture' was organised by IFGTB from 28

to 29 November 2013 at Coimbatore. Two books on "Forest seed Science and Technology" and "A Compendium of silvicultural technologies" were released to commemorate 25 years of seed and silvicultural research in the institute. The CYCUS software to calculate yield of *Casuarina* plantations and the 19th Newsletter of the Institute were also released. About 120 participants from ICFRE institutes, wood based industries, forest departments, universities, NGOs, students etc. from sixteen states participated in the Workshop wherein fifty papers and 40 posters presentations were made.

- Fifth international *Casuarina* workshop was organized by IFGTB at Mamalapuram (Tamil Nadu) from 03 to 07 February 2014. About 100 participants from nine countries participated in the workshop and deliberated on the research studies on *Casuarina*
- National Seminar on 'Tree biotechnology 2013 – emerging opportunities in forestry and tree science' was organised by IFGTB from 23 to 24 September 2013 at Coimbatore. A website on 'silico gene bank' for adaptation to abiotic stress was launched. About 60 research papers were deliberated and participants from fifty three organisations in the country took part in the seminar proceedings.
- Workshop on 'Recent advances in bio-fuels' was organised by IWSST in collaboration with Karnataka State Bio-fuel Development Board and Karnataka State Council for Science and Technology from 22 to 23 November 2014 at Bangalore.
- International seminar on '*Sandalwood: Current trends and future prospects*' was organised by IWSST, Bangalore from 26 to 28 February 2014. Representative from countries like Australia, Fiji, Hawaii, Pacific Islands and Sri Lanka participated in it. The seminar was also attended by people from different parts of the society like researchers, forest officers, industrialists, farmers, plantation owners, entrepreneurs and others.
- A three days national seminar 'Recent Advances in applied statistics and its



application in forestry' was organised by TFRI at Jabalpur from 15 to 17 April 2013.

- National seminar on 'Recent advances in bamboo research and development in India' was organised by RFRI, Jorhat from 06 to 07 February 2014. About 50 research papers were presented in the seminar.
- The expert group meeting on 'Adaptation to climate change impacts and risks to different forest types of South Asia' was jointly organised by SAARC Forestry Centre, Bhutan and RFRI, Jorhat from 22 to 24

October 2013 with the aim of discussing climate change related critical issues in connection with impact of climate change on forests in their country.

- One day workshop on '*Conservation of rare, endangered and threatened plant species*' was organised by IFP on 29 March 2014 at Ranchi under MoEF & CC funded project titled 'Improvement of the infrastructural facilities in the Botanical Garden as a Lead Garden in Jharkhand for *ex-situ* conservation of rare and endangered plant species'.



Workshop/seminars organised by ICFRE institutes

7.3.3 Special Activities (Such as Van Mahotsava, Forestry Day and Other occasions)

- National Technology Day was celebrated on 11 May 2013 with great enthusiasm at FRI, Dehradun. A special exhibition was also held in front of the Information Centre of the institute showcasing recent scientific and technical achievements of the institute in the field of forestry for its use by the society.



Celebration of National Technology Day at FRI, Dehradun

- International Day for Biological Diversity was celebrated on 22 May 2013.
- World Environment Day and FRI Day were celebrated on 5 June 2013. A special exhibition was also displayed in front of the Information Centre of the institute showcasing the recent scientific and technical advancements made by the institute.

- Van Mahotsava was celebrated on 29 July 2013
- Himalayan Day was celebrated on 09 September 2013 and theme of panel discussion was 'Conservation of Himalayan ecosystems and sustainable development in Uttarakhand'. On this occasion, an essay competition on conservation of Himalayan ecosystems and sustainable development in Uttarakhand for students and research scholars of FRI Deemed University and painting competition for student of Kendriya Vidhyalaya of FRI was also held.



Celebration of Himalayan Day by FRI, Dehradun

- International Day for Forests was celebrated on 21 March 2014 and an exhibition was organised at Information Centre of FRI which included posters and models depicting the achievements of FRI.

- The International Day for Biological Diversity was celebrated on 22 May 2013 at IFGTB Coimbatore special lecture on 'Relevance of river basin approach for wise use of wetland ecosystems' was delivered by Dr. E.J. James, Director, Water Institute – A Centre of Excellence, Karunya University, Coimbatore.
- The World Environmental Day was celebrated on 5 June 2013 and plantation of trees was done involving members of the Forest Campus Nature Club.
- The World Bamboo Day was celebrated on 18 September 2013 at IWST, Bangalore. Booklets on three important bamboo species of Karnataka (*Guadua angustifolia*, *Dendrocalamus stocksii*, *Dendrocalamus brandisii*) were released. Various species of bamboo (*Dendrocalamus giganteus*, *D. stocksii*, *D. brandisii*, *D. asper*, *Bambusa balcooa*, *Thyrsostachys oliveri*, *Guadua angustifolia*, *Schizostachyum brachycladum*) were planted in the institute campus on this occasion.
- International Day for Biological Diversity was celebrated on 22 May 2013 at TFRI, Jabalpur
- World Environment Day was celebrated on 5 June 2013.
- National Science Day was celebrated on 28 February 2014 and monthly e-magazine *Van Sangyan* was released on this occasion.
- World Environment Day was celebrated on 5 June, 2013 at AFRI, Jodhpur in collaboration with Jai Narayan Vyas University, Jodhpur. On this occasion, a painting competition for children on 'Our Environment' was organised. Seedlings of trees were planted in the campus of Jai Narayan Vyas University on this occasion.
- World Day to Combat Desertification was celebrated on 17 June 2013 at AFRI, Jodhpur
- Van Mahotsava was organised at demo village, Salawas on 30 July 2013 with the participation of villagers. Multipurpose tree species and medicinal plants were planted at demo village site at Salawas.
- International Day for Biological Diversity was celebrated on 22 May 2013 at HFRI, Shimla Lectures were delivered on forests biodiversity and its conservation, water conservation and biodiversity on this occasion. A drawing competition was also held on water conservation and biodiversity for school children.
- International Day for Biological Diversity was celebrated on 22 May 2013 at Conifer Campus, Panthaghathi. About 30 students of Shimla based schools participated in various programmes like quiz competition, painting competition and slogan writing on the theme 'water and biodiversity'.
- Himalayan Day was celebrated in collaboration with WWF at Conifer Campus, Shimla on 09 September 2013 by organising a workshop that was attended by about 80 participants. Here, the problems pertaining to Great Himalayas were visualized and necessary measures and safeguards for conservation of the Himalayas were also suggested. A presentation on 'Towards re-defining & re-assessing the growth measures for sustainable & inclusive growth of Himalayan Ecosystem' was also made on the occasion.
- International Day for Biological Diversity was celebrated on 22 May 2013 at RFRI, Jorhat. About 150 participants took part in this programme including students and teachers of Cheniamguri High School, Sotai (Jorhat), scientists, officers and staff members of RFRI. A presentation on 'Diversity of flora and fauna of Northeast India and their conservation' was made on the occasion.
- World Environment Day was celebrated in collaboration with *Panchawati Prakriti Mancha*, Jorhat at Mahatma Gandhi College, Jorhat (Assam) on 05 June 2013. A large number of school and college students, scientists, officers and supporting staffs of RFRI participated in the celebration. Various events such as quiz, drawing, slogan and essay competition were also organised.
- International Day for Biological Diversity was celebrated on 22 May 2013 with the villagers of Munaga, Chhindwara District at CFHRD, Chhindwara
- World Environment Day was celebrated on 05 June 2013.
- Van Mahotsav was celebrated during first week of July 2013 by planting tree seedlings in the campus of CFRHRD, Chhindwara.
- Wildlife Conservation Week was celebrated by the centre from 2 to 4 October 2013.



Celebration of Van Mahotsava at ICFRE Institutes

7.4 Consultancy Services

With the aim to sustain the high performance of the Council in the area of Environment Management, the Environment Management Division under Directorate of Extension, ICFRE

Hqs. is continuously building networking with various ICFRE institutes and reputed R&D and academic institutions across the bio-geographical area for collective scientific services through consultancies. The philosophy at the core of the initiative is to build a platform to

connect the knowledge and wisdom of dedicated real time teamwork for sustaining the scientific service performance. In the process of doing so, the division has contributed in completing the following consultancy service during the year:

1. Final comprehensive environmental impact assessment (EIA) / environmental management plan study report for Bunkha Hydropower reservoir (180MW) project on Wang Chhu River near Buankha village, Chukha Dzongkhags in Bhutan submitted to *National Environment Commission, Royal Government of Bhutan* through Tehri Hydropower Development Corporation. It is a bilateral project between Government of India and Royal Government of Bhutan implemented by Tehri Hydropower Development Corporation.
2. Draft EIA/ environmental management plan report for Surgani Sundla 48 MW on Suli River, a tributary of Ravi River in Chamba District, Himachal Pradesh submitted to Himachal Pradesh Power Corporation Limited (HPPCL).
3. The draft final EIA/ environmental management plan report for Nakthan (520 MW) a run-off-river Hydro-Electric Project (NHEP) on river Tosh Nala and Parbati located in Barshaini Panchayat of District Kullu, Himachal Pradesh under preparation.
4. Draft interim progress report for the cumulative EIA of hydropower projects in Yamuna and Tons River basin submitted to *Uttarakhand Jal Vidyut Nigam Ltd.*, and further seasonal data collection for various parameters in progress.
5. Draft interim final progress report for cumulative EIA for river Sutlej and its tributaries submitted to Department of Energy, Himachal Pradesh.
6. Comprehensive final EIA and environmental management plan report for Ankua Iron ore mine (10 MTPA) in Ankua village, Ankua Reserve Forest, Manoharpur Taluka of West Singhbhum district of Jharkhand state submitted to M/s JSW Steel Ltd.

7. The reclamation and rehabilitation plan for individual mine in the mine affected district of Bellary, Chitradurga and Tumkur for Government of Karnataka as per the directions of the Hon'ble Supreme Court of India continued during 2013-14. Plans for 93 mines of category A and B have been completed, of which, during the current financial year, a total of 32 mines of category A & B submitted in line with CEC guidelines to Department of Mines, Government of Karnataka.

FRI, Dehradun provided following consultancy services to the various stakeholders:

- Consultancy for 'Quality assessment of cooling timbers and onsite training' was given to M/s Hindustan Petroleum Corporation Ltd., Visakh Refinery, Visakhapatnam.
- Advisory to APSARA Authority, Cambodia and ASI for conservation of trees at Ta Prohm temple, Cambodia
- Advisory to Bodhgaya Temple Management Committee for maintenance and conservation of Bodhivriksha at Bodhgaya
- Paper samples received from government organisations and private industries, such as, Employment News, Indian Army, NCERT, M/s Ayukta Rajya Siksha Kendra, Bhopal, M/s. Distt. Siksha Kendra Betul (M.P.), M/s. Distt. Siksha Kendra Shivpuri, (M.P.), M/s. Distt. Siksha Kendra Sarv Siksha Abhiyan, Khargon (M.P), etc. were tested for physical and optical properties.

Testing and consultancy services, such as, wood identification, determination of moisture content, density and strength properties etc. were rendered by IWST, Bangalore to various organisations (Govt./Non-Govt./PSU/ Private/ individual etc). Total revenue of Rs.5.65 lakhs was generated from testing, training and consultancy services rendered by WPEW division.

HFRI, Shimla undertook a consultancy on "Redrafting of catchment area treatment plan for Shongtong-Karchham hydroelectric project" from HPPCL, Shimla.

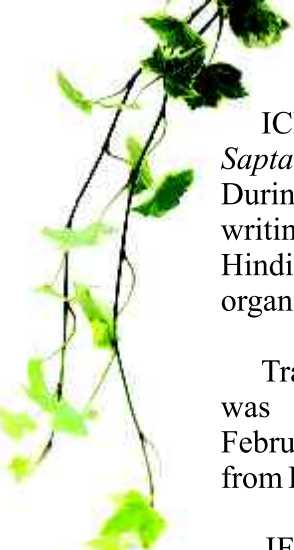
7.5 Activities of Rajbhasha

ICFRE Hqs. published Hindi magazine 'Taruchintan' and a workshop on implementation of Hindi as official language was organised to

promote Hindi in official work at ICFRE on 27 June 2013. Training on Hindi software "Saransh" was also organised on 27 June 2013. The aim of the training was to train officials of ICFRE as master trainers for the software.



Rajbhasha activities in ICFRE



ICFRE and its institutes observed '*Hindi Saptah*' during the month of September 2013. During which competitive events, such as, essay writing, drafting, English to Hindi translation, Hindi typing and '*Swarachit Kawaya Path*' were organised.

Training workshop on official language Hindi was organised at ICFRE, Dehradun on 25 February 2014 in which more than 50 participants from ICFRE participated.

IFGTB, Coimbatore prepared a bilingual official language guide containing administrative glossary, noting used in day- to- day office work, usage of technical and scientific terms, and provided to all employees of IFGTB.

7.6 Awards and Honours

- Dr. Dinesh Kumar, FRI, Dehradun received award for the best research paper from CSIR-National Botanical Research Institute for paper titled “Agro-technology of *Jatropha curcas* for diverse environmental conditions in India” published in *Biomass and Bioenergy*. 48: 191-202.
- Dr. Hukum Singh, FRI received DST Young Scientist Award under Start Up Research Scheme of Science and Engineering Research Board (SERB), Department of Science and Technology (DST), Govt of India, New Delhi.
- Dr. Vineet Kumar, FRI was awarded with the prestigious Dr. H. C. Srivastava Young Scientist Award by Association of Carbohydrate Chemists and Technologists, India during the International conference on Challenges in Chemistry and Biology of Carbohydrates organised at Dehradun from 20 to 22 January 2014.
- Dr. Vineet Kumar, Shipra Nagar and Dr. Y.C. Tripathi, FRI, Dehradun bagged the *First Best Poster Award* for poster presentation titled 'Do assorted approaches aid in determination of uronic acids? Structural studies on *Tinospora sinensis* polysaccharide' in the '*Science Model and Science Poster Competition*' organised during National Innovation Award Function under NRDC sponsored Innovate India Programme on 27 February 2014 at University of Petroleum and Energy Studies, Dehradun.
- The Casuarina Working Group has nominated Dr. A. Nicodemus, Scientist 'E', IFGTB, Coimbatore as a coordinator of the IUFRO Working Party 02.08.02 Improvement and Culture of Nitrogen-fixing Trees.
- Dr. Modhumita Dasgupta, IFGTB was awarded the International Timber Trade Organisation (ITTO) fellowship for undergoing two months hands-on-training on “Molecular cytogenetics techniques” at Texas A&M University, College Station, Texas, USA.
- Ms. Karpaga Raja Sundari, Scientist - B, IFGTB was awarded first prize in poster session in national seminar on Tree Biotechnology at IFGTB, Coimbatore held from 23 to 24 September 2013.
- Dr. Vipin Parkash, Scientist – D, RFRI, Jorhat received 'Young Achiever Award – 2013' conferred by the Society for the Advancement of Human and Nature, Dr Y S Parmar, University of Horticulture and Forestry, Nauni, Solan, Himachal Pradesh.
- Dr. P K Das received 'Brandis Memorial Prize 2011' for published research article in Indian Forester Journal. (Singh, P. K., Das, P. K. and Quli, S. M. S. (2011). Economic Analysis of Agro-forestry model adopted by Tribals of Orissa: India. *Indian Forester*. 137, (5) 535-543).