

CHAPTER-XVI

EXTERNALLY AIDED PROJECTS

Activities under externally aided projects in ICFRE during the year have been as follows.

UNDP-ICFRE PROJECT IND/92/038-STRENGTHENING AND DEVELOPING OF ICFRE

UNDP Project for strengthening and developing the Indian Council of Forestry Research and Education was launched on 4.9.1992 with UNDP assistance of US \$ 2.56 million and Indian contribution of Rs.21.94 million. This is a five year project aiming at poverty alleviation through enhancement of the contribution of forestry to rural development in India. The project is designed to strengthen the capacity of ICFRE Institutes and their personnel to undertake and extend forestry research.

MAIN OBJECTIVES OF THE PROJECT

- Establishment of a solid research base to increase forest productivity and support afforestation; reforestation and rehabilitation of degraded forests and village commons; and agroforestry on farmlands.
- Development of extension mechanisms, to transfer proven research results and tested technologies to the users.
- Upgradation of Research capability at the national level and integration level keeping in view that progress towards the goal may be achieved by integrated efforts of many well knit and multidisciplinary teams of skilled scientists and technicians.

Beneficiaries

The ultimate beneficiaries are the farmers, poor tribal, economically backward classes and also the wood based industries. The forestry researchers having experience of interaction with the international researchers and exposure to the advances in research through courses on forest genetics, seed technology, evergreen forests, deciduous forests, arid zone forestry, research methodology and tree physiology are engaged in the relevant fields of their expertise utilizing their newly acquired skill for furthering the cause of forestry research.

Highlights of the project

The main achievements of the project during the year 1996-97 are as under:

1. Training

Scientists have been trained abroad to handle sophisticated instruments at supplier's cost.

2. International consultancy

Following International Consultants visited ICFRE and its Institutes during the year:

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|-------|---------------------|-----------|-----------------------|
| (i) | Dr. Chris Harwood | | - Provenance Research |
| (ii) | Dr. Michael Manzies | } Joint | - Clonal Propagation |
| (iii) | Dr. Trevor Faulds | } Mission | |
| (iv) | Dr Alex Diner | | - Tissue Culture |

The reports of these experts have been circulated among all ICFRE Institutes and state Forest Departments.

3. National consultancy and awarding of sub-contracts

UNDP provides for employment of national consultants and award of sub-contracts in different fields. During the year, national consultancy on "Shifting Cultivation of North Eastern Region" and research review and consolidation of IFGTB Coimbatore, IWST Bangalore were completed. One national consultancy on Research Review and consolidation for AFRI, Jodhpur was awarded. Draft report on shifting cultivation in areas of M.P., Maharashtra and Orissa has been received.

Draft reports of sub-contracts on "Economics of tree growing on farm lands" for FRI Dehra Dun and HFRI, Shimla; Demand supply studies of social forestry products in areas under IWST and IFGTB jurisdiction; and socio economic studies to link people with regeneration and protection of forest in areas under purview of IFGTB and IWST have also been received.

4. Technology transfer and demonstration

The project envisages demonstrating potential of forestry programmes in alleviation of poverty in 100 demonstration villages spread over 20 districts in 13 states of the country. State Forest Departments have been provided technical know-how through closer interaction in maintaining 10,000 hectare of seed production areas of various multipurpose tree species and 50,000 candidate plus trees identified in different forest types distributed all over the country. Demonstrative training in collection of quality seed from seed production areas and superior planting material production by improved methods of biotechnology have been provided to state forest departments. During the year, 513 foresters, 45 NGOs and 3502 farmers have been given training in identification and inoculation of VAM and Rhizobia. Similarly, 612 foresters, 52 NGOs and 4134 farmers have been trained in Seed Technology and Plantation Management. Lab to land transfer of technology has been achieved through:

- Training packages on Seed Technology; plantation management; VAM; rhizobia production and inoculation techniques in nurseries of SFDs, NGOs etc.; proper soil working, choice of species, manuring, irrigation intensity, etc.
- Distribution of 3 lakh superior quality seedlings to farmers in 100 adopted villages for increasing the biomass productivity.
- Distribution of brochures, leaflets, pamphlets, handbills in Hindi, English and local languages during demonstrations, exhibitions and kisan Melas.

ICFRE-NABARD PROJECT FOR DEVELOPMENT OF AGROFORESTRY MODELS IN VARIOUS AGRO-ECOLOGICAL REGIONS OF INDIA

Agro and farm forestry hold the key to rural development for their potential in harnessing both the rural man power and land resources for biomass production. All the rural development programmes focus on self-sufficiency for the villages and generation of surpluses for commerce to improve rural economy. It is, therefore, necessary to modify suitably the current land use to achieve production of sufficient amount of food, fodder and timber alongwith agri-goods.

It is in this context that formulation of ecologically congruous agroforestry models assumes importance. Keeping this in view, ICFRE has finalised a five year project for

"Development of Agroforestry models in four agro-ecological regions of India" with NABARD which has approved a grant of Rs.1.26 crores from its R&D funds for the project. The grant will be available on quarterly reimbursement basis on furnishing a certificate of utilisation. The ICFRE Institutes identified as nodal institute for research in the four agro-ecological zones are:

- **Hot Semi-Arid Loamy Soils:** Institute of Forest Genetics and Tree Breeding, Coimbatore.
- **Hot sub-humid -Red black soils:** Tropical Forest Research Institute, Jabalpur.
- **Hot sub-humid-alluvial soil:** Centre for Social Forestry and Eco-rehabilitation, Allahabad.
- **Hot arid-desert and saline soils:** Arid Forest Research Institute, Jodhpur.

Activities

The project is aimed at developing site specific, user friendly, silvi-agri, silvi-horti, and silvi-pastoral model suitable for agro-ecological regions of the country. Following are the activities under the project:

- Conducting agro-forestry design and diagnostic surveys in 1-3 villages in each identified micro-watershed to evaluate weaknesses, constraints, and the potential of the existing land use system.
- Conducting economic analysis of existing agro-forestry system in the selected watersheds.
- Selecting multipurpose tree species for investigation in agro-forestry and other associated system.
- Introducing bio-fertilizers in agro-forestry plantations and evaluating their potential in enhancing productivity.
- Designing experiments on models for improving land use in different agro-ecological regions.
- Designing appropriate land use/management plans for selected watersheds under different agro-ecological regions.
- Seeking improvement in crop productivity through introduction of suitable tree species as part of the integrated watershed management.
- Establishing demonstration plots based on research findings.

The project has come into effect from January, 95.

Watersheds

12 Micro-watersheds covering the total area of 6600 ha in 16 villages will be tackled in 5 years under this project.

Work progress

Highlights of the work carried out is as under:

- i) Fifteen JRFs have been appointed and posted in different institutes for helping project execution.

- ii) Twelve micro watersheds have been selected keeping in view that maximum land should be under class-IV category and also of degraded nature. The institutes have prepared hydro-geomorphological maps, soil maps, land use and land cover maps by taking the help of maps available at NRSA and AISLUS organisations.
- iii) Surveys had been carried out for identifying the users needs and demand for different tree species and agricultural species. The results of the surveys are :-
 - a) The major tree species in the areas under IFGTB, Coimbatore are *Casuarina equisetifolia*, *Tectona grandis*, *Acacia nilotica*, *Tamarindus indica*. The agricultural and Olericultural crops are Rice, Pearl millet, Ground nut, Sesamum, Grams, Brinjal, Tomato Turmeric, Ginger, Sugar cane. Pastural crops are *Panicum maximum*, *P. pedicellatum*, *Cenchrus ciliaris*, *C. cetergerus*, *Napier hybrid*, *Vetiveria zizanioides*, *Trifolium alexandrinum*.
 - b) In the areas covered by AFRI, Jodhpur *Acacia nilotica*, *Prosopis*, *Azadirachta indica*, *Ailanthus* spp. are major tree species identified. Agricultural and Olericultural crops will be Jowar, Pearl millet, Bazra, Green gram, Cluster bean, Moth, *Eruca sativae* and pastural crops will be *Panicum antidotum*, *Cenchrus ciliaris*, *C. cetergerus*.
 - c) In the region under purview of TFRI, Jabalpur, major tree species are *Tectona grandis*, *Acacia nilotica*, *Albizia procera* and bamboos. Agricultural and Olericultural crops are Rice, Wheat, Jowar, Maize, Pearl millet, Bazra, Soyabean, Ground nut, Sesamum, Grams and other vegetable and economic crops. Pastural crops comprise *Panicum maximum*, *P. pedicellatum*, *Cenchrus ciliaris*, *C. cetergerus* etc.
 - d) In the region covered by Allahabad Institute, the most important tree species are *Paulownia* (exotic). Agricultural and Olericultural crops are Wheat, Pearl millet, Soyabean, Ground nut, Sesamum, Red gram. Pastural crop includes *Panicum maximum*, *P. pedicellatum*, *Cenchrus ciliaris*, *C. centigerus*, *Napier hybrid*, *Vetiveria zizanioides*, etc.
- iv) Nurseries at the project sites have been established and 1,01,200 seedling have been raised.
- v) Working group for each micro-watersheds have been identified and village committees have been formed.
- vi) Design and Diagnostic (D&D) survey, Data Collection on existing AF system and their economic analysis have been taken up.
- vii) Biofertiliser is in continuous production. This has been applied in the nurseries as well as in the field and studies vis-a-vis control are being carried out.
- (viii) Different Agroforestry models have been designed and laid down in the field. More than 48000 plants have been planted under different agro-forestry models. Observations are being recorded.

Monitoring of project

Project Director, NABARD Project is responsible for monitoring of the progress at ICFRE level. A Project Monitoring Committee monitors project progress and render advice at NABARD level.

Reimbursements

NABARD grant is made available on reimbursement basis on production of certified statement of expenditure. So far against the total expenditure of Rs.15.49 lakhs, Rs.11.18 lakhs have been reimbursed in six quarterly instalments.

ICFRE FORD FOUNDATION PROJECT ON PRODUCTIVITY ENHANCEMENT - MANAGEMENT FOR PEOPLES' PARTICIPATION

The project on Productivity Enhancement-Management for Peoples' Participation with the assistance of Ford Foundation was started in 1995. The project period is 4 years. Total assistance for the project is US\$ 2,00,000. The main objectives are as follows:

1. To conduct socio-economic studies for documentation of short term and long term needs and expectation of participating societies and individuals therein from forest lands with a view to providing direction to socially acceptable technological development and establishing a symbiotic relationship between the people and forests.
2. To develop site specific models of rehabilitation/forest regeneration for maximizing production of goods and services for meeting local demands and attracting forest community participation.
3. To evaluate different production alternatives and the trade offs involved in terms of end produce generated.
4. To study the existing channels of flow of forest products to and from the markets with a view to identifying bottlenecks and suggesting means of improving the situation.
5. To develop locally feasible processing technologies for value addition, storage and marketing of non-wood forest products.

The major forest types covered under the study are:

- i) Dry sal forests of Central India.
- ii) Dry deciduous teak forests of Central India.
- iii) Dry deciduous mixed forest of low hills in North India.

The project is being implemented by Tropical Forest Research Institute, Jabalpur and FRI, Dehra Dun. Three sites identified for studies are located at Jabalpur in M.P., Sambalpur in Orissa, and Yamuna Nagar in Haryana. Socio-economic studies of the villages identified under the project have been completed using Participatory Rural Appraisal (PRA) and Rapid Rural Appraisal (RRA) techniques.

Regeneration survey of the forest area under joint forest management has been completed to assess the status of regeneration under the impact of joint forest management. Vegetation survey and survey of non-wood forest produces available in the forest areas have also been completed. Experiments for introduction of grasses and other medicinal plants in the selected forest areas have been initiated.

For economic upliftment of the villagers residing in and around forest areas, market study of non-wood forest products is being conducted to identify bottlenecks and improve marketability. Technologies developed at the ICFRE Institutes have been introduced in the selected villages for storage and value addition of non-wood forest products.

WORLD BANK ASSISTED FORESTRY RESEARCH, EDUCATION AND EXTENSION PROJECT

Forestry Research, Education and Extension (FREE) Project was launched on 30th September 1994 with the assistance of the World Bank. Executing agencies are the Indian Council of Forestry Research and Education (ICFRE), the Ministry of Environment and Forests (MOEF), and the states of Himachal Pradesh and Tamil Nadu. Total estimated cost of the project is Rs. 2151.48 million equivalent to US \$ 56.4 million. IDA credit is for US \$ 47.0 million equivalent. The project period is five years with components as follows:

Research management

For establishment of Indian Forestry Research Information System (IFRIS), international and national consultants have been working on development of a management information system. Review of working of the institutes, both by national and international consultant arranged by Winrock International, has been completed. Three international consultants have, alongwith three national consultants, carried out study on research priority setting methodology. Three workshops on research priority were organised. A three day training workshop was also organised for scientists, NGOs and forest industries. Annual R.A.G. meetings were held in all institutes in which current research programmes; research needs of SFDs, ICFRE; collaboration with SFDs, universities; and research priority of all states were discussed.

Research programme support

31 research programmes covering many forestry disciplines are being taken up at ICFRE institutes. Planting Stock Improvement programme is one primary concern identified in the project. Till March 1997, 1480 ha area was surveyed, 362 ha area was marked and 9 ha area of seed stands had been culled. 36.07 ha clonal seed orchards, 102.10 ha seedling seed orchard and 36.07 ha vegetative multiplication gardens were established. The project also provides for grant of funds (for undertaking specific research programmes) to State Forest Department., Universities, and other private sector organisation. Till Feb. 1997, 114 Nos. of project were sanctioned, amounting to Rs. 1148.38 lakhs. The works on National Forest Library and Information System at Dehra Dun, and a network involving libraries under ICFRE and related institutes (Indian Forest Library Information Network (IFLIN)) are in progress. The V-SAT installation to upgrade the existing network system is in process. Training to librarians of institutes was imparted in information technology. Chief Consultant on Grey Literature Survey is in position. The project also includes a provision to develop a "Forest Statistical Unit" within ICFRE to coordinate compilation and analysis of national forest statistics. The format for data collection were sent to SFDs and other agencies. Based on the collected data, a book on Forest Statistics India 1995 was published. A training course, each on basic computer skills, and statistical experimental design and analysis was organised.

Forestry education

This involves development and validation of forestry curricula in formal education through provision of funds for review and revision of work and development of Deemed University, Dehra Dun. Two M.Sc. Courses (Forestry, and Wood Science and Technology), were started in addition to the two on going P.G. Diploma Courses (Plantation Technology, and Pulp and Paper Technology). Coordinators for the courses have been appointed. To build up research manpower 106 fellowships (JRF -66, SRF - 17 and R.A.-23) were awarded. Research management training to ICFRE Scientists was conducted.

Forestry extension

Technologies developed/tested by ICFRE institutes were selected and prioritisation of 17 of these tested technologies have been completed. An extension workshop involving various client groups was arranged. Demonstration of Eucalyptus for match splint by FRI and WIMCO is in progress. FRI tested technology were demonstrated at Hyderabad (AP), Nagpur (MS), Itarsi, Raipur (MP), Surat, Ahmedabad (Gujrat) and Hoshiarpur (Punjab). Exhibition was organised for extension of technologies on treated catamarans at Vishakapatnam. 14 extension proposals under extension grant fund were approved. An amount of Rs. 118.52 lakhs was sanctioned for approved proposals. Films on 9 identified topics are being made. The script/concept note on three topics are under preparation. A film on ICFRE activities (Van Anusandhan) is also being made. 13 pamphlets on Catamarans, Tea, Acacia etc. are ready for printing in English and Telgu. Translation of 35 pamphlets in different languages is in progress.

The projects are being reviewed quarterly and six monthly by Director of the Institutes and ICFRE internal monitoring committee. Annual monitoring is being done by World Bank Supervision Mission. The project has been reviewed four times by World Bank Supervision Mission till date.

ICFRE-IDRC RESEARCH PROJECT ON HIMALAYA ECO-REHABILITATION

This project commenced in April, 1993. It aims at locating and quantifying, using GIS techniques, damages caused by common land use practices in Himalaya such as mining and shifting cultivation, and developing socio-economically viable and ecologically stable methodologies for rehabilitation of degraded areas by application of well tested agro-forestry techniques developed at ICFRE.

The countries involved in the project are: India, Nepal, China, and Bhutan. The three ICFRE, Institutes namely, FRI, Dehradun; IR & MDFR, Jorhat; and HFRI, Shimla are carrying the study in association with Tribhuvan University, Nepal; Chinese Academy of Forestry, China; and Royal Forest Department, Bhutan. The NGOs and other Institutions such as G.B. Pant Institute of Himalayan Environment and Development, Almora and ICIMOD, Kathamandu are also collaborating. The project was initially for three year duration but has been extended upto March 1998. The contribution from IDRC is 500,000 \$ CAD and from ICFRE, Rs 137,6609 (ICFRE also provides infrastructure facilities at the three Institutes where the project is being run). Of the 500,000 \$ CAD IDRC contribution, 320,000 \$ CAD are being administered by the ICFRE and the rest by the IDRC itself. Works were carried out as per following objectives :

1. **Assessment and quantification of damage caused by shifting cultivation, mining and other commonly practised land use systems using GIS technique**

For the preparation of integrated data base file, a small unit of GIS was set up within the project and following are the achievements.

1. Vegetation, agriculture, mining, drainage and major river maps pertaining to Mussoorie and Dehra Dun were prepared. Damage in Mussoorie due to mine practices has also been assessed.
2. Quantification and assessment of mining and other land use in the Sirmour District of Himachal Pradesh has been done.
3. Visual interpretation of shifting cultivation sites in North East region - Jayantia Hills, Meghalaya pertaining to SOI toposheet 83 C/7 has been completed.

4. Vegetation maps of J&K, Himachal Pradesh, UP, West Bengal, Sikkim, Nagaland, Assam, Arunachal Pradesh, Meghalaya, Tripura and Manipur have been prepared.

2. Identification and testing of appropriate interventions to contain shifting cultivation

Studies were undertaken at six sites (selected earlier) of Ampheri Matiagog and Tandu villages in Kamrup district (Assam); and Amphangiri, Killing and Umtyra villages in East Khasi hill district (Meghalaya). Appropriate technologies for providing alternatives to shifting cultivation using different agroforestry models like Silvi-Horticultural, Silvi-Pastoral and Agri-Silvi-Horticulture were tried. For these trials, a nursery at Burnihat was established and seedlings of *Gmelina arborea*, *Embllica officinalis*, *Atrocrapous* spp. and *Tectona grandis* were raised for planting stock.

Pigs were distributed in earlier selected three villages and twenty one households for testing income generation intervention through concerned Block Development Office/Panchayats. Regular record is maintained with regards to income generated. Socio-economic survey of the area under study has also been conducted.

3. Rehabilitation of mine damaged areas with specific and reliable micro interventions

(a) Rehabilitation of mine damaged area

Reclamation works, through extension approach (collaboration with lease holders) in four sites namely Bodbas, Baldiwa, Deolan and Hiyona lime stone mine of Sirmour District (H.P) were carried out. Well tested methodologies developed by ICFRE were applied in these selected areas. Check dams, gabion structures, and toe-wall etc. were constructed to stabilise the soil. Plantation of *Rumex hastatus*, *Robinia pseudoacacia*, *Celtis australis*, *Grewia optiva*, *Vitex negundo*, *Ipomea carnea* and *Acacia catechu* have been raised to further stabilize the soil. Regular monitoring is being done.

Reclamation of mined land of Mussoorie was undertaken in two sites namely Lambidhar and Hathipaon. Monitoring was done periodically in the area brought under vegetation cover. An "Integrated Development and Sustainable Management" project in a mini watershed of Garhwal Himalaya was started in the Bhitarli Nadi Micro Watershed. Plantations of *Robinia pseudoacacia*, *Alnus nepalensis*, *Albizia stipulata*, *Acacia mollissima*, *Grewia optiva*, *Celtis australis* and *Dendroclamus membranaceus* were raised in the area. Survival and growth of these plantations is being monitored.

(b) Rehabilitation of degraded watershed

Degraded lands in Upper Herval Sub-Watershed of Chamba (Tehri District) were studied to ascertain their Phyto sociological status. Survival rate and growth data were recorded periodically in respect of the vegetation and soils were analysed for characterisation.

4. Baseline socio-economic impact studies in selected areas /villages

The socio-economic data was collected through PRA and analysed. A study of assessment and potential of market towns dependent on forest based industries in Tehri Garhwal District was also carried out.

5. Strengthening of socio-economic and inter disciplinary research capabilities of ICFRE

One scientist was sent to P.R. China for training. Ms Els Hendricks, a student from Larenstein International Agricultural College, Larenstein, Netherland was provided practical and field training under the project.

6. **Review and recommending of a national/regional land use policy with particular reference to rehabilitation of Himalaya.**

Review of forestry related policies of Bhutan, Nepal and India was undertaken. Detailed policy studies as regards Indian Himalaya are going on.

IDRC/INBAR PROJECT ON "BAMBOO AGROFORESTRY TECHNOLOGY FOR DEGRADED LANDS - PROD 8A"

The major activities during this year were to maintain the planted bamboo, casualty replacement, and cultivation of Kharif and Rabi intercrops. Soil and root samples were collected and analysed for N, P, K, pH, organic carbon, VAM infection and moisture etc. The ecological analysis was also carried out. The socio-economic studies conducted earlier were analysed in a systematic manner and yield, income generation were calculated. Data on weather, growth, and survival rate were also collected periodically and statistically analysed.

IDRC PROJECT ON "SURVEY, CULTIVATION AND EXTENSION OF SOME RARE MEDICINAL PLANTS OF NORTH-WESTERN HIMALAYA"

Survey of natural distribution of *Taxus baccata*, *Picrorhiza kurroa*, and *Nardostachys jatamansi* were undertaken in Chamoli and Uttarkashi District (U.P.) and Chamba District (H.P.). Germplasm including seeds of the above three species were also collected. The live plants were planted in nursery at Chakrata while the shoot cuttings of *T. baccata* treated with phytohormones were also planted and their phenological characteristics recorded. Chemical analysis of these species was also carried out. Experiments to standardise propagation methods of *N. jatamansi* and *P. kurroa* were also initiated. The air layering experiments on *T. baccata* were undertaken in Chakrata hills of Dehra Dun District.

NEEM PROJECT

Neem is one of the priority species identified by ICFRE. Institutes are undertaking research in respect of its genetic improvement, chemistry, silviculture (including farm forestry), biocidal properties, seed physiology, diseases and pests, etc.

International Neem network was established under the coordination of the Forest Resource Division FAO, with the objective to improve the genetic quality and adaptability of the neem planted and encourage its utilization throughout the world.

Under the Research Grant Fund during the year, eight research projects were allotted to different Universities and State Forest Departments for promotion of research on Neem complimentary to the guidelines set by International Neem Network.

These projects are sanctioned for three years with total operational expenses of Rs. 76,26,960.00. The location of these projects covers different geographic ranges of the country and includes themes like survey of rich neem sources, standardization of techniques for long term preservation, genetic improvement of neem, and storage potential and seed viability studies.

Evaluation of five International provenance trials of Neem in sites managed by AFRI Jodhpur, TFRI Jabalpur, & IFGTB Coimbatore was done to assess survival, growth rate etc. National trials of neem laid down by AFRI Jodhpur in 1992 were also evaluated to ascertain various parameters, including flowering, seed set etc.

POPLAR IMPROVEMENT (WORLD BANK PROJECT)

A tree improvement programme for poplar (*Populus deltoides*) was formulated and initiated in collaboration with silviculture Division, FRI., Dehradun. Under this programme, 40 promising clones of poplar were identified on the basis of field trials conducted in the terai region of Uttar Pradesh. Cuttings of the selected clones were planted in the nursery for multiplication for future multiplication trials. Shoots of 5 female clones and 18 male clones bearing reproductive buds were brought from the Terai region and planted for hybridisation. A new germplasm bank was established with 180 clones to overcome the need of cutting back/replanting of clones (as was the case in the previously existing germplasm bank) year after year.

Cuttings of 20 promising clones were supplied to 15 research units of State Forest Departments/State Agricultural Universities for multiplication and field trials under All-India Coordinated Project on Poplar Improvement. Technical guidelines were also supplied to the research units of State Forest Departments/State Agricultural Universities for improvement of *P. deltoides* and *P. ciliata*.

CONSERVATION OF INDIGENOUS POPLARS IN INDIA

FAO funded project on conservation of indigenous poplars was launched at ICFRE to cover areas in Himachal Pradesh, Uttar Pradesh and Eastern Himalayas. The main objective of the project is conservation of India's indigenous poplars (viz. *Populus ciliata*, *P. alba*, *P. euphratica* and *P. gamblei*) throughout their range, as a basis for future conservation, breeding and improvement programmes. The specific objectives are :

1. To carryout a survey and ascertain the status.
2. To develop a strategy and priorities for conservation of the target species, based on the survey of their status.
3. To prepare project proposals for the target species.

To fulfill the objectives of the project, the job was entrusted to Forest Research Institute, Dehra Dun to cover Himalayas in U.P.; Himalayan Forest Research Institute, Shimla to cover Himalaya in Himachal Pradesh; and Institute of Rain and Moist Deciduous Forests Research, Jorhat to cover poplar areas in eastern Himalayas.

Extensive survey on occurrence of *P. ciliata*, *P. euphratica* and *P. alba* in Himachal Pradesh covering extent, location and their current status has been completed. The most common occurrence of *P. ciliata* has been noticed between 2400-2800 m altitude. In case of *P. alba*, dense patches formed through root suckers could be seen along river channels, some stands of this species are over 8 ha in area. *P. euphratica* grows in the valleys of Jhelum and Indus rivers upto on elevation of 4000 m. Its occurrence has also been noticed in Shoyok river where the species is endemic to just 15 km stretch on the river bank, where only three stands have been noticed.

In Uttar Pradesh, the survey was conducted in Chakrata, Uttarkashi, Mussoorie and Chamoli regions where it was found growing in mixed forest and also in pure patches near water channels. All the trees in that area are numbered and their detail observations are noted in a prescribed form.