

Indian Council of Forestry Research and Education

The activities of forestry research, education and extension at ICFRE headquarters are as under:

FORESTRY RESEARCH

Biodiversity, Climate Change Division (BCC) has taken up short term and long term policy programmes to address the problems of Climate Change and Biodiversity Conservation.

A. BIODIVERSITY

1. **Preservation Plots:** Based on information received from Regional ICFRE Institutes and State Forest Department, a Brochure “Miniature Nature (Preservation Plots) A Status Report of India” was prepared and draft report was submitted for publication.

BCC Division has provided all the research materials towards development of Project Proposal on “Phytodiversity Network through Preservation Plots” for XI Five Year Plan.

2. **Forest Invasive Species:** BCC Division also prepared a Country Report on “Stocktaking of National Activities on FIS” submitted by MoEF to Asia Pacific Forest Invasive Species Network (APFISN), 61 species of plants (including 12 species of fungi) and 14 species of insects have been identified as invasive having national distribution and 36 species having regional distribution. Of these 28 species have been reported to be native to India but have taken invasive proportions in other bio-geographical regions of the country.

B. CLIMATE CHANGE

BCC Division had taken up two externally aided International Projects related to climate change:

1. **EU-India Small Projects Facility Programme “Beyond Kyoto: EU-India CDM partnership: Promoting stakeholder Dialogue and Analysis of barriers to Forestry Mitigation Projects”:** The overall objective of the project was to create an enabling environment through dissemination of information and policy reforms for implementation of bilateral Clean Development Mechanism (CDM) Sinks Projects at the local level in India.

The Division organized a two days Meeting of stakeholders on “Proposed Policy Reforms to remove the barriers to CDM Afforestation and Reforestation (A/R) Projects” on 14th and 15th September 2006. A total of 76 delegates representing various stakeholders from Govt. of India, like NRSA, IIRS, State Forest Departments, institutes, NGOs and Farmer Association participated in the Meeting. Dr. B. S. Burfal, Principal Chief Conservator of Forests, Uttarakhand was the Chief Guest of the function who delivered inaugural address.

Under this project, BCC Division of ICFRE conducted a Barrier analysis study for C D M A/R Projects. The study report was discussed in the meeting and the suggestions/



recommendations were deliberated upon to suggest ways and means to remove these barriers through policy interventions at National level, DG, ICFRE laid stress on accounting at agro-forestry and tree plantation on farm bunds. He advocated development of a system to convert strip plantation into notional hectares for facilitating A/R CDM activities. He further opined that all the potential areas including poverty and agriculture need to be identified with the help of NRSA, FSI and ICAR. Creation of a carbon Directorate at national level was also suggested during the meeting. The identified barriers along with recommendation have been forwarded to Govt. of India for speedy implementation of CDM A/R projects in India.

The project has been successfully completed and the final technical report of the project has been accepted by the European Union.

2. **FORCLIMIT India (MoEF-USEPA Programme-Forests and Climate Change Mitigation Network):** Under the FORCLIMIT India Project, development of regional base lines in selected watersheds in the country has been initiated.

C. OTHER ACTIVITIES

1. **Participation of ICFRE at UNFCCC Workshop on “Reducing Emissions from Deforestation in Developing Countries” in Rome, Italy, from 30th August to 1st September 2006:** Shri Sandeep Tripathi, ADG and Head, BCC Division, ICFRE attended the aforesaid workshop conducted on the invitation of the Conference of the Parties (COP) to the United Nations Framework Convention on Climate Change (UNFCCC).

Avoided deforestation is a newly debated mechanism under CDM, where developing countries volunteer to reduce their national level of deforestation rate to below a historical average baseline e.g. a 1980-1990 level, and commit, to stabilize or further reduce deforestation in future would receive post facto compensation. Shri Tripathi put forward the country's view on the issue of avoided deforestation. He emphasized that the Government of India was not in favour of any “optional” or “voluntary” protocol exclusively for “Deforestation” during the first commitment period or subsequent periods. He also deliberated that the proposed mechanism would act as a disincentive towards the countries, which have conserved or increased their forest cover. He also stated that before embarking upon any such mechanism, all technological, methodological and other related issues needed to be addressed and firmed up through a scientific body like IPCC.

The workshop provided an opportunity for parties to share experiences and consider relevant aspects relating to reduce emissions from deforestation in developing countries.

2. **Participation of ICFRE delegation in United Nations Climate Change Conference (COP 12/MOP 2) Nairobi, Kenya, from 6th to 17th November 2006 at United Nations Office in Nairobi, Gigiri, Africa:** Kenya hosted the second meeting of the parties to the Kyoto Protocol (COP/MOP 2), in conjunction with the twelfth session of the Conference of the Parties to the Climate Change Convention (COP 12), at Nairobi from 6th to 17th November 2006.

The ICFRE delegation, comprising Shri Jagdish Kishwan, DG, ICFRE; Dr. Shashi Kumar, Director (Research); Shri Sandeep Tripathi, Head, BCC Division and Dr. A. Ramchandran, Forest Utilisation Officer, Tamil Nadu, participated in the COP-12 along with the Government of India delegation.

The ICFRE delegation actively participated in different assigned agenda discussions relating to the COP, COP/MOP, SBSTA, SBI and AWG during the Nairobi meet. In particular, the following items were closely followed during the meet: (i) Reducing emissions from deforestation in developing countries (Agenda item 5 of SBSTA) (ii) Clean Development Mechanism (Agenda 5 of COP/MOP) (iii) Adaptation Fund: (Agenda item 6), Financial Mechanism (Kyoto Protocol) India proposed the mechanism of 'Compensated Conservation' for providing compensation to the countries for maintaining and increasing the carbon stocks as a result of conservation and improvement/ increase in forest cover backed by input of verifiable monitoring system.

3. **Participation of DG, ICFRE in second workshop on “Reducing Emissions from Deforestation in Developing Countries”, from 7th to 9th March 2007 in Cairns, Australia:** Shri Jagdish Kishwan, DG, ICFRE, participated in the aforesaid workshop as the country's representative.

Shri Kishwan made a presentation on “Reducing Emissions from Deforestation in Developing Countries: The Indian Proposal” wherein an alternate policy approach to Avoided Deforestation was suggested and the concept of “compensated conservation” to reward the countries that have increased their forest cover in spite of great population pressure and demand for land resources was proposed. It was projected that India would be entitled to claim incentive for maintaining baseline stock estimated at 8.79 GtC in 2006 as also an annual increment of 0.96 GtC effected till 2030 as a result of improvement of the present extent of forests and due to afforestation outside legal forest area. These interventions led to making noticeable headway in meeting India's concern towards providing incentive to countries for conserving and improving its forests.

4. **Climate News Letter:** Quarterly climate news letters covering latest developments in the area of climate change and upcoming events etc. were prepared and uploaded on the ICFRE website during 2006-2007.
5. **ISO 9001:2000 Implementation:** ICFRE is working hard for ISO 9001:2000 certification. The Quality Manuals as per ISO 9001:2000 have been completed and kept at various user locations. The first audit by internal auditors was conducted from 11th to 13th July 2006. A shadow audit was also conducted on 7th and 8th August 2006 by the consultants, M/s Consultancy Development Centre (CDC), New Delhi.

All the requirements as per the ISO 9001:2000 QMS have been met by ICFRE and the system put in place for ISO 9001:2000 certification.

Research Planning Division, under the Directorate of Research, deals with the planning, processing and execution of new research project proposals funded by ICFRE. It follows bottom-up, transparent and participatory approach.

During the year 2006 - 2007, following achievements have been made by this division:

- * It coordinated the Research Advisory Group (RAG) meetings at Institute level on the dates mentioned below:



IFGTB, Coimbatore	-	22 nd Aug. 2006
TFRI, Jabalpur	-	30 th Aug. 2006
IWST, Bangalore	-	26 th Sept. 2006
HFRI, Shimla	-	18 th Oct. 2006
FRI, Dehradun	-	30 th Oct. 2006
IFP, Ranchi	-	17 th Nov. 2006
RFRI, Jorhat	-	22 nd Nov. 2006
AFRI, Jodhpur	-	28 th Nov. 2006

This year the base of the Research Advisory Groups was made broader by including young scientists, representative of Planning Commission and representative of JFM Committees. All the RAGs discussed about adopting Rolling Research Plan and revision of National Forestry Research Plan.

Research Policy Committee (RPC): The new research proposal submitted by eight Research Institutes under ICFRE and recommended by the RAGs were placed before the RPC in its meeting held on 26th and 27th February 2007 for obtaining final approval. The meeting was chaired by Shri Jagdish Kishwan, DG, ICFRE.

In all, 122 new projects were discussed by RPC, of which 6 projects were not approved, 7 projects were approved for external funding, 72 projects were approved after modification and 37 projects were approved without modification.

The chairman, during the RPC meeting, desired that every project should have extension and IPR component. The All India Coordinated projects on identified species were assigned to different Institutes for taking lead role as under.

Name of the spp.	Nodal Institute
<i>Casuarina, Eucalyptus</i>	IFGTB, Coimbatore
Poplar, invasive species, lesser known species, Sissoo, Sal	FRI, Dehradun
Bamboo	RFRI, Jorhat
Jatropha	AFRI, Jodhpur
Teak	TFRI, Jabalpur

Directors' Meet:

On 28th February 2007, Directors meet was organized in the Board room of ICFRE headquarters under the chairmanship of Shri Jagdish Kishwan, DG, ICFRE. The 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. Some of the issues discussed were Grant-in-Aid provided by ICFRE to the Universities, appointment of JRFs and SRFs, HRD issues, budget issues, establishment of Van Vigyan Kendras in States/UTs, selection of villages by ICFRE institutes for extension of technologies, revise the mandate of each institute for renaming, adoption of five years research rolling plan, and revision of NFRP, etc.

Monitoring and Evaluation Division, under the Directorate of Research, deals with the review and evaluation of all the ongoing research projects of ICFRE institutes. It suggests corrective measures for timely completion of the projects and achievement of the objectives with perfection. During 2006-07, the review/evaluation of 355 (199 ICFRE funded and 156 externally aided) ongoing research projects of all ICFRE institutes was done. Apart from above, independent review of completed/ongoing research projects has also been carried out through independent subject matter experts/agencies. This Division also collects information on Annual Action Plan from the institutes for preparation of consolidated Annual Action Plan for ICFRE.

Project Formulation Division, acts as a nodal agency between the ICFRE Institutes and potential donor agencies, for the formulation of Research Projects of ICFRE Institutes / Centres in the identified thrust areas and their submission to various National and International donor agencies as per their funding requirements. It also coordinates the release of funds to ICFRE Institutes from the donor agencies and evaluates the project proposals with regards to their suitability in the identified thrust areas.

Externally Funded Projects

A number of Research Project Proposals submitted by ICFRE Institutes/Centres were scrutinised as per the guidelines and funding requirements of donor agencies in identified thrust areas and suitable proposals were processed for their approval and submitted to National and International donor agencies. Presently, 170 Projects funded by National donor agencies and 14 Projects funded by International and National donor agencies are being implemented. Besides this, there are 146 Projects and 15 Projects in the pipeline for funding, with National and International donor agencies respectively.

Some of the National Donor Agencies are Ministry of Environment and Forests (MoEF), Department of Biotechnology (DBT), Department of Science and Technology (DST), National Medicinal Plant Board (NMPB), National Bank for Agricultural and Rural Development (NABARD), Council of Scientific and Industrial Research (CSIR) etc. The International Donor Agencies are Japan International Co-operation Agency (JICA), Swedish International Development Agency (SIDA), International Foundation for Science (IFS), International Tropical Timber Organisation (ITTO) and United State Department of Agriculture (USDA) etc.

Bihar Project

The Division co-ordinated in the execution of a comprehensive Project titled, "Samudai Adharit Samanvit Van Prabandhan Evam Sanrakshan Yojana in Bihar State" (Phase I) being implemented by ICFRE with Department of Environment and Forests of Bihar State. Activities relating to ICFRE Component on Poplar Based Agroforestry Programme on farmer's field in Vaishali District of North Bihar were monitored. Review meetings were arranged regularly and minutes issued by this Division to monitor the progress of the project and record the decisions for taking further necessary actions in this regard.



The Status Reports of National and International Research Projects were updated (as on November, 2006). Projects were categorized as Approved, Submitted and Rejected as per the inputs received from the ICFRE Institutes / Centres.

A Compendium of National and International donor agencies for Project funding was published. The base document gives all the information related to Project development and National / International donor agencies at one place to help the researchers develop suitable Projects in the areas which warrant immediate attention.

A proposal worth Rs. 50 Crores was prepared for XI Five Year Plan relating to strengthening of forestry research capabilities of State Forest Research Institutes (SFRIs) to support their R&D wings through collaboration with ICFRE.

A draft proposal on “Forestry Research Support Project for Poverty Alleviation” for funding by World Bank was conceptualized and submitted.

The Division contributed towards the successful organisation of 21st Asia Pacific Forestry Commission (APFC) Meeting held at ICFRE from 17th to 21st April 2006.

FORESTRY EDUCATION

Directorate of Education provides financial support in the form of Grant-in-Aid to the universities imparting forestry education in the country in order to strengthen the infrastructural facilities and to enhance the teaching and research capabilities of their forestry faculties thereby promoting forestry education in the country at university level. The activities undertaken by the universities under this scheme include:

- * Construction of college, laboratory and students' hostel building.
- * Purchase of equipments.
- * Purchase of books, periodicals and journals for the libraries.
- * Developing glass houses, mist chambers and other such teaching/research facilities.
- * Developing sports/games and other students' amenities.
- * Establishment/strengthening of communication-cum-museum and instrumentation centers.
- * Purchase of transport and camping equipments for practical training and extension education.
- * Development of computer centres and purchase of mini computers, personal computers, terminals.
- * Assistance for preparation of teaching manuals and aids.
- * Organization of workshops/seminars/symposia.
- * Participation of teachers in national seminars/ workshops/symposia.
- * Students' study tours and any other such work proposed by the universities, considered necessary by the ICFRE Accreditation Committee.

In the financial year 2006-2007 Rs. 700.00 lakhs was provided as Grant-in-Aid to 22 universities.

The Directorate has also taken up work related to standardization and unification of B.Sc./M.Sc. (Forestry) courses being run in various state agricultural universities to ensure delivery of quality education thereby safeguarding the interests of students community and forestry sector in particular. For validation of the course curriculum and the college imparting the same, process of accreditation on the pattern of AICTE has also been initiated.

JRFs/SRFs/RAs are appointed by the Directorate for implementation of projects in the ICFRE institutes. It also conducts trainings/programmes for scientists of ICFRE and its institutes with the objective to hone up their knowledge/research skills for making effective contribution in the forestry research.

Policy Research Division carries out work on Policy Research related to forestry sector on technical, sociological, policy and programme related issues. Policy Research Advisory Committee of ICFRE under the chairmanship of ADG (FC), Ministry of Environment and Forests, Govt. of India, New Delhi has been constituted. Following key research issues/topics have been identified and work has been initiated on the same;

- (i) Need for an institutional and regulatory mechanism for certification of planting stock material of forest seeds and vegetative origin.
- (ii) Analyzing the linkage between poverty alleviation and forestry programmes.
- (iii) Scientific rationale for prescribing the requisite forest and tree cover in India.

FORESTRY EXTENSION

Media and Publication Division looks into the extension activities and strategies being adopted by the institutes of ICFRE for the dissemination of research findings in forestry sector. This division maintains the monthly account of various R&D activities of ICFRE institutes and keeps MoEF apprised of them. The division publishes the Quarterly Newsletter of ICFRE (that brings out the latest significant achievements made by the ICFRE institutes) and the ICFRE Brochure. The reports of ICFRE and its institutes are collected, compiled, edited and published as the Annual Report of ICFRE, which is tabled in Parliament. Editing, vetting and processing of books, brochures, pamphlets and technical reports of ICFRE institutes is taken up by this division and is mandatory before their final publication.

Work on establishment of Van Vigyan Kendras (VVKs) in collaboration with SFDs and selection of villages for adoption by ICFRE institutes have been initiated with the objective of promoting forestry extension among farmers and other targeted groups. ICFRE shall provide the Van Vigyan Kendras, funds for literature, printing of brochures, newsletters etc., model nursery technology, equipments for extension besides training and capacity building of farmers. In the villages selected by ICFRE Institutes, there will be demonstration and extension of technologies for example Agroforestry models, establishment of Model/Hi-tech nurseries, training and transfer of simple technologies, etc.

Statistics Division, under the Directorate of Extension, published 4 volumes of Timber/Bamboo Trade Bulletin, Nos. 46, 47, 48, and 49 during the year 2006-2007.



The Division is also implementing a project funded by ITTO entitled 'Establishment of a Network to Facilitate Collection, Processing and Dissemination of Statistics Pertaining to Tropical Timber and Other Forestry Parameters in India'. The total budget of ITTO is USD 2,16,378.00. The first installment of USD 59,150.00 was received on 28th June 2006 and the project was initiated on the 1st July 2006. The following activities have been carried out:

- a) A Forestry Statistics India Stakeholders' Meet was organized on 29th and 30th November 2006. The organizations that participated in the meet were Central Statistical Organization; Wildlife Institute of India; Forest Survey of India; Chattisgarh State Forest Department; Directorate General, Customs Intelligence and Statistics, Kolkata and the ICFRE institutes. The following main agenda items were discussed in the meet:
 1. Review the existing formats of Forestry Statistics India.
 2. Constitute a National Working Group of stakeholders.
 3. Constitute a calendar for data collection.
 4. Decide the frequency of data collection and its format.
 5. Identify the areas where data availability is low and sample surveys may be resorted to in order to fill in the gaps.
 - b) Computerization of data collection and dissemination of formats is under process.
 - c) A National Forestry and Environmental Statistics Laboratory has also been established at ICFRE Headquarters with adequate hardware and data analysis software (STATISTICAL).
- Statistics Division also provided statistical services to consultancy projects as under:
- a) Statistical services were rendered to EIA Division of ICFRE for monitoring and evaluation of compensatory afforestation raised by Tehri Hydro-electric Development Corporation (THDC) for Tehri Dam Project.
 - b) Monitoring and evaluation of projects funded by National Afforestation and Eco-development Board (NAEB).
 - c) Socio-economic Survey for Kotlibehl Hydro-Power Project.

The division disseminated data in respect of forestry sector to ITTO in the form of Joint Forest Sector Questionnaires (JQ1 and JQ2).

Environmental Impact Assessment Division of the Directorate of Extension has been undertaking EIA studies nationwide for various developmental activities. The following studies have been completed by the Environmental Impact Assessment Division during the year:

1. Monitoring and Evaluation of projects funded by the Department of AYUSH, National Medicinal Plant Board under Promotional Commercial and Contractual Schemes to various agencies nationwide except for central India.



Medicinal plant farming under the projects funded by
Department of AYUSH, NMPB

1. Rapid Environment Impact Assessment studies for Chandigarh Industrial Area Phase III in Chandigarh Administration, Chandigarh.
2. Environmental Impact Assessment studies and formulation of Environmental Management Plan for Kotlibhel stage II (530 MW), National Hydroelectric Power Corporation, Tehri/Pauri Garhwal.



PRA for socio-economic studies and view of dam
site of KBHEP-II, NHPC

The following studies undertaken by the Council are in progress:

1. Evaluation of Catchment Area Treatment Plan of Tehri Dam Hydro Electric Project, Tehri Hydroelectric Development Corporation.



Evaluation of engineering work and plantations for CATP of Tehri Dam

2. Preparation of Catchment Area Treatment Plan (CATP) for bauxite mining in Muliagalugu, Anantagiri and Sunkermetta Reserve Forests in favour of Andhra Pradesh Mineral Development Corporation (APMDC).



3. Preparation of EIA/EMP covering socio-economic and ecological aspects for diversion of forest land for bauxite mining in Muliagalugu, Anantagiri and Sunkermetta Reserve Forests in favour of Andhra Pradesh Mineral Development Corporation (APMDC).



Chittamkondi Bauxite mining site, APDMC

4. Monitoring and Evaluation of National Afforestation Programme a scheme being implemented under the decentralized system of Forest Development Agencies (FDA) and funded by the National Afforestation and Eco-Development Board of the Ministry of Environment and Forests, Government of India.
5. Preparation of Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) for diversion of 125 ha, 289 ha, 900 ha and 335 ha forest land for bauxite mining in Jerrela Block-III of Reserve forest respectively in favour of Andhra Pradesh Mineral Development Corporation (APMDC), Hyderabad.

GENERAL ADMINISTRATION

Information Technology Cell

Directorate of Administration, caters to all the Information Technology needs of the users at ICFRE and its Institutes/Centres. The activities of the cell include LAN-WAN support, procurement and maintenance of hardwares, E-Governance, trainings, providing IT support for the technical presentations in the meetings, conferences, seminars, workshops etc. The important achievements are as follows:

- * Regular maintenance of 512 Kbps leased line taken from BSNL, Dehradun.
- * Regular maintenance and reporting of e-mail, internet, CD-Service etc. for around 400 users across ICFRE Headquarters and FRI.
- * Development and updation of www.icfre.org a website of the Council.
- * Regular maintenance and reporting of File Server for data storage service provided to users of ICFRE Headquarters and FRI.
- * Regular maintenance and reporting of Network Antivirus facility at the ICFRE Headquarters and FRI campus through a centralized AV Server.

- * Maintenance of computer and peripheral hardware at ICFRE Headquarters and FRI through the third party vendor's.
- * The HCL Pentium IV Desktops (81 nos.), HP Laserjet 1320N (31 nos.) Printers and APC UPS (81 Nos.) were received from MoEF, New Delhi under E-Governance and put to use after installation.
- * A consolidated portal is being planned for ICFRE as a whole to suit the e-Governance needs of the organisation.
- * The Indian Forestry Research and Information System is being planned and a consultancy for formulation of its Project Development Document (RFP) is underway.
- * A separate proposal has been initiated to install a Virtual Private Networking (VPN) for ICFRE.
- * Imparted in-house training to Officers and staff of ICFRE and its Institutes.
- * Securing computer through proposer usage of Centralized Antivirus.
- * Conducted Training programme on "Securing Computer and Network".
- * IT Service support provided to ICFRE Headquarters and FRI with regards to the IT and audio-visual arrangements in all the meetings, conferences, seminars and workshops etc. organized at ICFRE Headquarters and FRI during the year 2006-2007.

EDUCATION AND TRAINING

1. One week refresher training course for Indian Forest Service Officers on "Climate Change and Relevance to Forestry Sector" sponsored by Ministry of Environment and Forests, Govt. of India, New Delhi was organized at ICFRE Dehradun from 9th to 13th October 2006. 18 IFS officers of different States participated in this training programme.
2. Scientists of BCC Division participated as resource persons to impart short term training and education on Climate Change and Biodiversity Conservation related issues to officials of Government of India, State Forest Department, Public Sector Undertakings, NGOs and representatives from various industries.

PUBLICATIONS

BROCHURES / PAMPHLETS

1. Sandeep Tripathi and V.R.S. Rawat (2006): Resource Manual on "Climate Change and Relevance to Forestry Sector" for Indian Forest Service Officers ICFRE, Dehradun.
2. Shashi Kumar, Sandeep Tripathi and V.R.S. Rawat (2006): CDM Afforestation and Reforestation Projects in India Analysis of Barriers. An ICFRE Publication under EU-ICFRE SPF Project.
3. Inhi f=i k Bhj fot; jkt fl g jkor , oavke dekj (2006) % "I h- Mh- , e- fl d i fj; kst uk; a%ouhdj.k , oai uoZhdj.k i fj; kst uk vkdsfØ; k lo; u i j i z uk Brjh", vkb-Zl h- , Q- vkj- bž i d k' kuA



CONFERENCES/MEETINGS/WORKSHOPS/SEMINARS/SYMPOSIUM/ EXHIBITION

1. Jagdish Kishwan and V. R. S. Rawat (2006): Compensated Conservation: A New Concept for Compensating Nations for Carbon Conservation by Maintaining and Enhancing Forest Cover. Paper presented in the International Conference on Planted Forests: Ecosystems Goods and Services, from 13th to 15th December 2006 at Forest Research Institute, Dehradun.
2. Shashi Kumar, Sandeep Tripathi and V.R.S. Rawat (2006): Creating an Enabling Environment for CDM Afforestation and Reforestation Projects in India. Paper presented in the International Conference on Planted Forests: Ecosystems Goods and Services, from 13th to 15th December 2006 at Forest Research Institute, Dehradun.
3. Shashi Kumar, Sandeep Tripathi and V.R.S. Rawat (2006): "Potential of Production Forestry for Carbon Sequestration in India". Paper presented in the Regional Conference(s) on "Scope of Production Forestry for Carbon Sequestration" organized by Ashoka Trust for Research in Ecology and Environment (ATREE), New Delhi and British High Commission, from 7th to 8th December 2006 at Forest Survey of India, Dehradun.
4. Shashi Kumar and Om Kumar (2006): Afforestation A Tool for Combating Desertification. Paper presented in National Workshop Forestry for Food Security in Dry Zone on 5th and 6th October 2006, organized by Arid Forest Research Institute, Jodhpur.