



CHAPTER V

RAIN FOREST RESEARCH INSTITUTE JORHAT

Rain Forest Research Institute situated at Sotai, Jorhat (Assam), is one of the eight Institutes under the Indian Council of Forestry Research and Education, an Autonomous body under the Ministry of Environment and Forests, Govt. of India. The Institute was established in 1988 with the primary aim to conduct forestry research, education and extension in the north-eastern states comprising Arunachal Pradesh, Assam, Manipur Meghalaya, Mizoram, Nagaland and Tripura.

PROJECTS COMPLETED DURING THE YEAR 2003-2004

Project 1: Management of seed and soil borne diseases of *Gmelina arborea* and *Dipterocarpus retusus* in nursery [RFRI/FP/05 (1999-2004)]

Principal Investigator - Dr A. N. Singh

Findings: Record of periodicity of nursery diseases of *D. retusus* revealed that most potential and destructive diseases like shoot blights caused by *Phoma eupyrena* and *P. tropica* occurred during April and May and leaf blight caused by *Colletotrichum* sp. occurred during the month of July-August. Prophylactic fungicidal spray 15 days before the onset of diseases minimized the disease incidence significantly. Bavistin was found most effective amongst the fungicides screened for prophylactic spray.

Project 2: Development of VAM as biofertilizer for some economically important forest plant species of Assam and Arunachal Pradesh [RFRI/FP/07]

Principal Investigator - Shri Rajib Kumar Kalita

Findings: Response of twenty-six different clones of *G. arborea* (Roxb.) to the native population of AMF was studied in terms of spore number in the rhizosphere soil and percent colonization in the roots. Species *Glomus fasciculatum*, *G. aggregatum*, *G. multiculis* and *Gigaspora* sp. were recorded from the soils. Four clones showed better response to AMF both in terms of spore numbers and percent colonization in roots.

Project 3: Isolation and evaluation of Rhizobium from leguminous forest trees in nurseries of three districts of Assam [RFRI/FP/08]

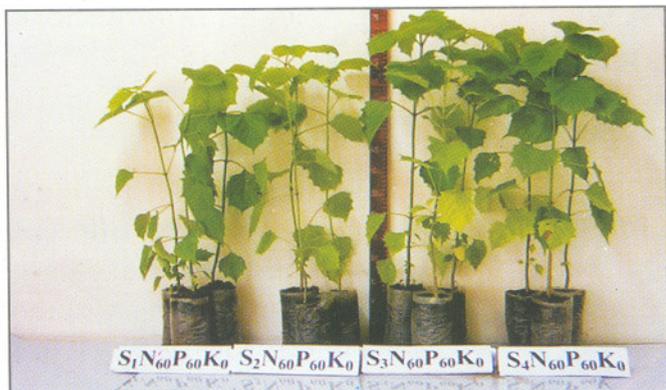
Principal Investigator - Dr Jasbir Singh

Findings: Only 17 numbers of leguminous species get priorities as plantations stock in local nurseries. A total of 42 Rhizobium strains were isolated and authenticated from these species. From the studies conducted in both sterilized and non-sterilized soil it can be concluded that native Rhizobium strains can be used in nurseries to boost up growth, biomass production and nitrogen content in seedlings.

Project 4: Fertiliser response studies in nursery for some important species of north-east region [RFRI/SM/02/1999-2003]

Principal Investigator - Shri Baikuntha Goala

Findings: The experiments representing the variables are nitrogen, phosphorous, potassium, soil, sand and farmyard manure various treatment combinations were studied. The periodic recorded growth data on height and collar diameter on all the variants and



Standardised potting media

subsequent statistical analysis of variance concluded that the combined influence of variants with nitrogen and phosphorous 60 ppm each in combination with soil, sand and farm yard manure (1:1:1 by volume) are the best growth media in polybag (8½x6½)" (60 ppm), phosphorous (90 ppm), the combined influence of variants with nitrogen and phosphorous 60 ppm each in combination with soil, sand and farmyard manure (1:1:1 by volume) emerged as the best growth media and polytube 8"x 3". Ideal time for planting a seedling in the field was observing the monsoon but not beyond September, 15th

From the experiments, it could be concluded that raising nursery for vigorous plantable seedlings of *Gmelina arborea* from germination of seed for successful planting in the forest sites is possible just within 45 days. Young aged planted seedlings produces above 84 percent log convertible straight boles in the planted stocks, while in the case of stump planting it produces crooked boles.

Project 5: Standardization of nursery techniques for selected bamboo species of north-east India [RFRI/SM/01/1999-2003]

Principal Investigator – Shri S. Pattanaik

Findings: Nursery technique for four bamboo species viz., *Bambusa tulda*, *B. nutans*, *B. hamiltonii*, *B. balcooa* and *Dendrocalamus* has been standardized and a package for practices has been developed..

PROJECTS CONTINUED DURING THE YEAR 2003-2004

Project 1: Studies on distribution dynamics of bamboos and canes and their ex-situ conservation [RERI/EE/03/2003-2005]

Principal Investigator - Dr K.C. Pathak

Status: Survey has been made in parts of Assam for location of different species of bamboos. The map of the occurrence of different species of bamboos in different parts of northeastern region has been prepared. Collection and ex-situ conservation for 4 species of bamboos have been carried out.

Project 2: Integrated nutrient management in shifting cultivation soil through green manuring and inorganic fertilizers [RFRI/SC/04/2000-2003]

Principal Investigator - Dr Jasbir Singh

Status: *Sesbania bispinosa*, *Dalbergia sissoo*, *Lantana camara*, *Albizia procera* and *Chromolaena odorata* incorporated on green manure exhibited 55.2 percent, 20.12 percent, 19.80 percent and 8.30 percent grain yield, respectively.

Project 3: Evaluation of different existing land use systems for development of viable economic models in north-east India [RFRI/SC/06/2003-2008]

Principal Investigator - Dr Jasbir Singh

Status: Cost benefit ratio of crop productivity of pointed gourd, tea and jhum cultivation were carried out. Soil samples were collected from

Teak, Tea, Pineapple and shifting cultivation areas of Karbi Anglong district of Assam. Analysis of soil physico-chemical properties are under progress.

Project 4: Growth, biomass and energy production potential of selected energy plantation species [RFRI/SC/07/2003-2005]

Principal Investigator - Shri Anup Chandra

Status: A total of ten species were selected from the plantation already established in the Naharoni Research Station of the Institute. for study. Growth data was recorded at six monthly intervals and component wise biomass was calculated annually. Parameters like growth, biomass, moisture content and energy value, etc. are being analysed.



A view of three years old *Mallotus albus* growing under energy plantation



A view of three years old *Anthocephalus chinensis* growing under energy plantation

Project 5: Reclamation of highly eroded site of Cherapunji, Meghalaya [RFRI/SM/04/2003-2006]

Principal Investigator – Shri B. Goala

Status: 22.52 ha land was acquired from Meghalaya Forest Department, 1.5 ha was fenced, physiographic data were collected, possibilities were explored for collaboration with the department and NGOs.



Planting of seedlings

Seedlings of *Ex-bucklandia populania* and *Alnus nepalensis* were planted in two different pit sizes. Each block contains 9 seedlings having different treatment combinations like water harvesting structures, mulching and variable fertiliser doses.

Physicochemical and Nutritional properties were analysed from the above treatments.

Project 6: Germplasm evaluation of selected bamboo species for various end uses [RFRI/SM/03/2001-2004]

Principal Investigator – Shri V.K.W. Bachpai

Status: Evaluation trials with statistical design were established at Telliamura, Tripura and Naharoni research station, Assam to an extended area of 1.0 ha during the year 2003.

Species included are *Bambusa balcooa*, *B. nutans*, *B. tulda* and *Dendrocalamus hamiltonii*, number of genotypes per species was 10 in 5 replications, in an extended area of 0.65 ha.

A base population of the plus clumps of the different species of *Bambusa balcooa*, *Bambusa tulda*, *Bambusa nutans* and *Dendrocalamus hamiltonii* was produced and are being maintained in the nursery. About 1727 ramets of 33 plus clumps of *Bambusa balcooa*, 802 ramets of 36 plus clumps of *Bambusa tulda*, 1038 ramets of 13 plus clumps of *Bambusa nutans* and 166 ramets of 9 plus clumps of *Dendrocalamus hamiltonii* are being maintained in the nursery.



Bambusa balcooa cuttings (3 months old)



Bambusa tulda cuttings (6 months old)

Project 7: Genetic improvement of Khasi pine (*Pinus kesiya*) [RFRI/TI/08/2001-2004]

Principal Investigator – Dr Ombir Singh

Status: 10 ha SPA was established (Meghalaya) at Riet Khwan near Shillong, Meghalaya, scientific and technical formalities were submitted to the State Forest Department to carry out culling operations. A total of 29 plus trees of Khasi pine has been selected in Meghalaya. Seed has been collected from plus trees to raise progenies. Cone and seed parameters measured for different plus trees and germination trials have been laid in the laboratory.

Project 8: High value merchantable biomass production of teak through genetic improvement [RFRI/TI/05/1999-2002]

Principal Investigator - Dr A.K. Sarkar

Status: The clonal seed orchard of teak was established at Telliamura, Khassia Mangal Beat, Telliamura Forest Range, Telliamura Forest Division and Tripura taking 50 clones in 10 replication, doubling design at spacing 6x6 m. Total area covered 2 ha.

Project 9: Stability test of various clones and progenies for different characterization in *Gmelina arborea* [RFRI/TI/10/2003-2004]

Principal Investigator – Dr Ashok Kumar

Status: Established a national base multilocation progeny trial of seeds collected from 49 selected clones of the clonal seed orchards to attempt selection of high yielding progenies for large scale multiplication. Successful implementation and conduct of the trial will ensure of genetically superior *Gmelina arborea* properly.

Project 10: Genetic improvement and clonal propagation of *Dipterocarpus retusus* [RFRI/TI/11/003-2004]

Principal Investigator - Dr C.R. Meena

Status: The Seedling Seed Orchards (SSO) at Deovan and Nahorani were studied for various growth parameters. A profuse flowering was observed in juvenile stage of some progenies, planted at Deovan campus.



Identification of bamboo



Woman's participation in Kisan nursery



Profuse flowering in juvenile plant of *Dipterocarpus retusus*

Project 11: Capacity building of village level committee for efficient forest resource management through JFM [RFRI/CFE/01/2002-2006]

Principal Investigator – Shri B.K. Pandey

Status: Literature surveyed. Site identified in Majuli (Assam). Interacted and established liaison with farmers, communities, NGOs.

Project 12: Studies on yield and quality traits of fragrant products from selected humid-tropical aromatic plants [RFRI/CFE/02]

Principal Investigator – Dr Y.C. Tripathi

Status: Plots were randomly selected in the patchouli-cultivated fields and observations were made for each plot for various parameters to calculate leaf yield. Moisture content was determined, fresh and dry weight ratio was calculated. Leaf samples of different maturity stages were examined for their oil content to standardize the optimum stage for harvesting. Leaf samples collected from different experimental sites evaluated for their essential oil content.



Laid out experiment on the effect of drying mode on the essential oil (fragrant constituents) content of patchouli leaves. Leaf samples of Patchouli harvested from cultivated field were kept in shade and dark conditions as well as under heap and spread drying mode. Leaf samples dried under different conditions are under chemical evaluation.

Organoleptic characteristics like colour, odour and taste etc. of harvested leaves were studied and leaf samples were separated based on their appearance. Number of completely matured (brown colour), matured (brownish green) and immature (green) leaves per plant and total leaf yield per plot were calculated. Leaf area and thickness of the three categories of leaves were measured. Moisture content was determined and fresh to dry weight ratio was calculated. Fungal infestation on leaves in the plantation field as well as during storage was noticed. Infested leaf samples have been collected and categorized as severely and mildly infested based on visual observation for further analysis. Biodeteriorative effects on yield of essential oil were being evaluated.

NEW PROJECTS INITIATED DURING THE YEAR 2003-2004

Project 1: Ecological studies on Dipterocarp forest of Gibbon Wildlife sanctuary of Assam [RFRI/EE/04/2003-2006]

Principal Investigator - Dr S. Trivedi

Status: Sites inventorization of flora is in progress.

Project 2: Germplasm collection conservation and mass multiplication of selected medicinal plants of north-east India [No.RFRI/EE/05/2003-2006]

Principal Investigator - Dr K.C. Pathak

Status: Survey has been conducted in parts of Assam for localization, collection and conservation of selected medicinal plants and a total of 30 medicinal plants have been collected and conserved in RFRI premises.

PROJECTS COMPLETED DURING THE YEAR 2003-2004

(Externally Aided)

NIL.

PROJECTS CONTINUED DURING THE YEAR 2003-2004

(Externally Aided)

Project 1: Indigenous knowledge of Angami tribe in sustainable management of biodiversity in Nagaland, India [RFRI/EP/03/2003-2006]

Principal Investigator - Dr Jasbir Singh

Status: Project sites were surveyed. Detailed relevant information on Angami Nagas is being collected. Questionnaire is prepared for collection of resource management data.

Project 2: Contribution of N₂ fixing plants on improvement of abandoned fallow in shifting cultivation [RFRI/EP/04/2003-2006]

Principal Investigator - Dr Jasbir Singh

Status: Plot preparation and sowing of seeds for nitrogen fixing species was done. Green manure species were incorporated in the respective plot.

Project 3: Conservation of productive land and promising flora of Majuli Island in Brahmaputra river [RFRI/EP/05]

Principal Investigator - Shri B.K. Pandey

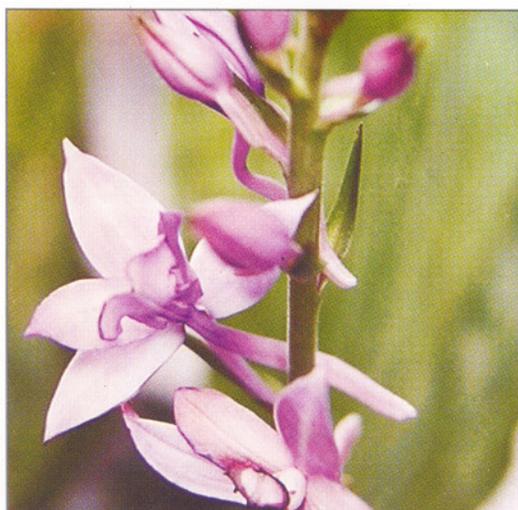
Status: Literature and field survey were carried out and study sites were selected at Majuli (Assam). Interacted and established liaison with inhabiting farmers, communities and NGOs was

undertaken. Action was initiated for implementation of proposed action plan. A Junior Project Fellow has been appointed under the Project. Survey for enumeration of vegetation has also been initiated at the selected site. Two farmers' training programmes have been conducted.

Project 4: Assessment of biological diversity of various ecosystems and to establish methods for conservation in the Kaziranga National Park of Assam [RERI/EP/06/2003-2006]

Principal Investigator - Dr P. K. Khatri

Status: The permission from Govt. of Assam to conduct research in the KNP was received in the last week of October. Topo- sheets (1:50000) and maps of area have been collected. Study sites in the park have been selected. Enumeration of vegetation and grassland is in progress. Vegetation survey, laying out permanent plots 100 m x 100 m in woodland, 50m x 20m plot in grassland have been initiated. Plant samples are being collected and enumeration of species is in progress. About 10 species of important orchids have been collected for conservation.



Grassland dominated with *Phragmites karka*
Kaziranga National Park



Ground Orchid (*Calanthe masueca*) of Kaziranga National Park

PROJECTS INITIATED DURING THE YEAR 2003-2004

(Externally Aided)

NIL.

RESEARCH ACHIEVEMENTS

Name of State	No. of projects completed in 2003-04	No. of ongoing projects in 2003-04	No. of projects initiated in 2003-04
Arunachal Pradesh	2	2	Nil
Assam	5	4	5
Tripura	-	1	-

TECHNOLOGY ASSESSED AND TRANSFERRED

Trainings were organized and technologies pertaining to the Macroproliferation and preservation of bamboo were demonstrated to

the farmer, NGOs and Forest Officials of North-eastern of India during the year 2003-2004.

Low cost, short duration nursery technology for the rural people, Forestry students, as well as all the major planting agencies like Forest Depts, Forest Corporations, Companies etc.

EDUCATION AND TRAINING

Shri Swapendu Pattanaik, Scientist 'C' of Rain Forest Research Institute, Jorhat attended the International "Bamboo cultivation, processing and production technologies, its administration, tools and small machines" held at the China National Bamboo Research Centre, Hangahou, P.R. China. Duration – 11th to 24th August, 2003.

LINKAGES AND COLLABORATION

National

The linkage and collaboration with various forest departments of Assam, Meghalaya, Manipur, Arunachal Pradesh, Nagaland, Tripura, West Bengal and organizations like Assam Agricultural University, Jorhat; Regional Research Laboratories, Jorhat; Tocklai Experimental Station, Jorhat; North Eastern Hill University, Shillong; Central University, Tezpur, Guwahati University, Guwahati, Assam University, Silchar; North Eastern Regional Institute of Science and Technology, Naharlagoon; State Forest Research Institute, Itanagar; National Bureau of Plant Genetic Resources, New Delhi; Kerala Forest Research Institute, Peechi; G.B. Pant Institute of Himalayan Environment and Development, Kosi-Katarmal, Almora have already been developed.

PUBLICATIONS

Journals

1. Barua, K.N. and Singh, J. (2003). Foliar Trichomes as aid in clonal variability of *Gmelina arborea* Communicated to *Journal of Tropical Forest Science*.
2. Barua, K.N. and Singh, Jasbir (2003). Invasive exotic weeds in jhum fallow vegetation of Karbi Anglong district, Assam. Paper presented in "National Seminar on Alien Invasive weeds in India" from 27th to 29th April, 2003 held at Assam Agricultural University.
3. Bora, I.P.; Baruah, A. and Singh, J. (2003). Isolation and selection of efficient Rhizobium strains from *Dalbergia sissoo*. Communicated to *Indian Journal of Agricultural Research*.
4. Dutta, D.; Bora, D.P. and Kalita R.K. (2003). Arbuscular mycorrhizal association in forest trees of North-eastern region of India. *MyForest*, 39 (2): 171-177.
5. Hazarika, P.; Tripathi, Y.C. and Zhasa, N.N. (2003). Indigenous and traditional agroforestry in Assam. *Proc. Nat. Sem. on Approaches for Increasing Agricultural Productivity in Hill and Mountain Ecosystem* (Eds. Bhatt, B.P., Bujarbaruah, K.M., Sharma, Y.P. and Patiram) pp. 149-152, ICAR Research Complex for NEH Region, Umiam, Meghalaya.
6. Kalita, R.K.; Bora, D.P. and Dutta, D. (2002). Association of vesicular arbuscular mycorrhiza with 20 biomass species in Assam. *Indian Forester* (In Press).
7. Kaushik, P.; Tripathi, Y.C. and, Pandey, B.K. (2003). Industrial Prospects of Post Flowering Utilization of Bamboo Resources. *Proc. Natl.*



- Symp. Conservation, Management and Utilization of Bamboo and Rattan Resources – 2003* from 25th to 27th February, 2003, University of Agricultural Sciences, Dharwad, Sirsi (Karnataka).
8. Pandey, B.K.; Kaushik, P.; Tripathi, Y.C. and, Hazarika, P. (2003). Extension of technology for enhancement of productivity under community forestry and extension programme. Presented in Training on "Application of improved afforestation technologies for north-eastern India, held at RFRI, Jorhat from 23rd to 25th September, 2003.
9. Pattanaik, S.; Borah, E.D.; Kaur, H. and Borah, K. (2003). " *Cultivation of sympodial bamboos – Scientific techniques and practices*"- Paper presented in the workshop on 'Application of Improved Technology for Afforestation in North-east India', organized by Institute of Rain and Moist Deciduous Forests Research in association with the National Afforestation and Eco-Development Board, NEHU, Shillong: was held at RFRI, Jorhat from 23rd to 25th September, 2003.
10. Prasad, K.G.; Gogoi S. and Singh, J. (2003). Biological rejuvenation of sick tea soil at Naharoni, Golaghat district of Assam. To be published in the proceedings of the national seminar on "Rehabilitation of Lands under Anthropogenic Stress of Degradation" at Institute of Forest productivity, Ranchi on 20th January, 2004.
11. Singh, J. and Barua K.N. (2003). Status of bamboo resource in North-East India. Paper presented in the workshop of "Awareness campaign-cum-training programme, of bamboo flowering - probable impact and its management" was organized at Haflong Cultural Hall on October 21 under the aegis of International Fund for Agricultural Development (IFAD), Haflong and a Guwahati based leading NGO, Bureau of Integrated Rural Development (BIRD), Guwahati, Assam.
12. Singh, J.; Barua, K.N. and Das, N. (2003). The role of *Chromolaena odorata* and *Lantana camara* slash and burn fallow systems of North-East India. Communicated to *Indian J. of Weed Science*.
13. Singh, J. and Barua, K.N. (2003). Leaf Macromorphological variations in *Gmelina arborea* Roxb. Clones Communicated to *Indian Forester*.
14. Singh, J.; Bora, I.P.; Baruah, A. and Barua, K.N. (2003). Allelopathic effect of successional weed species on germination and seedling vigour of traditional paddy variety of jhum. Communicated to *The World Weed*.
15. Singh, J.; Bora, I.P. and Baruah, A. (2002). Effect of shifting cultivation on nutrient status of soil in Silonijan (Karbi Anglong) Assam (Accepted for publ. In *Indian Forester*).
16. Singh, J.; Bora, I.P. and Baruah, A. (2003). Changes of the physico chemical properties of soil under shifting cultivation with special reference to Karbi Anglong district of Assam. *Indian J. Forestry*, 26(2): 116-122

Proceedings

- ♦ Kalita, R.K.; Bora, D.P. and Dutta, D. (2003). Response of different clones of *Gmelina arborea* to native population of arbuscular mycorrhizal fungi. Communicated to Technical session of Assam Science Society to be held in January, 2004.



Chapter in books

1. Kalita, R. K.; Dutta, D. and Bora, D.P. (2003). Arbuscular mycorrhizal association. In: *Gmelina arborea; A Technology Mission* (Eds. Ashok Kumar, A. N. Singh, R. K. Kalita and K. G. Prasad) Published by Rain Forest Research Institute, Jorhat, Assam, p. 98-106.
2. Kalita, R. K. (2003). Soil Solarization for Management of Soil Borne Pathogens in Forest Nursery. In: *Plasticulture Intervention for Agriculture Development in North-eastern Region* (Eds. K. K. Satapathy and Ashwani Kumar) Published by ICAR Research Complex for NEF Region, Umiam, Meghalaya, p. 112-119.
3. Goala, B.; Prasad, K.G.; Borthakur, J.B.; Gogoi, B. (2003). Paper presented on "Afforestation Trait and Improved Nursery Practices" was presented by B. Goala, D.C.F. in the workshop on "Application of Improved Afforestation Technologies for North-East India" organized by Institute of Rain and Moist Deciduous Forests Research in association with the National Afforestation and Eco-Development Board, NEHU, Shillong was held at RFRI, Jorhat from 23rd to 25th September, 2003.
4. Final report "Project Completion Report 2000-2002" of the externally aided project 'Resource enhancement and processing of cane and bamboo species suitable for handicrafts' was prepared and submitted.
5. Tripathi, Y.C. and Singh, S. (2003) Prospecting phytomedicinal diversity: Threats and challenges. In: *Recent Progress in Medicinal Plants* (Eds. Govil, J.N. and Singh, V.K.), SCI TECH Publishing LLC, Houston, Texas, USA.
6. Singh, S. and Tripathi, Y.C. (2003). Phytochemical standardization towards quality assurance of phytomedicines. In: *Recent Progress in Medicinal Plants* (Eds. Govil, J.N. and Singh, V.K.), SCI TECH Publishing LLC, Houston, Texas, USA.
7. Tripathi, Y.C.; Kaushik, P. and Pandey, B.K. (2003). Patchouli (*Pogostemon cablin*): A promising medicinal and aromatic crop for north-eastern India. In: *Recent Progress in Medicinal Plants* (Eds. Govil, J.N. and Singh, V.K.), SCI TECH Publishing LLC, Houston, Texas, USA.
8. Hazarika, P.; Tripathi, Y.C.; Pandey, B.K. and Kaushik, P. (2003). Use of Biofertilizer in Bamboo based Agroforestry system in North East India: Prospects and Limitations. In: *Agroforestry in NEH Region* (Ed. Bujarbaruah, K.M.), ICA, Research Complex for NEH Region, Umiam, Meghalaya.
9. Tripathi, Y.C.; Pandey, B.K.; Kaushik, P.K. and Hazarika, P. (2003). NTFPs of Indian North-East Region: Need for Sustainable Management and Prospects of Productivity Enhancement through Agroforestry. In: *Agroforestry in NEH Region* (Ed. Bujarbaruah, K.M.), ICAR Research Complex for NEH Region, Umiam, Meghalaya.
10. Prasad, K.G. and Pattanaik, S. (2003). 'Resource Enhancement and Processing of Cane and Bamboos Suitable for Handicrafts – A Compendium of Bamboo Research at RFRI, Jorhat'. Compiled.
11. Pattanaik, S.; Pathak, K.C.; Bhuyan, T.C.; Khobragade, N.D.; Das, P. and Prasad, K.G. (2004). Mensurational studies in *Melocanna baccifera*, *Journal of Tropical Forest Science*, 16 (1): 62-70.



Paper Presented

1. Pattanaik, S.; Trivedi, S.; Pathak, K.C.; Borah, E.D.; Borah, K. and Kharshi-ing, A. (2004). 'Scientific Clump Management for Sustainable Shoot Production in *Dendrocalamus hamiltonii* Nees & Arn.' Paper presented in the World Bamboo Congress held at New Delhi from 27th February to 4th March, 2004.
2. Pattanaik, S.; Borah, E.D.; Kaur, H. and Borah, K. (2003). 'Cultivation of Sympodial Bamboos – Scientific Techniques and Practices'. Paper presented at the workshop jointly organized by NAEB (NEHU) and RFRI at Jorhat.
3. Kharshi-ing, A. and Pattanaik, S. (2003). 'Bamboo Resource in Northeastern India-Status, Research and Management Issues'. Paper presented at the Conference on Bamboo and its Applications, held at Kohima, Nagaland, organized by Nagaland Forest Department.
4. Pattanaik, S.; Pathak, K.C.; Trivedi, S.; Khatri, P.K. and Prasad, K.G. (2003). 'Cohort Mapping in Bamboo Resource Management' – Paper presented in the Regeneration Task Force Meeting held at Rain Forest Research Institute, Jorhat during September, 2003.
5. Singh, J. (2003). 'Status of bamboo resource in North-East India' – Paper presented in the seminar at Haflong by IFAD and BIRD on 21st October, 2003.

Popular Science Articles

- ♦ Kalita, R.K.* (2003). Joint Forest Management- An Innovative Approach for reclamation of degraded forests *Bigyan Jeuti*, Assam Science Society Magazine, 37(2): 15-17.

- ♦ Kalita, R.K.* (2003). Biodiversity and Its Management *Prantik XXII* (21) Guwahati, Assam, India.
- ♦ Hazarika, P. and Tripathi, Y.C. (2003). "Prospects of Application of Eco-biotechnologies in Sustainable Development of The River Island Majuli", *Aranya: Journal of the Majuli Arayna Surakha Samiti*, Communicated.

(*Thesis are in vernacular language- Assamese)

Abstracts

- ♦ Kaushik, P.; Tripathi, Y.C. and Pandey, B.K. (2003). Industrial Prospects of Post Flowering Utilization of Bamboo Resources, National Symposium on Conservation, Management and Utilization of Bamboo and Rattan Resources – 2003 from 25th to 27th February, 2003, University of Agricultural Sciences, Dharwad, Sirsi (Karnataka).

Technical Bulletins

1. Brochure on bamboo cultivation entitled as "*Bamboo Kissan Nursery*" 2002 in three different languages (English, Assamese and Bengali) was published and distributed amongst the Trainers, Foresters, Farmers and other users etc. during the training period.
2. Brochure on cane cultivation entitled as "*Rattan for Prosperity*" 2003 in two different languages (English and Assamese) was published and distributed amongst the Trainers, Foresters, Farmers and other users etc. during the training period.
3. T.C. Bhuyan, B. Meitram, S. Pattanaik and K.G. Prasad 2003. '*Rattans: For Prosperity*'- Technical bulletin prepared in English and Assamese for distribution under the Ministry of Textiles and UNDP sponsored cane and bamboo project.



CONFERENCES/MEETINGS/WORKSHOPS/ SEMINARS / SYMPOSIA / EXHIBITIONS

Organised by Others

1. Shri A. Kharshi-ing, Group Co-ordinator (Research), Dr Jasbir Singh, Scientist 'E' and Dr T.C. Bhuyan, R.A. (SG) of this Institute participated in the meeting / conference on Bamboo and its applications on 9th December, 2003 at Kohima, Nagaland organized by the Forest Department of Nagaland.
2. Shri S. Pattanaik, Scientist 'C' attended the VII World Bamboo Congress held at New Dehli from 27th February to 4th March, 2004 and presented a paper titled 'Scientific Clump Management for Sustainable Shoot Production in *Dendrocalamus hamiltonii* Nees & Arn.'
3. Dr Jasbir Singh, Head of Shifting Cultivation Division participated in round table conference on "Ecology And Biodiversity In North-East India" held on 22nd to 23rd March, 2004 at Assam University, Silchar.
4. Shri G. Thakuria, R.A. I of Shifting Cultivation Division participated in the Krishak Samoroh held from 21st to 24th February, 2004 at Alengmara, Jorhat, Assam.
5. Dr Y.C. Tripathi, Scientist 'D' and Shri P.K. Kaushik, Scientist 'B' of Community Forestry and Extension participated in the Training Programme on "Design of Experiments and its Application" sponsored by SQC Unit of ISI, Kolkata and Organized by Dept. of Statistics, Gauhati University, Guwahati from 16th to 19th February, 2004.
6. Dr Y.C. Tripathi, Scientist 'D' and Shri P.K. Kaushik, Scientist 'B' of Community Forestry

and Extension Division of R.F.R.I., Jorhat participated in the "VIIth World Bamboo Congress 2004" held in New Delhi and made two Oral and two Poster presentations.

7. Exhibition-cum-Technology Demonstration was organized at "Krishok Samara (Farmer's Festival)" organized at Allangmara, Jorhat from 21st to 24th January, 2004.

Organised

1. Shri B.K. Pandey, Scientist 'B' of C.F. & E. Division participated in the Training Programme on "Application of improved afforestation technologies for North-eastern India held at RFRI, Jorhat from 23rd to 25th September, 2003" and presented a paper entitled "Extension of technology for enhancement of productivity under community forestry and Extension programme".
2. A team from Technology Information, Forecasting and Assessment Council (TIFAC), Govt. of India, Visited RFRI on 17th May, 2002 for a preliminary identification of potential for entrepreneurial activity relating to processed bamboo shoots for marketing.
3. Short term Practical Training was imparted to a forestry student Shri Divya Ninad Kaul, from NERIST, Nirjuli, Arunachal Pradesh from 3rd to 18th June, 2003. He was exposed with relevant Research information, regarding the short duration and cost effective Nursery and field trial going at Naharoni Experimental Farm, by Shri Bhubesh Gogoi, R.A.-II /SFM division.
4. A three days NAEB-sponsored training for Forest officers of North-eastern region on



"Application of improved afforestation technologies for North-East India" was conducted from 23rd to 25th September, 2003. The Director of RFRI inaugurated the session in which all the scientists and officers of RFRI, Twenty Forest officers of north-east region as well as outsider expert from INBAR, NERIST and NEHU and Shillong took part in this training.

5. Research Advisory Group meeting was held on 5th and 6th November, 2003 wherein the RAG member's reviewed the progress of the on going project work and suggestions was given by the RAG members for upgrading the technical backup of the project.
6. Shri S. Pattanaik, Scientist 'C' attended the Regeneration Task Force Meeting held at Rain Forest Research Institute, Jorhat during September, 2003 and presented a paper titled 'Cohort Mapping in Bamboo Resource Management'.
7. Shri S. Pattanaik, Scientist 'C' attended the workshop jointly organized by NAEB (NEHU) and RFRI at Jorhat and imparted training on 'Cultivation of Sympodial Bamboos – Scientific Techniques and Practices'.
8. Shri Anup Chandra participated in "Training-Cum-Workshop on identification of Bamboo species for survey parties for ground truthing" at Rain Forest Research Institute, Jorhat, Assam on 20th January, 2004.

AWARDS

- ◆ Dr Ashok Kumar, Scientist 'C', Tree Improvement and Propagation Division of R.F.R.I., Jorhat was awarded with Dr Y.S. Rao

Forestry Research Award, 2003 by the Asia Pacific Association of Forestry Research Institutes (APAFRI) for his outstanding work in the field of Tree Improvement with special reference to *Gmelina arborea*. The award was presented to him during the 'APAFRI's General Assembly meeting on 21st October, 2003 in Manila, Philippines.

- ◆ Dr Kumar is the first Indian Scientist to receive this coveted award from APFRI in recognition to his contributions.
- ◆ Shri S. Pattanaik, Scientist 'C' received the best paper award for the paper presented by him in the VII World Bamboo Congress held at New Delhi from 27th February to 4th March, 2004.

DISTINGUISHED VISITORS

Shri Pradyut Bordoloi, Hon'ble Environment and Forest Minister, Govt. of Assam visited Rain Forest Research Institute on 27th June, 2003. He was warmly received by the Director, Scientists and Officers of RFRI, Jorhat. He inspected Laboratory and Fields and attended discussion on major activities of RFRI.

RFRI Library: Resources and Services

RFRI library is a leading organizational setup in the whole northeast India having collection of forestry related literature. This is a special library having a special type of literature and means of services. The collection mainly deals with the broad spectrum of forestry; and its allied fields such as – floral and faunal documents, biotechnology, ecology, Agro-forestry and management, biodiversity, reclamation of degraded land sustainable use of natural resources.



At least 500 readers per year from different academic and research institutions in and around Jorhat and other north-eastern states constantly use resources of RFRI library.

Following is a quick view of the resources available in RFRI Library on Forestry and its allied fields:

No	Items	Nos.	Remarks
1.	Books	3715	Include Annual Reports, etc.
2.	Journals	38	Indian and Foreign
3.	Newsletters and Bulletins	67	Indian and Foreign
4.	Bound Vols. of Journals	928	Comprising 94 titles
6.	Documentary CD	30	Comprising 16 titles
5.	Video Cassettes	17	Comprising 17 titles