



RRC-2019



WED-2019



DG, ICFRE, Visit-2019



DPR, Telangana-2019

ANNUAL REPORT 2019-2020 *IFB, HYDERABAD*



RAG-2019



PBR, AP-2019



Prakriti



Rooting in Red sander



VVK, Odisha-2020

ANNUAL REPORT 2019-2020

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INSTITUTE OF FOREST BIODIVERSITY

Indian Council of Forestry Research & Education

(An Autonomous body under the Ministry of Environment, Forests and Climate Change, Government of India)

Kompally(S.P.O.), Dulapally, Hyderabad – 500 100

2020

Overview: (Please indicate most important achievements/new initiatives (not more than 200 words) during the period under report)

Executive summary

The Institute of Forest Biodiversity endeavors to carry out focused research and development works that address the forestry research needs of the states of Telangana and Odisha. Institute has taken up various research projects under different thrust areas and themes. During the year under report, the Institute executed five (5) ongoing projects as well as 15 All India Coordinated Research Project (AICRP) and one NPFGR. The Institute also formulated four new projects which were approved by the RAG during the reporting year. Out of these projects, two projects have been approved in RPC to subsume in AICRP project. One external project of APMAPB (Andhra Pradesh Medicinal & Aromatic Plant Borad) for one year has also been implemented during 2019-20. IFB completed all ground works for the preparation of 'DPR for rejuvenation of Godavari river using forestry interventions.

Some significant research findings include **1)** Natural populations of *Syzygium alternifolium* has been identified in eight ranges. Seed germplasm was collected from seven populations and nursery of about 600 seedlings is maintained for establishing gene conservation stands. **2)** Twenty two plus trees of *Pterocarpus santalinus* L.f., were selected and half-sib progenies raised in nursery. Vegetative propagation with coppice shoots yielded 70% success with vermiculite as substrate and 2-Napthaleneacetic acid at 1000 ppm. **3)** Indigenous egg parasitoid *Trichogramma chilonis* egg cards have been prepared and released @ 1.25 lakh/ha in natural forests. The plantations of teak revealed significant ($P < 0.05$ - $P < 0.001$) variation of defoliation and skeletonization caused by teak pests, *H. puera* and *E. machaeralis*, when compared to non-released sites. **4)** Seeds of *R. serpentina* plants, foliar sprayed with different concentration of natural biostimulant viz aqueous *Moringa oleifera* leaf extract were subjected to germination test. The result showed that seeds collected from 9-12% MOLE sprayed *R. serpentina* plants have significant germination percentage, germination vigour, mean germination rate and mean germination time as compared to

Control. Total 47 samples of lateral roots of *R serpentina* (one year old plant) were extracted and TLC analysis confirmed the presence of reserpine in extracts as compared with standard reserpine. 5) Socio-economic status of Bakkalingaiahpally, Bacharam, Chenchugudem, Banala and Kothayaptla in Achampet Division of Nallamalai Hills and Mamndoor village in Tirupati Division in Seshachalam area have been recorded based on the village profile, household profile, focused group discussion, ethno medicine and forest data. 6) Passport data of all the species in the AICRP projects are being compiled before the actual initiation of the project. 7) Coastal surveys resulted with first record of 3 birds, namely, Slaty Breasted Rail (*Lewinia striata*) and Great Crested Tern (*Thalasseus bergii*) from Visakhapatnam, whereas “White Cheeked Tern” (*Sterna repressa*) was reported for the first time from Easter Coast of peninsular India

During the year, three consultancy projects were awarded to the Institute and one MoUs was signed with the concerned Department. 1) The first consultancy was on ‘DPR preparation on rejuvenation of Godavari river through forestry interventions’ funded by NAEF, New Delhi to the ICFRE, Dehradun. The Institute organized kick off meeting, stakeholders meetings, and field level training for the prioritization, and finalization of the areas for forestry interventions in Godavari riverscape comprised in seven states and one union territory of Pondicherry. 2) Second consultancy was on Preparation of 17 People’s Biodiversity Register under A.P. Biodiversity Board and draft reports have been prepared and submitted. 3) Third consultancy deals with assessment of ecological damage include cost of river bed material, cost of ecological restoration and NPV of future ecosystem services foregone on account of illegal mining sites in Subarnarekha River (Odisha and West Bengal). The sites have been visited and reports also submitted to the concerned departments. Institute also engaged in Monitoring & Evaluation of Plantations under the NTPC 10 million acceleration plantations in Andhra Pradesh and Telangana states supervised by the ICFRE, Dehradun in continuation to the previous year.

During the year, the Institute organized one kick off meeting, 14 stakeholder's conferences and 26 field level training programmes under DPR, three training programmes under VVK, Eighteen scientist-student interaction under prakriti program, one regional research conference, nine in house seminars. The scientists/officers of the Institute have published one paper in national journal, one paper in international journals, one proceeding in international journal, four chapters in NSMC manuals, fourteen popular article and three abstracts in national and international conferences/seminars. The scientists/officers presented two articles in national and international conferences. The institute also successfully executed the scientist-B exam of the council.

Summary of Projects

Projects	Completed Projects	Ongoing Projects	New Projects initiated during the year
Plan	0	4	1
Externally Aided	0	0	1

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1. **Introduction :**(MoUs signed, visit of dignitaries, new initiatives etc.)

The Institute of Forest Biodiversity is one of the nine institutes under the auspices of ICFRE. The Institute is enduring the research and extension, focusing the needs of State Forest Departments and other stake holders. The initiatives of the institute mandates are strictly followed:

New initiatives:

- A great initiative for DPR preparation on rejuvenation of Godavari river through forestry interventions was taken by the Institute of Forest Biodiversity, Hyderabad under the umbrella of ICFRE, Dehradun to prioritize the state wise detailed activities, plantation models, project area, SMC works, riverfront development works etc. and implementation strategies for SFD, agriculture department, watershed department and other agencies. One kick off and total 14 stakeholders meeting were organized for Maharashtra, Telangana, Andhra Pradesh, Odisha, Karnataka, Madhya Pradesh, and Chhattisgarh to prioritize the area for forestry intervention and finalize the DPR for rejuvenating the Godavari river in these states. Besides this, total 28 field level trainings were also imparted to field staff of SFD, rural development, and agriculture departments to provide data in the different formats for forestry intervention. Data has been compiled and draft is being finalized for submission to the ICFRE.
- Monitoring of plantations raised in Krishna, Guntur, Paderu forest divisions in Andhra Pradesh and Mahaboob Nagar division of Telangana state were taken up under consultancy 'NTPC accelerated Afforestation programme of 10 million trees in Andhra Pradesh and Telangana'. Report submitted to ICFRE, Head Quarters.
- Preparation of 17 People's Biodiversity Register namely Lakkavaram, Pongutur, Kondrukota, Mellapattu, Kothavari Palli, Vepurikota, Kamareddy kandhuku, Bommavaram, Rajuvarichinthalapalem, Perasanipalli, Vashili, Mutukur, Daida, Konupothulapalem, Manchyapalem, Gullalamuda, Salempalem Panchayats were prepared by the IFB and the consultancy was awarded by Andhra Pradesh State

Biodiversity Board.

- Under the “Prakriti: A scientist-student connect initiative”, Institute of Forest Biodiversity (IFB), Hyderabad and Forest Research Centre for Coastal Ecosystems (FRCCE), Visakhapatnam delivered several lectures and conducted interactive sessions in Twelve schools under Kendriya Vidyalaya Sangathan, Zilla Parishad School and Navodaya Vidyalaya Samiti in Hyderabad and six schools under Kendriya Vidyalaya Sangathan and Navodaya Vidyalaya Samiti in Visakhapatnam respectively. More than 2500 students and class teachers, as well as Principals altogether, participated during a period from August, 2019 to February, 2020. They got awareness about forest and environment among school children for acquiring skills for care and protection towards forests, environment, and society.
- Institute of Forest Biodiversity, Hyderabad and FRCCE, Visakhapatnam organized and conducted three trainings under ‘Van Vigyan Kendra’ on Agroforestry System, Raising of Plantations, Management of Plantations and Marketing Issues to SFDs, farmers and other stakeholders. More than 220 farmers and Stakeholders participated in the training.
- One regional research conference (RRC) has been organized at TSFD, Hyderabad on 17 July 2019. The main aim of this conference was to strengthen the linkages between the forestry research Institutes, forest departments, forest based industries, tree farmers and other stakeholders involved in forestry sector. DG, ICFRE, Dehradun PCCF (HOFF) Telangana, Dean, TSFD, representative from IFP, Ranchi and other dignitaries addressed the forestry challenges and opportunities in the southern region particular. Three Working groups of Forest productivity enhancement, Forest Biodiversity conservation, and Climate change mitigation & adaptation were made for the final recommendations of the RRC which was submitted to the council.
- Monthly seminars (six numbers) were organized at Institute level on different forestry research subjects.

MoUs signed:

- Institute has entered into MoU with Andhra Pradesh State Biodiversity Development Board for Preparing People's Biodiversity Registers on 09 September 2019 for 17 BMC's namely as mentioned earlier.
- A MOU has been signed with NBRI, Lucknow, University of Hyderabad, Hyderabad, S. V. University, Tirupati and BIOTRIM, Tirupati for execution of All India Coordinated Project on 'Conservation and productivity improvement of Redsanders'.

Visit of dignitaries:

- Dr. Steve lee a Renounced tree breeder and Ex - Forestry commissioner U.K. member visited Institute of Forest Biodiversity on 12 April 2019. He also gave a presentation on tree breeding, need of tree breeding and important Planting Stock etc.
- Dr. Pramod (Retd.) Associate Professor, University of Delhi, Resource Person Ministry of HRD, Govt. of India visited Institute of Forest Biodiversity and gave a presentation on the theme Our Biodiversity, Our Food, Our Health on 22 May 2019 on the occasion of World Biodiversity Day.
- Dr. S.C. Gairola, IFS, Director General, ICFRE, Dehradun visited Institute during RRC on 18 July 2019.
- Dr Akshay Patanaik, CCF, (R) Odisha Forest Department visited the *R. Serpentina* field experiment and *P. santalinus* germplasm of the institute on 25 September 2019.
- Shri Rajeswar Tiwari, IAS, Special Secretary, EFS, Government of Telangana and Shri Lokesh Jaiswal, IFS, APCCF IFB Nodal Officer for Telangana Godavari DPR visited IFB, Hyderabad on 18 October 2019.
- Shri S Niranjan Reddy, Telangana State Agriculture Minister, visited Institute during "Telangana Agriculture and Horticulture Stakeholders Meeting" under project "DPR for rejuvenation of Godavari and Krishna Rivers through forestry interventions" on 18 December 2019.

- Shri C. V. Rajan, DCF & Shri JoJo, DCF from Kerala Forest department and Shri Sridhar Rao, DCF Siddipet, TSFD visited the Institute in January 2020.
- Dr B M K Reddy A.P Biodiversity chairman had visited in February 2020

Recruitment and Promotion during the year:

- Dr M Deepa Scientist-c To Scientist –D w.e.f 01 July 2019
- Dr Abha Rani Gupta from scientist-E to Scientist-F w.e.f 01 January 2020
- Shri Pankaj Singh from Scientist-B to Scientist-C w.e.f 01 January 2020
- 6 MTS (Mr. J Sardaar, , Mrs. D. Soni, Mr. Srinivas on 01 November 2019; Mr. P Lachi Reddy on 04 November 2019, Mr. Nagashekhar, 21 November 2019 and Mr. Kartik, 02 December 2019)

New infrastructure developed during the year:

- New Projector procured and installed
- Hot Air Oven and UV chamber was installed in the laboratory
- Insect showcases and insect growth chamber was added in the laboratory
- Established Geographic Information System(GIS) Laboratory at IFB Hyderabad
- Ependroff nexus gradient cyclor was procured and installed.
- Shimadzu Spectrophotometer and analytical Balance were repaired.

All India Coordinated Research Projects:

ICFRE has made focused efforts in furthering the cause of forestry research resulting in significant achievements and development of a strong scientific forestry research base in the country. The AICRPs were scrutinized and approved by the expert committee to avoid the fragmented outcome, the loss of valuable germplasm, know-how, technologies, and infrastructures etc., generated during the course of various studies and one FGR projects has also been approved. The emphasis has given on networking of resources and capabilities of ICFRE institutions. Out of 31 AICRP, Institute is contributing in 15 AICRP and one FGR projects as per the available expertise. Funds for AICRP under CAF have been released and progresses are being done. Details are given in the below table;

S.NO.	Name of the AICRP Project with code	Name of the Project Investigator & Contact Number	Duration (Years)	PROGRESS OF THE PROJECT
1	AICRP 01 Testing and deployment of clones and seed sources of Casuarina for different planting environments and end-use applications. NPC: Dr. A. Nicodemus, IFGTB, Coimbatore,	Mr. Pravin H.Chawhaan, Scientist-G	5	(i) Location for establishing trial tentatively (ii) Selected One JPF and One FA is appointed
2	AICRP 4 Eucalyptus Improvement NPC: Dr. V Shiv Kumar, IFGTB, Coimbatore	Dr. S Pattanaik, Scientist-F	5	(i) One JPF is Recruited (ii) Location for one NLT and one Germplasm bank finalized
3	AICRP 8 Conservation and productivity improvement of Red Sanders (Pterocarpus santalinus), NPC: Dr. S Pattanaik, IFB, Hyderabad	Dr. S Pattanaik, Scientist-F	5	(i) One SPF is Recruited (ii) Shade House construction tender is under process
4	AICRP 13 Valuation of forest for GDP, Green GDP and payment of Eco system goods and services NPC: Dr. Rajeev Pandey, ICFRE, Dehradun	Mr. M.B.Honnuri, Scientist-C	4	(i) Recruited Project staff but order is yet to be Issued (ii) Attended project launch workshop held on 13.03.2020 at V.V.Bhavan, New Delhi (iii) Literature review in progress
5	AICRP 14 Forest Fire research and knowledge management centre in India, NPC: Dr. Arti Choudhary, IFS, FRI, Dehradun	Mr. Arulrajan, IFS, DCF	5	Project to be started from 2020-2021 budget yet to release
6	AICRP-15 Tamarind (<i>Tamarindus Indica</i>), Domestication conservation and deployment of genetic resources for sustenance and livelihood amelioration NPC: Dr. B. Nagarajan IFGTB, Coimbatore	Shri M.B.Honnuri, IF B	5	(i) Cleaning of Tamarind plantation area at Mulugu is under process (ii) Collection of information of Tamarind plantation is under process
7	AICRP-16 Bioprospecting for industrial utilization of lesser known forest plants. NPC: Dr. V.K. Varshney, FRI, Dehradun	PI-Mr. Pankaj Singh, Scientist-B Co-PI-Dr. Abha Rani Gupta, Scientist-E Mr. Kiran Technician	5	(i) One JPF was Recruited (ii) Information on distribution of the target species in Telangana, Andhra Pradesh and Odisha are being collected from the authentic sources. Consultation of the published knowledge in respect of the target 6 plant species from various online databases such as Google, PubMed, Science Direct, Scopus and Science Finder was completed.
8	AICRP 17 Enhancement of Fodder availability and quality to reduce unsustainable grazing in the forests. NPC: Dr. Dinesh Kumar, FRI, Dehradun	Mrs. Asha Kumari, ACTO	5	(i) One JPF and one Project Assistant was recruited (ii) Due to COVID-19 the selection of sites has delayed it will be continued in next quarter
9	AICRP 20 Development of Bio pesticide products/formulations from extracts of tree borne oil seeds and leaves, bark and roots of wild plants for management of insect pests Five years NPC: Dr. Jacob, IFGTB, Coimbatore	Dr. Deepa M. Scientist-D	5	(i) one Junior Project Fellow was recruited (ii) chemical and Equipments purchased (iii) Initiated extraction of chloroxylon suctiana (iv) Literature review was conducted

				& collected the related articles
10	AICRP 22 Preparation of Forest Soil Health Cards under different Forest Vegetations in all the Forest Divisions of India” NPC: Dr. Vijendra Pal Panwar, FRI, Dehradun	Dr. G.R.S.Reddy, Scientist-G(PI) Smt Asha Kumari(CO-PI)	3	(i) Two JPF and two Project Assistants were recruited (ii) State nodal Officers has been nominated for telangana and Odisha (iii) Tenders are under process for the Equipments needed in the soil compilation (iv) A list of all forest division has been compiled for Tealangana and Odisha
11	AICRP 23 Genetic Improvement and value addition of <i>Madhuca longifolia</i> . NPC: Dr. Fatima Serine, TFRI, Jabalpur	Dr. GRS Reddy, Scientist-G	5	(i) Recruitment process for selection of JPF was carried out candidates unwilling to join for the position. Further Recruitment process is under process. (ii) Indents for glassware, chemicals, tree climbing equipment and Vehicle, mountened ladder were placed. Field surveys have been carried out in Telangana state and date on phenotypic characters of trees were collected from different location (iii) Literature Review was conducted and collected articles related to the projects
12	AICRP 26 Genetic improvement of <i>Azhadirectha indica</i> Juss. Neem , NPC: Dr. U. K. Tomar, Scientist-F, AFRI, Jodhpur	Mr. Pravin H Chawhaan, Scientist-G,	5	(i) One JPF is recruited (ii) Area District for survey is bared(iii) One geographical zone allotted and literature review done
13	AICRP 29 Sustainable management of NTFPs through conservation and value addition NPC: Dr. Neelu Singh, FRI, Dehradun	Mr. Pankaj Singh, Scientist-B Mr. Pravin H Chawhaan Scientist-G, Dr. Abha Rani Gupta Scientist-E , Dr.S. Pattanaik Scientist-F	5	(i) Two JPF and One PA were recruited. (ii) Information on distribution of the target species in Telangana, Andhra Pradesh and Odisha are being collected from the authentic sources. Consultation of the published knowledge in respect of the target plant species from various online databases such as Google, PubMed, Science Direct, Scopus and Science Finder are being done. Further work is in progress.
14	AICRP 30 Development of packages of practices on <i>Gmelina arborea</i> for different agro climatic zones of India NPC: Dr. Nanita Berry, TFRI, Jabalpur	Mr. M.B. Honnuri, Scientist-C,	5	(i) One JPF and One Project assistant are recruited (ii) Selected the site(SAT) for agroforestry trial (iii) Purchased one equipment (Balance) (iv) Cleaning of selected site is under progress (v) chemical and equipment tenders are under process
15	AICRP 31 Study of climate driven effects on Indian forests through long term ecological monitoring. NPC: Dr. N. Bala, FRI,	Dr. Ratnakar Jauhari, IFS, CF	5	(i) Equipment tenders is under process (ii) four out of six JPF and One Project Assistant is recruited (iii) Literature review under progress

	Dehradun			
1 FGR	National program for conservation and development of FGR NPC: Dr Anandalakshami Scientist-F, IFGTB, Coimbatore	Shri Pravin. H. Chawhaan, Sc-G Dr. S. Pattanaik, Sc-F	5	(i) Two JPF's appointed in the project (ii) Literature review is in progress

2. Research Highlight

2.1 Ecosystem Conservation and Management

2.1.1 Overview

Under the theme, one project was initiated in July-2019. The projects focused on the relationship between biodiversity including NTFP and socio economic profile of people on macro and micro level to be useful for inputs at policy level of governance. The Eastern Ghats have rich biodiversity and this provides a great source of livelihood to the tribal and local people residing in these areas. Further, Nallamalais, Seshachalam and North Coastal areas of Eastern ghats have been chosen for the study.

2.1.1.1 Projects under the Theme

Projects	Completed Projects	Ongoing Projects	New Projects Initiated During the Year
Plan	0	0	1
Externally Aided	0	0	1

2.1.2 Climate Change

2.1.3 Ecology & Environment

2.1.4 Biodiversity (Non-Plan Research Activity)

So far as “**Avian Diversity**” is concerned, FRCCE, Visakhapatnam started bird survey around coastal lines of Visakhapatnam and species counts are put in a global bird biodiversity portal generated by Lab. of Ornithology, Cornell University, N.Y. USA. 92 records of birds added and this initiative resulted with 3 new bird records for Visakhapatnam, namely, Slaty Breasted Rail (*Lewinia striata*) and Great Crested Tern (*Thalasseus bergii*), whereas White Cheeked Tern (*Sterna repressa*) was reported for the first time from Easter Coast of peninsular India. The records can be accessed online in the following url: <https://ebird.org/subnational2/IN-AP-VS?yr=all&m=&rank=lrec>.

2.1.5 Forest Botany

2.1.6 Tribals and Traditional Knowledge System

Project Title: Study on Socio Economic status of People in Nallamalais, Sheshachalam and North Coastal Eastern Ghats in relation with Forest Biodiversity (2019-2021).

Status: Questionnaires have been prepared to collect the primary data on socio economic status of people in the defined region to analyze the relationship between socioeconomic status and biodiversity especially non timber forest products. Bakkalingaiahpally, Bacharam, Chenchugudem, Banala and Kothayaptla in Achampet Division of Nallamalai Hills and Mamndoor village in Tirupati Division in Seshachalam area have been recorded based on the village profile, household profile, focused group discussion, ethnomedicine and forest data.

2.2 Forest Productivity

2.2.1 Overview

The overall productivity of rainfed agricultural systems in semi arid regions of A.P. and Telangana are very low. Therefore, a number of agroforestry systems were designed and developed depending on tree and crop combinations. Taking the lead from this, a pilot project on Paddy+Bach system with fish and trees as an Intensive organic farming system developed. In addition to this one AICRP project on development of agro forestry model with *Gmelina arborea* is also being implemented. A write up on ‘Package of practices for production of shoots of *Dendrocalamus hamiltonii* bamboo’ was prepared and published by ICFRE Dehradun

2.2.1.1 Projects under the Theme

Projects	Completed Projects	Ongoing Projects	New Projects Initiated During the Year
Plan	0	0	0
Externally Aided	1	0	0

2.2.2 Silviculture

2.2.3 Social Forestry, Agro-forestry/ Farm Forestry

Project Title: Intensive organic farming system based on Paddy+Bach (*Acorus calamus*), trees and fish in Agroforestry system- a pilot research and development programme with

financial assistance from Andhra Pradesh Medicinal and Aromatics Plant Board (APMAPB) (April 2019- March 2020).

Status: An Intensive Organic Farming System based on Paddy +Bach (*Acorus calamus*) with Trees and Fish in Agro forestry was implemented in Andhra Pradesh for the year April 2019- March 2020. This intensive agroforestry system is implemented with financial assistance from Andhra Pradesh Medicinal and Aromatics Plant Board (APMAPB). An area of 10 acres is covered by providing planting material free of cost to willing farmers. Farmers have obtained a minimum of 20 quintals yield per acre of *Acorus* rhizomes on dry weight basis (Fig.1). However, some progressive farmers have achieved 30 quintals as maximum.



Figure1: Farmers collecting the *Acorus* root

2.2.4 Forest Soils & Land Reclamation

2.2.5 Watershed Management

2.3 Genetic Improvement

2.3.1 Overview

Under the theme 'Genetic Improvement', two projects were continued from previous year. The first project addresses the issue of forest genetic resource conservation and deals with species 'recovery for *Syzygium alternifolium*, an endangered species from Eastern Ghats' whereas, the second project aims at 'productivity enhancement of *Pterocarpus santalinus* L.f. through mass selection and selective breeding' which is imperative considering the low productivity of our forests in general and *Pterocarpus santalinus* in particular. Besides these two ongoing projects, the Institute has taken a lead in the development of all India coordinated project on genetic improvement of *Pterocarpus santalinus* and also contributed in formulating projects on *Tamarindus indica*, *Eucalyptus*, *Casuarina*, *Madhuca longifolia*, and *Azadirachta indica*. In addition, A cultivation manual for Red sanders has been prepared and published by ICFRE.

2.3.1.1 Projects under the Theme

Projects	Completed Projects	Ongoing Projects	New Projects Initiated During the Year
Plan	0	2	0
Externally Aided	0	0	0

2.3.2 Conservation of Forest Genetic Resource

Project Title: Recovery programme for *Syzygium alternifolium*-an endangered species from Eastern Ghats (2017-2022).

Status: In the project on ‘Recovery programme for *Syzygium alternifolium* - an endangered species from Eastern Ghats’, Field surveys were taken up in fourteen forest ranges and natural populations of *Syzygium alternifolium* could be located only in eight ranges (Fig.2). Leaf samples were collected from eight populations for genetic analysis and seed germplasm was collected from seven populations. A nursery was raised and about 600 seedlings are



Figure 2. *Syzygium* natural population

maintained (Fig.3) for establishing gene conservation stands at a later date. DNA extraction process through CTAB method was standardized from dried and fresh leaf samples. Due to its medicinal value, bark, leaf and seed of five samples of *Syzygium alternifolium* and one sample of *Syzygium cumini* were subjected to extraction from non-polar to polar solvents. The extracts were stored for further analysis of fats, phenols, tannin content and antioxidant activity.



Figure 3. Nursery of *Syzygium alternifolium*

2.3.2 Tree Improvement

Project Title: Productivity improvement in *Pterocarpus santalinus* L.f. through mass selection and selective breeding (2016-2021).

Status: The project is now subsumed in AICRP- Red sanders. Under the project on ‘Productivity improvement in *Pterocarpus santalinus* L.f., through mass selection and selective breeding’, Comparison/check tree method was used in selecting plus trees from plantations. Looking at the range of variation observed (GBH varied from a minimum 25.5 cm to a maximum of 183.0 cm.; Top height varied from a minimum of 4.0 m to a maximum of 23.0 m. (Fig.4); clear bole height varied from a minimum of 0.70 m to a maximum of 10.0 m.), a set of grading criteria was developed for quantitative characters like GBH, top height and clear bole height as given below. In each plantation one or two dominant trees were short listed as candidate plus trees (CPT) and measured. Simultaneously, ten co-dominant trees growing in the vicinity of the CPT were also measured. The average population value of these ten trees was arrived for each of the aforesaid characters. Then, the candidate plus tree was scored for each of the measured character based on its percent superiority over the average population value derived from the ten trees growing in the vicinity. Candidate plus trees were scored directly for qualitative characters like pruning ability, straightness, presence of pest and diseases as per the scoring criteria given below. A composite score was arrived for each candidate plus tree by adding the scores obtained for each of the seven characters. Using this methodology altogether twenty two candidate plus trees has been selected till date. Half-sib progenies of eighteen of these selected plus trees are being raised in nursery.

Air layering experiments were conducted with coppiced shoots of Red sanders. The vegetative multiplication garden at Institute of Forest Biodiversity was hedged at one foot height during the month of December. Rooting and callusing response was found to be much better during rainy season compared to summer season. Similarly, the rooting and callusing response in ring incision was found much better than stripe incision. The stems treated with stripe incision got healed up without any root initiation. Rooting and callusing response was found to be slightly better in Vermiculite compared to Coir pith (Fig.5A and 5B, 6 and 7). Use of Vermiculite as substrate in combination with NAA (2-Naphthaleneacetic acid at 1000 ppm) yielded the maximum (70%) rooting success.

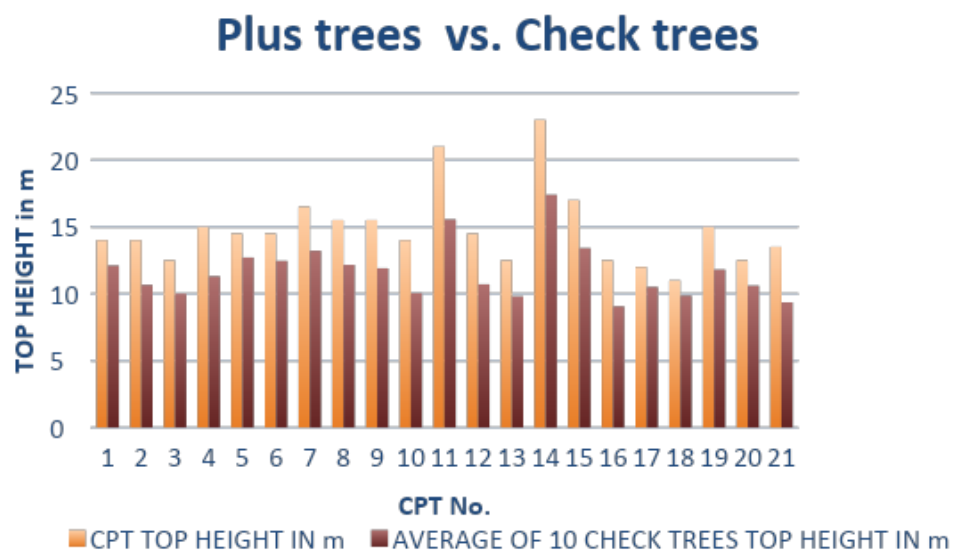


Figure 4. Graph showing superiority of selected plus trees over the check trees



Figure. 5 Vermiculite media with NAA (1000 ppm)

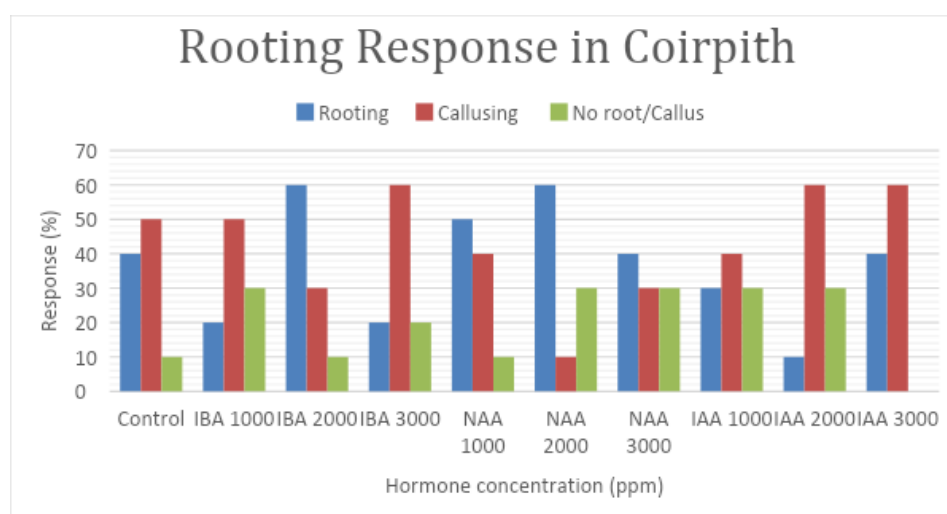


Figure 6. Rooting response of air-layered Red sanders shoots in coir pith media and various hormone treatments.

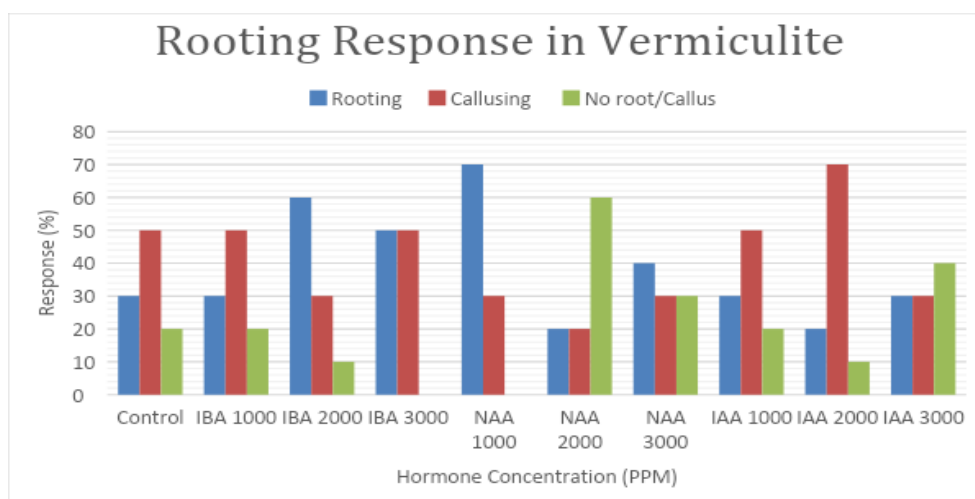


Figure 7. Rooting response of air-layered Red Sanders shoots in vermiculite media and various hormone treatments.

2.3.4 Vegetative Propagation

2.3.5 Biotechnology

2.4 Forest Management

2.4.1 Overview

2.4.1.1 Projects under the Theme

2.4.2 Sustainable Forest Management (SFM)

2.4.3 Forest Economics

2.4.4 Forest Biometrics

2.4.5 Participatory Forest Management

2.4.6 Policy and Legal Issues

2.4.7 Information and Communication Technology (ICT)

2.5 Wood Products

2.5.1 Overview

2.5.1.1 Projects under the Theme

2.5.2 Wood and other Lignocellulosic Composites

2.5.3 Wood Processing

2.5.4 Value Addition and Utilization

2.5.5 Wood Chemistry

2.5.6 Pulp and paper

2.6 Non-wood and Forest Products (NWFPs)

2.6.1 Overview

Under the theme one plan project was continued from previous year. The project addresses growth and biochemical content enhancement in *Rauwolfia serpentina*, mainly the reserpine, utilizing potential natural biostimulants as growth regulator. As these natural biostimulants not only promote the growth by increasing cell division but also influence the biochemical parameter. The seeds of the treated *R. serpentina* plants also showed good germination rate.

2.6.1.1 Projects under the Theme

Projects	Completed Projects	Ongoing Projects	New Projects Initiated During the Year
Plan	0	1	0
Externally Aided	0	0	0

2.6.2 Resource Development of NWFPs

Project Title: “Exploring the potential of natural bio-stimulant on the growth and biochemical content in *Rauwolfia serpentina* (L.) Benth. Ex. Kurz”. (July-2017- 2020; RAG approved for extension)

Status: Field experiment of *R. serpentina* plants were established in RBD design and maintained (Fig.8). Fresh *Moringa oleifera* leaf extract and Seaweed extract (3%, 6%, 9%, 12%, 15%, 18% and 21%) were sprayed periodically on each *R. serpentina* plants. Doses were increased from 10-15 to 20 mL. Data on height and collar diameter have been recorded. Seeds of *R. serpentina* plants, foliar sprayed with different concentration of natural biostimulant were collected and subjected to germination test in Petridis methods. The result obtained showed that seeds collected from 9- 12% MOLE sprayed *R. serpentina* plants have significant germination percentage and germination vigor as compared to Control. Total 47 samples of lateral roots of *R. serpentina* (one year old plant) were extracted and TLC analysis confirmed the presence of reserpine in these extracts as compared with

standard. Further crop was matured in December-2019 and five plants from each treatment/replication have been excavated. Fresh and dried weight of above and below ground biomass was noted. Dried samples were stored in air tight bags for further analysis.



Figure 8. *R serpentina* field demonstration

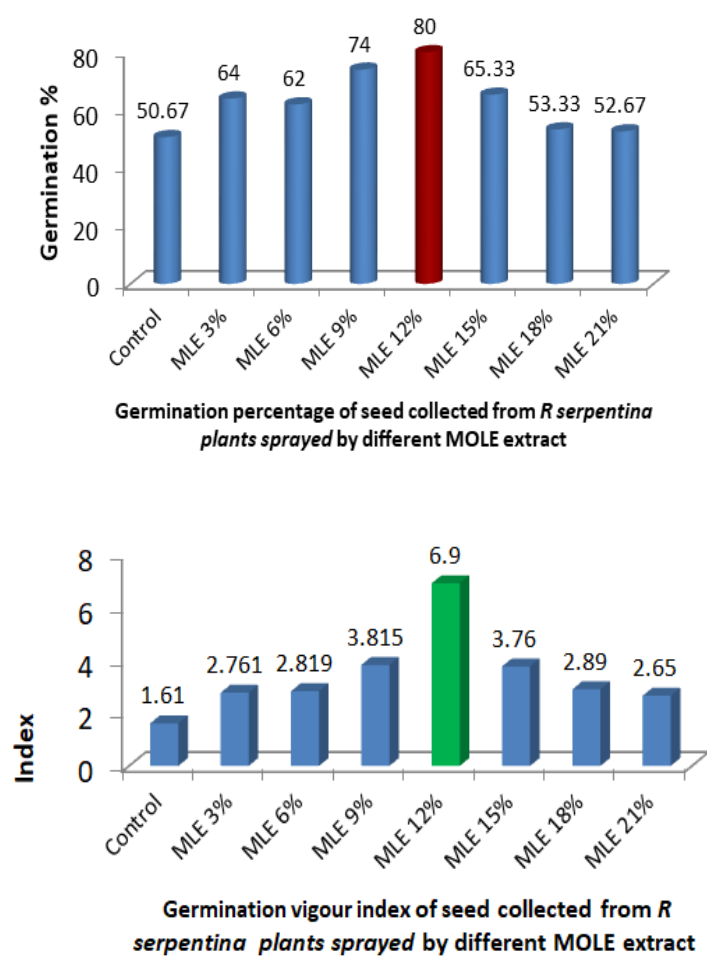


Figure 9. Percentage germination and vigor index of seed collected from biostimulant sprayed *R serpentina* plants

2.6.3 Sustainable Harvesting and Management

2.6.4 Chemistry of NWFPs, Value Addition and Utilization

2.6.5 Biofuels and Bioenergy

2.7 Forest Protection**2.7.1 Overview**

Forests in general are vulnerable system and damaged considerably by various factors and causes like epidemic of insect pest and diseases, weed and invasive species, forest fires and anthropogenic activities. It is a known fact that considerable reduction in productivity occurs due to infestation. However, it is challenging to utilize traditional methods of protection against insect pest. Keeping this in view, Institute is implementing three projects focusing on IPDM approach, including plant based insecticides and biological control measures.

2.7.1.1 Projects under the Theme

Projects	Completed Projects	Ongoing Projects	New Projects Initiated During the Year
Plan	0	1	0
Externally Aided	0	0	0

2.7.2 Insects pests, diseases and control

Project Title: Identification of indigenous species of *Trichogramma* west wood (Hymenoptera: *Trichogramma tidae*) and their assessment against major insect pest of Teak in Telangana and Andhra Pradesh (2017-2022)

Status: Under this research project the Mass multiplication of egg parasitoid *Trichogramma chilonis* the laboratory host *Corcyra cephalonica* multiplication was done and using *C corcyra* eggs for mass multiplication of *T chilonis* was also accomplished. The trichocards of indigenous egg parasitoid *T chilonis* were prepared and released @ 1.25 lakh/ha in natural forests and plantations of teak. This revealed significant ($P<0.05$ - $P<0.001$) variation of defoliation and skeletonization caused by teak pests, *H. puera* and *E. machaeralis*, when compared to non-released sites.

2.7.3 Mycorrhizae, rhizobia and other useful microbes

2.7.4 Weeds and Invasive species

2.7.5 Forest Fire and Grazing

3. Education Vistas/Activities

3.1 FRI University (Applicable for FRI, Dehradun only) : NA

3.2 Trainings Organized (Photos are attached in separate sheet as Glimpses-1)

Sl. No	No. of Trainings	Duration (in days)	No. of participants
1.	Kickoff meeting of state nodal officers for DPR Godavari with forest Interventions at Institute of Forest Biodiversity dated 07 June 2019	1	28
2	First stakeholder consultation meeting of DPR Godavari for Odisha state conducted at New Marrion Hotel, Bhubaneswar, Odisha dated 10 June 2019	1	105
3	First stakeholder consultation meeting of DPR Godavari for Madhya Pradesh state conducted at Madhya Pradesh Rajya Laghu Vanoupaj Sahkari Sangh Marvadit, Bhopal dated 19 June 2019	1	46
4	First stakeholder consultation meeting of DPR Godavari for Maharashtra state conducted at Hotel Orchid, Pune dated 18 September 2019	1	74
5	First stakeholder consultation meeting of DPR Godavari for Chhattisgarh state conducted at Raipur, Chhattisgarh dated 04 October 2019	1	72
6	First stakeholder consultation meeting of DPR Godavari for Andhra Pradesh state conducted at Vijayawada, Andhra Pradesh dated 10 October 2019	1	69
7	First stakeholder consultation meeting of DPR Godavari for Telangana state conducted at the Park hotel, Hyderabad, Telangana dated 06 November 2019	1	120
8	Field level Training under project DPR Godavari conducted in Yavatmal circle at Conference Hall, CCF Office, Yavatmal dated 16 November 2019	1	57

9	Field level Training under project DPR Godavari conducted in Amravati circle at Conference Hall, Social Forestry Office, Amaravati dated 18 November 2019	1	50
10	Field level Training under project DPR Godavari conducted in Jagdalpur, Kondagaon, Sukuma, Jagdalpur, K.V. , N.P . Divisions of Chhattisgarh State conducted at Jagdalpur dated 18 November 2019	1	77
11	Field level Training under project DPR Godavari conducted in Rayagada division of Odisha State at DFO Office, Rayagada dated 18 November 2019	1	34
12	Dr M Deepa Scientist-D, Smt Asha Kumari ACTO, organized training to the staff of forest Department and other line Department on field data collection for Godavari DPR at Bidar on 18 November 2019	1	59
13	Field level Training under project DPR Godavari conducted in Bijapur, Dantewada, Bhiramgarh. Divisions of Chhattisgarh State conducted at Bijapur dated 19 November 2019	1	105
14	Field level Training under project DPR Godavari conducted in Eluru Divisions of Andhra Pradesh State conducted at DFO Office Eluru dated 19 November 2019	1	9
15	Field level Training under project DPR Godavari conducted in Kakinada Divisions of Andhra Pradesh State conducted at Sub DFO Office Rampachodavaram dated 19 November 2019	1	9
16	Field level Training under project DPR Godavari conducted in Koraput division of Odisha State at DFO Office, Koraput dated 19 November 2019	1	39
17	Field level Training under project DPR Godavari conducted in Jaypore division of Odisha State at DFO Office, Jaypore dated 20 November 2019	1	52

18	Field level Training under project DPR Godavari conducted in Chintoor Divisions of Andhra Pradesh State conducted at DFO Office Chintoor dated 20 November 2019	1	26
19	Field level Training under project DPR Godavari conducted in Malkangiri division of Odisha State at DFO Office, Malkangiri dated 21 November 2019	1	40
20	Field level Training under project DPR Godavari conducted in Kakinada Divisions of Andhra Pradesh State conducted at KORINGA WLS, Kakinada dated 21 November 2019	1	11
21	Field level Training under project DPR Godavari conducted in Navarangapur division of Odisha State at Nakshitra Van, Navarangapur dated 22 November 2019	1	23
22	Field level Training under project DPR Godavari conducted in Kalahandi division of Odisha State at DFO Office, Kalahandi dated 21 November 2019	1	12
23	Field level Training under project DPR Godavari conducted in Paderu Divisions of Andhra Pradesh State conducted at FRO office Araku dated 27 November 2019	1	15
24	Field level Training under project DPR Godavari conducted in Chandrapur and Gadchiroli circle at Niyojana Bhavan, Chandrapur dated 03 December 2019	1	320
25	Field level Training under project DPR Godavari conducted in Nagpur circle at Hari Singh Sabhagruh, Nagpur dated 05 December 2019	1	81
26	Field level Training under project DPR Godavari conducted in North Seoni, South Seoni, Pench Tiger Reserve, West Mandla, S.Balaghat, N. Balaghat Divisions of Madhya Pradesh state at Seoni dated 06 December 2019	1	86

27	Field level Training under project DPR Godavari conducted in Chinndwara, Betul Divisions of Madhya Pradesh state at Chinndwara dated 07.12.2019	1	27
28	Field level Training under project DPR Godavari conducted in Aurangabad circle at Marthwada Mahasool Prashikshan Probodhi, Aurangabad dated 11 December 2019	1	73
29	Field level Training under project DPR Godavari conducted in Nashik and Thane circle at Forest Conference Hall, Maharashtra State Forest Department, Nashik dated 13 December 2019	1	89
30	Telangana Agriculture and Horticulture Stakeholders consultation meeting under project entitled “Detailed Project Report for rejuvenation of Godavari and Krishna Rivers through forestry interventions” was organized by IFB Hyderabad at Telangana Forest Academy, Dulapally Village, Kompally, Hyderabad, dated 18 December 2019.	1	60
31	Field level Training under project DPR Godavari conducted in Yellandu Division of Telangana State at dated 18 January 2020	1	45
32	Field level Training under project DPR Godavari conducted in Khammam Division of Telangana State at dated 18 January 2020	1	70
33	Field level Training under project DPR Godavari conducted in Kothagudem Division of Telangana State at dated 18 January 2020	1	105
34	Field level Training under project DPR Godavari conducted in Munuguru Division of Telangana State at dated 18 January 2020	1	60
35	Field level Training under project DPR Godavari conducted in Warangal Division of Telangana State at dated 20 January 2020	1	270
36	Field level Training under project DPR Godavari conducted in Karimnagar Division of Telangana State at dated 21 January 2020	1	70
37	Telangana Rural Development Stakeholders consultation meeting	1	55

	under project entitled “Detailed Project Report for rejuvenation of Godavari and Krishna Rivers through forestry interventions” was organized by IFB Hyderabad in IFB Hyderabad Campus, Dulapally Village, Kompally, Hyderabad, dated 13 February 2020.		
38	Odisha 2 nd Stakeholders consultation meeting under project entitled “Detailed Project Report for rejuvenation of Godavari River through forestry interventions” was organized by IFB Hyderabad at Odisha dated 19 February 2020	1	
39	Karnataka 2 nd Stakeholders consultation meeting under project entitled “Detailed Project Report for rejuvenation of Godavari and Krishna Rivers through forestry interventions” was organized by IFB Hyderabad at Bangalore, dated 26 February 2020.	1	40
40	Maharashtra 2 nd Stakeholders consultation meeting under project entitled “Detailed Project Report for rejuvenation of Godavari and Krishna Rivers through forestry interventions” was organized by IFB Hyderabad at Aranya Bhavan, Pune dated 28 February 2020.	1	50
41	Chhattisgarh 2 nd Stakeholders consultation meeting under project entitled “Detailed Project Report for rejuvenation of Godavari River through forestry interventions” was organized by IFB Hyderabad at Aranya Bhavan, Raipur dated 29 February 2020	1	35
42	Madhya Pradesh State 2 nd Stakeholders consultation meeting under project entitled “Detailed Project Report for rejuvenation of Godavari River through forestry interventions” was organized by IFB Hyderabad at Aranya Bhopal, dated 06 March 2020	1	12
43	Andhra Pradesh State 2 nd Stakeholders consultation meeting under project entitled “Detailed Project Report for rejuvenation of Godavari and Krishna Rivers through forestry interventions” was organized by IFB Hyderabad at Manor Food Plaza, Vijayawada, Andhra Pradesh dated 12 March 2020.	1	47

3.3 Visits Abroad: Nil

3.4 Participation in Seminars/Symposia/ Workshops/Trainings

- Shri Pravin Chawhaan Sc-G, Dr Ratnaker Jauhari CF Head of Extension, and Dr S. Pattanaik Sc-F attended the State Level Inception workshop for preparation of DPR Mahanadi & Godavari at Bhubaneswar, Odisha organized by the IFP, Ranchi on 10 June 2019.
- Smt Asha kumari (ACTO), Mr Varun Singh (Technician) and Mr Shashidhar (Technician) attended HRD training programme in “Research Methodology & Statistical tool in Forestry” at FRI Dehradun from 22 July 2019 to 26 July 2019.
- Dr Abha Rani Scientist-E and Shri Pankaj Singh Scientists-B attended the training on “NTEP value and Assessment” organized by CIMAP, Lucknow, UP from 18 to 25 August 2019.
- Shri Arulrajan IFS, DCF attended the training programme on “Disaster Management” organized by LBSNAA, Mussoorie from 13 to 24 August 2019.
- Mr. Kiran, Technician attended the hands on Training programme of NTPC Bhuvanapp from 23 to 28 October 2019 in Jabalpur.
- Shri M. B Honnuri Scientist-C attended the “Modern Trends in Biosystematics of Angiosperms” 29th Annual Conference of Indian Association for Angiosperm Taxonomy and National Symposium at KSCSTE- JNTBGRI, Palode, Tiruvananthapuram from 11 to 13 November 2019.
- Smt M.B.S Bharathi,LDC, Kum N. Archana,LDC, and Shri A. Rakesh,LDC attended the training on Finance, Budget and Accounts, internal audit and control from 27 to 29 November 2019 at IFGTB, Coimbatore
- Dr S. Chakrabarti attended on 22-12-2019, one day Workshop on Eco-Teachers organized by Dolphin Nature Conservation Society in collaboration with Andhra University, Dept. of Environmental Sciences and Environment, Visakhapatnam, AP.

- Dr Sumit Chakrabarti, Scientist-G & Shri Pankaj Singh, Scientist-C were attended the Training Programme on UNDP-GEF Global ABS Project on capacity building Held from 28 to 29 January 2020 Conducted by IFGTB, Coimbatore
- Dr. S. Pattanaik, Scientist-F & Shri M.B.Honnuri, Scientist-C were attended the Training Programme on Forest Genetics Resource Management & Conservation Held from 27 to 31 January 2020 Conducted by ICFRE, Dehradun
- Mr. A. Kishore, Technical Assistant, attended the training on "Tissue Culture of Tree Species and Bamboos" under ICFRE- HRD plan from 24 to 28 February 2020 organized by Institute of Forest Genetics and Tree Breeding, ICFRE, Coimbatore.
- Dr Ratnaker Jauhari IFS, Head Extension and Mr E Manikanta Reddy Technician attended the training under the AICRP Climate change project in Tamilnadu dated 17 to 23 February 2020.
- Mr D Krishna Shashank Lower Division Clerk attended the training on “E-procurement and purchase management in Government Storekeeping and record maintenance” at TERI, Jabalpur dated 04 to 06 March 2020.
- Shri Arulrajan IFS, DCF, IFB attended the 25th AIFSM at Bhubaneswar from 03 to 07 March 2020.
- Shri M B Honnuri Scientist-C attended the Workshop of the AICRP -13 Project Valuation of the Forest Services in Delhi dated 13 to 14 March 2020.

4. Extension Panorama/Activities

- National Forest Library and Information Centre (NFLIC) (Applicable for FRI, Dehradun only):NA
- Environmental Information System (ENVIS) (Applicable for FRI, Dehradun only):NA

4.1 Report on Van Vigyan Kendras (VVKs), Demo Village (DV), Tree Growers Mela (TGM), Prakriti and Green Skill Development Programme (GSDP)

Van Vigyan Kendras (VVKs) (Photos are attached in separate sheet as Glimpses-2)

Institute of Forest Biodiversity, Hyderabad, conducted trainings under ‘Van Vigyan Kendra’ on Agroforestry System, Raising of Plantations, Management of Plantation and Marketing Issues to farmers and Stakeholders. More than 150 farmers and Stakeholders participated in two (2) full days interactive training at IFB, Hyderabad. The programme continued with a presentation by Dr. G.R.S. Reddy, Scientist–G, IFB, expressed his views and shared knowledge with participants on agroforestry practices in Andhra Pradesh and Telangana and sessions were followed by a field visits to *Rauwolfia Serpentina*, *Santalum album*, *pterocarpus santalinus*, *Melia dubia*, *Dalbergia latifolia* and *Tectona grandis* field experiment sites.

FRCCE, Visakhapatnam, also conducted trainings under ‘Van Vigyan Kendra’ for the front-line staffs of forest department, on conservation of RET species. More than 70 officials including CCF Training & Development, DFO’s, ACF’s participated in one full day interactive training at Koraput, Odisha. The program was highlighted with a small Kisan Mela having stalls of Medicinal Plants, forestry literatures of ICFRE SFDs, display of Rare Endangered food-grains by Swaminathan Institutions and a stall by Coffee Board. The programme was highly appreciated and presentations were applauded by the trainee where they demanded to organize more such trainings and practical exercises.

SI. No.	Name of ICFRE Institute	Activities Conducted	No. of Participants
1.	IFB, Hyderabad	Training on “Agroforestry Systems, Raising of Plantations, Management of Plantations and Marketing Issues held on 8 January 2020.	70
2.	IFB, Hyderabad	Training on “Agroforestry Models” held on 10 January, 2020	80
3.	FRCCE, Visakhapatnam	Conservation of RET species at Koraput, Odisha.	70

Prakriti Report (Photos are attached in separate sheet as Glimpses-3)

A scientist-student connect initiative- Prakriti programme, Institute of Forest Biodiversity (IFB), Hyderabad delivered several lectures and conducted interactive sessions in Twelve schools under Kendriya Vidyalaya Sangathan, Zilla Parishad School and Navodaya Vidyalaya Samiti in Hyderabad under the guidance of Dr. Ratnakar Jauhari, CF and Head extension. More than 1500 students and class teachers, as well as Principals altogether, participated during a period from August, 2019 to February, 2020. The main aim of the programme is to promote awareness about forest and environment among school children for acquiring skills for care and protection towards forests, environment, and society. The biodiversity walk was conducted and aimed to generate awareness about biodiversity conservation and identification of local flora and its importance in and around the school campus.

Dr. S. Chakrabarti from Forest Research Centre for Coastal Ecosystem (FRC-CE), Visakhapatnam also lead the programm and conducted interactive session in six schools under Kendriya Vidyalaya Sangathan' in Visakhapatnam. More than 1000 students and class teachers, as well as Principals altogether, participated during a period from December, 2019 to February, 2020. These research outreach programs created awareness about the environment and forests among the children and generated immense interest and enthusiasm to the KV authorities to organize such interactions in future.

Sl. No	Name of the School	Duration (in days)	No. of participants
1.	The Institute of Forest Biodiversity organized a awareness programme to a group of 45 students of Navodaya Vidyalaya Samiti, Gopanpally on 08 August 2019 at Training cum Extension Centre, IFB, Hyderabad under Prakriti.	1	45
2.	In compliance to MoU signed between ICFRE and Jawahar Navodaya		

	Vidyalaya (JNV), New Delhi to promote awareness about forest and environment among school children for acquiring skills for care and protection towards forests, environment and society, a group of Research and extension team members from Institute of Forest Biodiversity (IFB), Hyderabad have visited Jawahar Navodaya Vidyalaya, Wargal, Medak District Telangana on 27 August 2019.	1	300
3.	The Institute of Forest Biodiversity organized a awareness programme to a group of 45 students accompanied by staff (3 members) of Kendriya Vidyalaya Sangathan (KVS), Golkonda-2 on 29 August 2019 at Training cum Extension centre, IFB, Hyderabad under Prakriti.	1	45
4.	The Institute of Forest Biodiversity organized a awareness programme to a group of 45 students accompanied by staff (5 members) of Kendriya Vidyalaya Sangathan (KVS), Tirimulgherry on 12 September 2019 at Training cum Extension centre, IFB, Hyderabad under Prakriti.	1	45
5.	The Institute of Forest Biodiversity organized a awareness programme to a group of 45 students accompanied by staff (5 members) of Kendriya Vidyalaya Sangathan (KVS), Shivarampally on 13 th September 2019 at Training cum Extension centre, IFB, Hyderabad under Prakriti.	1	45
6.	The Institute of Forest Biodiversity organized a awareness programme to a group of 35 students and 2 teachers of Zilla Parishad high School, Dulapally, Hyderabad dated on 26.09.2019	1	35
7.	The Institute of Forest Biodiversity organized a awareness programme to a group of 60 students of Kendriya Vidyalaya Sangathan (KVS), University of Hyderabad, Gachibowli on 25 October 2019.	1	60
8.	The Institute of Forest Biodiversity organized a awareness programme to a group of 37 students of Kendriya Vidyalaya Sangathan (KVS),	1	37

	Gachibowli on 08 November 2019.		
9.	In compliance of MoU signed between ICFRE and KVS a group of Research team members from FRCCE, Visakhapatnam have visited Kendriya Vidyalaya Sangathan (KVS), Waltair, Visakhapatnam on 05 December 2019.	1	150
10.	In compliance of MoU signed between ICFRE and KVS a group of Research team members from FRCCE, Visakhapatnam have visited Kendriya Vidyalaya Sangathan (KVS), Nausenbaugh, No. 2 Visakhapatnam on 12 December 2019.	1	120
11.	In compliance of MoU signed between ICFRE and KVS a group of Research team members from IFB, Hyderabad have visited Kendriya Vidyalaya Sangathan (KVS), Uppal, No. 1, Hyderabad on 16 December 2019.	1	80
12.	In compliance of MoU signed between ICFRE and KVS a group of Research team members from IFB, Hyderabad have visited Kendriya Vidyalaya Sangathan (KVS), Uppal, No. 2, Hyderabad on 16 December 2019.	1	120
13.	In compliance of MoU signed between ICFRE and KVS a group of Research team members from FRCCE, Visakhapatnam have visited Kendriya Vidyalaya Sangathan (KVS), Sri Vijayanagar, KV No.1 near Industrial Estate, Visakhapatnam on 06 January 2020.	1	152
14.	In compliance of MoU signed between ICFRE and KVS a group of Research team members from IFB, Hyderabad have visited Kendriya Vidyalaya Sangathan (KVS), Dundigal No.1 on 09 January 2020.	1	50
15.	In compliance of MoU signed between ICFRE and KVS a group of Research team members from FRCCE, Visakhapatnam have visited Kendriya Vidyalaya Sangathan (KVS), Nausenbagh, No.1 near Gandhi gram post Visakhapatnam on 10 January 2020.	1	101

16.	The Institute of Forest Biodiversity organized a awareness programme to a group of 55 students accompanied by staff (5 members) of Kendriya Vidyalaya Sangathan (KVS), Dundigal-2 on 14 February 2020, at Training cum Extension centre, IFB, Hyderabad under Prakriti.	1	55
17.	In compliance of MoU signed between ICFRE and KVS a group of Research team members from FRCCE, Visakhapatnam have visited Kendriya Vidyalaya Sangathan (KVS), Malkapuram KV near Gandhi Gram Post, Visakhapatnam on 14 February 2020	1	132
18.	In compliance of MoU signed between ICFRE and KVS a group of Research team members from FRCCE, Visakhapatnam have visited Kendriya Vidyalaya Sangathan (KVS), Chepaluppada, Visakhapatnam on 14 February 2020.	1	68

4.2 Technologies transferred: NIL

4.3 Research Publications: Please provide information in the tables given below:

4.3.1 Research articles published by the institute

S.N	Number of research articles published in scientific journals and books/ proceedings		
	National Journal (1)	International Journal (1)	Chapters in books/ proceedings (5)
1.	◆ Deepa M, Meera D and Venkataramana Devi C. H. 2019. Study of Relative feeding potentiality of <i>Soapnut semilooper</i> against <i>Cleistanthus collinus</i> plant extract". Research Journal of Agricultural Sciences, RJAS. Vol: 10. issue2. p:306-308. 2019/NAAS Rating 4.54.	◆ Pankaj Singh, Vinay Kumar Varshney, K. Jayaram Kumar, Sanjay Singh. 2019. A review on nutritional and biological potential of <i>Astraeus</i> spp. of wild edible mushrooms. International Journal of Medicinal Mushroom, 21 (6); 523-	◆ Pankaj Singh, Arvind Kumar, V.K. Varshney, Elena E. Stashenko. 2019. GC-MS Analysis of Different Extracts of Wild Edible Mushroom <i>Astraeus hygrometricus</i> (Pers.) Morgan from Jharkhand, India. Proceeding of 10th International Medicinal Mushroom Conference, 19-22/09/ 2019, Nantong, China, pp.452-464.

		536, 2019/Impact Factor1.423, Clarivate analytics-2018	<p>◆ Deepa M. 2019. Contributed chapter on Management of <i>Sapindus trifoliatus</i> insect pest for manual of forest pest and diseases. under NSMC. Extension Division, ICFRE, Dehradun</p> <p>◆ Pankaj Singh. 2019. Contributed chapter on NWFPs (<i>Sterculia urens</i> and <i>Strychnos nux-vomica</i>) for manual of Cultivation of NWFPs under NSMC. Extension Division, ICFRE, Dehradun.</p> <p>◆ Swapnendu Patanaik. 2019. Contributed a chapter on 'Package of practices for production of shoots of <i>Dendrocalamus hamiltonii</i>' in the ICFRE user manual on forest based technologies for improved livelihood under NSMC. Extension Division, ICFRE, Dehradun.</p> <p>◆ Swapnendu Pattanaik. 2019. Contributed a chapter on 'Cultivation methods for Red sanders to enhance productivity' in the ICFRE user manual on productivity enhancement in forestry plantations.</p>
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4.3.2 Research articles presented in seminars/conferences/workshops and abstracts and popular articles published by the Institute

Number of articles presented in seminar/conferences/workshops and abstracts and popular articles published		
Article presented (4 oral presentation)	Abstract published (3 Abstract)	Popular articles (14 article)
<p>Sailaja.V and Deepa M, K Rahul Viswakarma. Gave oral presentation on Evaluation of relative toxicity and toxicity of certain plant extracts against teak defoliator. International plant protection congress . IPPC 2019. 15 September 2019.</p> <p>Sailaja.V, Jagadesh. B and Deepa M. Agrometeorological interventions for Enhancing farmers income. 20-22. January 2020. AGROMET-2020.</p> <p>G.R.S. Reddy gave oral presentation on Agroforestry models and sustainability presentation on (21 February 2020) and varietal sustainability on (22 February 2020) in national Seminar on Advances and Challenges in Horticulture-Agroforestry system based Horticulture crops.</p>	<p>◆ Honnuri, M. B., Reddy, G.R.S. and Jayaprasad, D, 2019. Floral Diversity of Achampet Working Plan Forest Division of Telangana state, pp-113. In 29th Annual conference of Indian Association for Angiosperm Taxonomy held at Thiruvananthapuram from 11-13, November 2019.</p> <p>◆ Honnuri, M. B., Reddy, G.R.S. and Jayaprasad, D, 2019, Phytodiversity of Bansawad Working Plan Forest Division of Telangana State, pp-113. In 29th Annual conference of Indian Association for Angiosperm Taxonomy held at Thiruvananthapuram from 11-13, November 2019.</p> <p>◆ Honnuri, M. B., Reddy, G. R. S, D. Jayaprasad and Ratnakar, J. 2019. Ethnomedicinal uses of some plants of Chintalavedhi village Panchayat of Paderu Mandal of Vishakhapatnam District (A.P), pp-143. In 29th Annual conference of Indian Association for Angiosperm Taxonomy held at Thiruvananthapuram from 11-13, November 2019.</p>	<p>◆ Shiva Satya Prasad and Pankaj Singh, 2019. हमारे लघु प्रसाय पर्यावरण के आस - पास, ई - पत्रिका, अंक-1, पृष्ठ.18-19, FRI Dehradun.</p> <p>◆ Abha Rani, Pravin H. Chawhaan. 2019. वन जैवविविधता संस्थान परिसर की पुष्पविविधता . <i>तरुचिन्तन</i>, पृष्ठ. 64, ICFRE Dehradun.</p> <p>◆ T. Anusha, 2019. Friends and Foes, Vanam Manam - 04, Pp.37</p> <p>◆ Deepa M. 2019. There's need to save bees, Vanam Manam -06, Pp-42-43;</p> <p>◆ DSS.Prasad, 2019. Forest heals people, Vanam Manam -06, Pp-25;</p> <p>◆ E. Manikanta Reddy. 2019. A Picture can speak thousand words, Vanam Manam, 09, pp-25,</p> <p>◆ T. Anusha, 2019. Not all classrooms have four walls, Vanam Manam 04, pp-38;</p> <p>◆ T. Anusha, 2019. Iron man of India, Global Green news Magazine-October-2019,</p> <p>◆ Hariprasad, 2019. Consultant, Rejuvenation of Godavari and Krishna rivers- A mission, Vana Premi- November- Page-33-36;</p> <p>◆ E. Manikanta Reddy, 2019. ,A Scientist-Student Connect</p>

		<p>Initiative, Global Green news Magazine-November-2019,</p> <p>◆ D. Jayaprasad, 2019. Preparation of DPR for Rejuvenation of Godavari & Krishna Rivers through Forestry Interventions, Vanam Manam -November-2019, Page-40-43;</p> <p>◆ Sumit Chakraborty, 2019. Once the webs go dry and cannot catch prey, spiders eat them, Down to Earth Magazine-January- Page no- 50-52;</p> <p>◆ G. R. S. Reddy.2019 Rejuvenation of the godavari and krishna rivers through forestry interventions in telangana state, Vana Premi- December-2019, (19):54-59</p> <p>◆ G. R. S. Reddy.2020 Agroforestry systems, raising of plantations, management of plantations and marketing issues, Vana Premi- February-2020,:33-34</p>
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4.3.3 Books and booklets, brochures/pamphlets published by the institute (Photo attached separately):

Books (41)	Booklets/Brochure/Bulletins/Pamphlets (2)
<p>◆ 17 Peoples Biodiversity Register books of Andhra Pradesh.</p> <p>◆ 19 Working Plan reports of Telangana (12) and Andhra Pradesh (7).</p> <p>◆ 5 CAMPA, Andhra Pradesh Reports.</p>	<p>◆ DPR Brochure</p> <p>◆ Telagu Brochure of flora and fauna of the Institute</p>

4.4 Seminars/Symposia/Workshops/ Meeting Organized: (Photos are attached separately as glimpses-4)

SN	Seminars/Symposia/Workshops/ Meeting	Days	Number
1	Seminar conducted on World Biodiversity day with the External guest Dr. Pramod Kumar (Retd. Associate Professor, University of Delhi, Resource Person Ministry of HRD, Govt of India) on topic “Rural management & Importance of farmers” and Director of IFB also spoke on “Biodiversity & their related issues” in Seminar hall of IFB on 22 May 2019.	1	27
2	The Drawing competition for students of the Government School of Dulapally and quiz competition for staff members were conducted on the occasion of Environment Day with the theme Air pollution on 03 June 2019.	1	30
3	The Environment Day was celebrated on 5 June 2019	1	33
5	राजभाषा कार्यान्वयन समिति की त्रैमासिक बैठक 19 जून 2019, 20 सितम्बर 2019, 30 दिसम्बर 2019 और 11 मार्च 2020 को की गई	4	20
6	One day interaction seminar including field visit was conducted to the BSc Forestry Students of Forest College and Research Institute, Tamilnadu Agricultural University, Mettupalayam under the study tour to southern India with 45 students and 3 faculty members on 27 June 2019.	1	48
7	Monthly seminar on “Water use efficiency and drought tolerance breeding v/s climate change adaption biodiversity concepts & conservation” in Seminar Hall of Institute of Forest Biodiversity on 28 June 2019 given by Dr G R S Reddy, Scientist –G	1	13
8	Regional Research Conference was organized by the IFB , Hyderabad in Telangana Forest Academy, Dulapally, Hyderabad dated 17 July 2019	1	71
10	Seminar was organized for Institute Ordinance on “Cyber Crime and Cyber Forensics” and delivered by Shri Hari Prasad Retd SFS, Consultant dated on 19 August 2019.	1	14
11	Hindi Week was celebrated in the Campus on 14- 20 September 2019	1	25
	Institute organized RAG Meeting on 25 September 2019	2	40
12	Institute organized the visit of the students of M.Sc Forestry, from Forest	1	20

	Research Institute, Dehradun on 25 October 2019		
13	Institute organized the vigilance awareness week for the year 2019 from 28 October 2019 to 01 November 2019	2	34
14	Monthly seminar on “Wood Forensics” was organized in Institute of Forest Biodiversity, Hyderabad on 13 November 2019 and delivered by Dr S Pattanaik Scientist-F	1	19
15	A seminar/awareness programme on Intellectual Property Rights with the help of ICFAI Faculty members was held in the Institute on 26 November 2019.	1	30
17	IFB organized an awareness and interactive programme on Environment and Forest to a group of 12 students accompanied by 2 faculty of B Sc IIIrd year Students of Horticulture and Forestry of Rani Lakshmi Bai Agricultural University (RLBAU), Janshi, Uttar Pradesh on 27 December 2019.	1	14
18	Monthly sseminar was organised for Institute Ordinance on “Forest and Tree Cover of India” and delivered by Dr Ratnaker Jauhari IFS, dated 22 January 2020.	1	21
19	Monthly sseminar was organised for Institute Ordinance on “Forest Carbon Stock of India” and delivered by Dr Ratnaker Jauahari IFS, dated 28 February 2020.	1	
20	Monthly sseminar was organised for Institute Ordinance on “Sustainable management of NTFP” and delivered by Dr Abha Rani Scientist-F dated 16 March 2020.	1	25

4.5 Consultancies

➤ Under the consultancy project ‘Preparation of DPR for rejuvenation of Godavari river through forestry interventions’, consultation process started with a kickoff meeting of state nodal officers and some identified experts from Geology, Hydrology, Forestry and GIS disciplines, on 7th June 2019, at Institute of Forest Biodiversity, Hyderabad,. The approach to be adopted for preparation of DPR was discussed thoroughly. This was followed by 1st

stakeholder consultation meeting for Odisha (10.06.2019), Madhya Pradesh (19.06.2019), Maharashtra (18.09.2019), Chhattisgarh (04.10.2019), Andhra Pradesh (10.10.2019) and Telangana (06.11.2019). Some of the important suggestions that emerged from these consultations include (i) Riverscape to include all headwater catchments and deltaic region (ii) Riparian buffer of 5.0 km along main stem after bank line and 2.0 km from tributary after bank line, (iii) Ten main tributaries to be included in the riverscape. Further, spatial analysis of Godavari basin, delineation of riverscape, identification of priority areas for forestry intervention has been exercised. Thereafter, twenty-seven circle/division level training of field staffs of the Forest and Agriculture departments were conducted in the seven basin states. Field staffs were given practical demonstration to access priority areas of riverscape using .kml files and filling of data formats developed for the four different landscapes. Model-wise, landscape-wise, division-wise and state-wise budgeting of the proposed interventions have been done based on the data provided by the Forest and Agriculture departments in the seven basin states. Second stakeholder consultation meeting in seven basin states was also organized before final draft submission. In addition, an interactive webpage (<http://dprgodavari.icfre.org>) on 'preparation of Godavari DPR' has been developed for reporting progress and information exchange among groups involved in DPR preparation for the nine major river systems.

- A.P. Biodiversity Board have given a task of preparation of Biodiversity Registers of Panchayats to compile the biodiversity data of 17 People's Biodiversity Register namely Lakkavaram, Pongutur, Kondrukota, Mellapattu, Kothavari Palli, Vepurikota, Kamareddy kandhuku, Bommavaram, Rajuvarichinthalapalem, Perasanipalli, Vashili, Mutukur, Daida, Konupothulapalem, Manchyapalem, Gullalamuda, Salempalem of Andhra Pradesh.
- Monitoring of plantations raised in Krishna, Guntur, Paderu forest divisions in Andhra Pradesh and Mahaboob Nagar division of Telangana were taken up under consultancy 'NTPC accelerated Afforestation programme of 10 million trees in Andhra Pradesh and Telangana'. Report submitted to ICFRE, Head Quarters.

➤ Institute of Forest Biodiversity was given a task by NGT to study the assessment of ecological damage done by illegal mining, if any, including cost of river bed material, cost of ecological restoration and NPV of future ecosystem services foregone on account of illegal mining sites in Subarnarekha River in Odisha and West Bengal. The site Jaleswar town, Balasore, Odisha was visited by Dr. Ratnaker Jauhari, Conservator of Forests alongwith Sub collector, Deputy SP, Tahsildar, Police inspector and other officials to get an idea of the present situation. Accordingly project was submitted to NGT and sanctioned by the West Bengal and Odisha Government on 27 September 2019 and 03 December 2019. Further work plan was submitted to NGT by IFB, Hyderabad to reassign the work as per Project Report. IFB Team and ICFRE expert have visited the site and collected information required in preparation of restoration plan. The pre monsoon data was planned & drone serial surveys are planned for assessing quantity of sand removed.

4.6 Technical Services: For In-Service-Skill-Upliftment technical programme for KV Sanghatan Biology Teachers and Principals from throughout the country, Head, FRCCE, Visakhapatnam was nominated. Accordingly, a one-day technical services for skill development course on Ecosystem and Biodiversity was contemplated by Dr. S. Chakrabarti, Scientist G, FRCCE, Visakhapatnam with exposure on field related studies and research. A manual and course material was prepared and distributed among stakeholders on 24 December 2019.

4.7 Activities of Rajbhasha:

1. राजभाषा कार्यान्वयन समिति की 4 त्रैमासिक बैठकों का आयोजन क्रमशः 19 जून 2019, 20 सितम्बर 2019, 30 दिसम्बर 2019 और 11 मार्च 2020 को संस्थान में किया गया।
2. संस्थान में हिन्दी सप्ताह का आयोजन 14-20 सितम्बर 2019 को किया गया। सप्ताह के दौरान हिन्दी-अंग्रेजी मिलाप एवं हिन्दी रिक्त शब्द प्रतियोगिता आयोजित की गई जिसमें संस्थान के कर्मचारियों ने भाग लिया और पुरस्कार प्राप्त किया।
3. हिन्दी का त्रैमासिक प्रतिवेदन एवं वार्षिक प्रतिवेदन नवीन पत्र 18-19 में भारतीय वानिकी अनुसंधान एवं शिक्षा परिषद, देहरादून को भेजा गया।
4. वन जैवविविधता संस्थान, हैदराबाद में हिन्दी एवं अंग्रेजी में 'आज का शब्द' लिखने की व्यवस्था की गई।
5. हिन्दी के प्रचार हेतु संस्थान द्वारा CD की खरीद की गई।
6. हिन्दी आख्या 19-20 का प्रकाशन तरुचिन्तन-2019 में किया गया।



चित्र: हिन्दी सप्ताह समारोह एवं इनाम वितरण

4.8 Awards and Honors: NIL

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

- 71th Republic Day celebrated at IFB, Hyderabad & FRCEE, Visakhapatnam.
- Vigilance Awareness Week was celebrated at IFB, Hyderabad on 28 October to 01 November 2019.
- Essay writing competition also organized. Vigilance oath was taken on 28 October 2019 at IFB Hyderabad.
- Independence Day Celebrated in the Institute on 15 August 2019.
- World Environment Day was celebrated on 5 June 2019 in the Institute with Smt M.N.R Jyothi Municipal chairmen of Kompally and Shri Suresh Municipal Chairman of Dundigal, Biodiversity chairman Shri S.B.L Mishra, Dr Sudhakar Reddy Mallareddy College Principal and Shri K.K Pappan Senior Scientist Isro, Shri E. Srinivas Revenue officer Kompally and the students from Zilla Parishad High School Dulapally

5. Administration and Information Technology

Introduction

5.1. Information Technology

- Institute of Forest Biodiversity, Hyderabad, is connected to ICFRE and Internet through the National Knowledge Network (NKN). Regular maintenance activities were taken up in collaboration with NIC Hyderabad and Rail Tel for the upkeep of this 100mbps link.

5.2. **Sevottam:** Activities relating to the Citizens/Clients Charter as detailed below has to be included in the Annual report.

5.2.1.1 Action taken to formulate the Charter for the Department and its subordinate formation:

The Institute of Forest Biodiversity, Hyderabad is working under the auspices of ICFRE, Dehradun, and enduring its research and extension work to fulfill the mandate and the mission of council "To generate, preserve, disseminate advance knowledge, technologies and solutions, for addressing issues related to forests and promote linkages arising out of interactions between people, forests and environment on a sustained basis through research, education and extension". The charter has been prepared based on the seven steps mentioned in Sevottam. The Institute website has a link with ICFRE website and all relevant information about the mandate, thrust areas, ongoing and completed projects, personals etc. along with details of contact information is duly depicted for the benefit and information of populace. The Institute has identified thrust areas of research in consonance with National Forestry Research Plan (NFRP). Institute is implementing its research endeavors after consultation and duly recognizing the users need. As far as taking up project is concerned the Institute has a sound set procedure. To identify the problems and user needs stakeholders meetings are conducted insuring participation of SFDs, progressive farmers, NGOs, representatives from forest based industries and universities. Once the problems are identified projects are formulated after in house discussions followed by vetting of the projects by independent reviewers. The projects are then evaluated and scored by the research advisory group of the Institute again represented by various stakeholders. The projects are then finally approved by RPC for implementation. The research results and technologies are demonstrated to the users adopting various means of communication and extension.

5.2.1.2. Action taken to implement the charter:

To implement the charter new projects have been formulated in consultation with stake holders. All new projects were vetted by external expert. The new and ongoing projects were presented

to research advisory group (RAG) during the RAG meeting held on 25-09-2019. The RAG has evaluated the progress of the project and given the comments and recommendation for continuing the projects. The suggestions were duly addressed. The research findings are uploaded in website of the Institute. Scientist-B Phase-I, Phase-II and Phase-III exams were conducted by IFB, Hyderabad on 09.11.2019, 14.12.2019 and 09.1.2020. Recruitment of JRF/JPF/PA/FA was conducted during the month of January & February 2020 under the AICRP projects. Recruitment of Consultants was conducted during the month of August 2019 under the DPR project Recruitment of Data Entry Operators was conducted during the month of February 2020 under the DPR project. In addition to this Institute has imparted training to different stake holders during the year and also conducted Vana Mahotsava and also implemented National programme like Swach Bharat Abhiyan etc.

5.21.3. Details of training programmes, workshops, etc. held for proper implementation of Charter:

As mentioned under Point Nos. 3.2, and 4.4 of the report.

5.2.1.4. Details of publicity efforts made and awareness campaigns organized on Charter for the Citizens/Clients:

As mentioned under Point Nos. 3.4, 4.1, 4.3 and 4.9 of the report.

5.2.1.5. Details of internal and external evaluation of implementation of Charter in the organization and assessment of the level of satisfaction among Citizens/Clients:

All the research programmes were evaluated internally by GCR and Director and also by the Additional Director General (M&E). Both the new projects as well as progress of ongoing have also been scrutinized by RAG comprising both internal and external experts.

5.3. Welfare measures for SC/ST/Backward/Minority communities:

Due attention has been given to these aspects. No complaints were received during the year.

6. Annexure

6.1. RTI

Names and addresses of Public Information Officers and Appellate Authorities under the right to Information Act 2005 in ICFRE and its Institutes

Headquarters/Institutes	Appellate Authorities	Public Information officer
Institute of Forest Biodiversity, Hyderabad	Director IFB, Hyderabad	Dr. GRS Reddy, Scientist-G, IFB, Hyderabad

6.2. Information on vigilance cases: Nil**6.3. Information on audit objections:****Status of Outstanding Audit Para of IFB, Hyderabad for the period from 04/2010 to 03/2013**

Para NO	Description of Para	Reply	Remarks
Para-1	Irregular Double Increments to the staff of IFB(FRC), Hyderabad	Double increment was allowed to the staff as per the orders of ICFRE, vide office order no.58-21/2007(XXVI)/ICFRE, dated 11.11.2007 in pursuance to the orders passed by the Hon'ble High Court of Delhi on 24.07.2006 in the matter of VAKS Vs UOI and others in CWP No.1178/2003 wherein the orders were to grant two additional increments with DA to the staff members absorbed in ICFRE w.e.f. 09-09-2006 and subsequently it was discontinued as per the decision taken in the Board of Governors meeting held on 29.10.2015 and communicated vide Secretary, ICFRE's office letter No.58-21/52nd/2015-ICFRE, dated 12.11.2015. The audit query is whether the orders issued were with the concurrence of DoPT/Ministry. In this connection, a letter has been received from Secretary, ICFRE enclosing a copy of letter addressed to the secretary to the Government of India, MoEF&CC, New Delhi vide Ir no. 39-18/2010-ICFRE dated.27.07.2017 (copy enclosed for ready reference) seeking ex-post facts approval of two additional increments from the ministry of Finance and the matter is under consideration at ministry level, In view of the above, the audit para may be dropped.	Ex-post facto approval from Ministry of Finance is requested.

6.4. Email and Postal addresses

Postal Address	Email & Telephone
The Director Institute of Forest Biodiversity Dulapally, Kompally, Post, Hyderabad – 500 100	Email:director_ifb@icfre.org Webpage: http://ifb.icfre.gov.in Phone:(+91) 040-66309501 Fax: (+91) 040-66309521
The Head Forest Research Centre for Coastal Ecosystem Via Yoga Village, Beach Road, Pandurangapuram, Visakhapatnam, 530003, A.P.	Email:head_FRCCE_Vizag@icfre.org Webpage: http://ifb.icfre.gov.in/frc-ce Phone:(+91) 0891-2704502 Fax: (+91) 0891-2793022


6.5. Intellectual property**1. Patents granted: Nil****2. Others****6.6 LIST OF ABBREVIATION**

ACF	Assistant Conservator of Forest
AFRI	Arid Forest Research Institute
AGROMET	Agrometerology
AICRP	All India Research Coordinated Project
APCCF	Additional Principal Chief Conservator of Forest
APMAPB	Andhra Pradesh Medicinal and aromatic Plants Board
APFD	Andhra Pradesh Forest Department
CAF	Compensatory Afforestation fund
CAMPA	Compensatory Afforestation Fund Management and Planning Authority
CF	Conservator of Forest
CIMAP	Central Institute of Medicinal and Aromatic Plant
CPT	Candidate Plus Tree
CTAB	Cetyl trimethylammonium bromide
CWP	Case Witnessing Process
DA	Dearness Allowance
DCF	Deputy Conservator of Forest
DFO	Divisional Forest Officer
DOPT	Department of Personnel and Training
DPR	Detailed Project Report
DRO	Deputy Range Officer
DV	Demo village
ENVIS	Environmental Information System
FA	Field Assistant
FGR	Forest Genetic Resources
FRCCE	Forest Research Centre for Coastal Ecosystem
FRI	Forest Research Institute
FRO	Forest Range Officer
GBH	Girth Breast Height
GIS	Geographic Information System
GPS	Geo Positioning System

GSDP	Green Skill Development Programme
HRD	Human Resource Development
IAS	Indian Administrative Service
ICFRE	Indian Council of Forestry Research and Education
ICT	Information and Communications Technology
IFB	Institute of Forest Biodiversity
IFGTB	Institute of Forest Genetic and Trees Breeding
IFS	Indian Forest Service
IPPC	International Plant Protection Convention
IWST	Institute of Wood Science and Technology
JNV	Jawahar Navodaya Vidhyalaya
JPF	Junior Project Fellow
KVS	Kendriya Vidhyalaya Sangathan
LDC	Lower Division Clerk
MOEFCC	Ministry of Environment, Forest and Climate Change
MOUS	Memorandum of Understanding
NAA	Naphthalene Acetic Acid
NAEB	National Afforestation and Eco-Development Board
NFLIC	National Forest Library and Information Center
NFRP	National Forest Research Plan
NGOs	Non-Governmental Organization
NGT	National Green Tribunal
NIC	National Information Center
NKN	National Knowledge Network
NSMC	National Subject Matter Specialist
NTPC	National Thermal Power Corporation
NWFP	Non-Wood Forest Products
PA	Project Assistant
PBR	Peoples Biodiversity Register
PI	Principal Investigator
RAG	Research Advisory Group
RBD	Randomized Block Design
RET	Rare Endangered and Threaten
RPC	Research Policy Council
RRC	Regional Research Conference
RTI	Right To Information
SFDs	State Forest Department
SMC	Soil Moisture Conservation
TFRI	Tropical Forest Research Institute
TGM	Tree Grower Mela
TLC	Thin Layer Chromatography
TSFA	Telangana State Forest Academy
TSFD	Telangana State Forest Department
TSMPB	Telangana State Medical Plant Board
VCP	Vegetation Carbon Pool
VVK	Van Vigyan Kendra
WP	Working Plan

Check list to be sent with Annual Report 2019-2020

Sl. No	Jobs to be checked	Indication						
1.	The report is strictly in the format prescribed for this purpose and vetted by the committee at institute level.	<input checked="" type="checkbox"/>						
2.	Achievements are suitably placed under appropriate themes/sub-themes	<input checked="" type="checkbox"/>						
3.	All India Coordinated Research Projects are presented separately.	<input checked="" type="checkbox"/>						
4.	Numbers indicated in the summary of the projects in the overview is sum of the projects indicated at every theme.	<input checked="" type="checkbox"/>						
5.	Compliance of BoG instructions has been ensured.	<input checked="" type="checkbox"/>						
6.	Soft copy is supplied in a separate cover	<input checked="" type="checkbox"/>						
7.	Digital RAW photographs (each in a separate file) are in JPEG/TIF format suitable for printing in 600 dpi or more/in 2.0 mega pixel or more	<input checked="" type="checkbox"/>						
8.	Photographs are provided with appropriate captions.	<input checked="" type="checkbox"/>						
9.	Expanded forms of all abbreviations are suitably incorporated in the text as well as in the list.	<input checked="" type="checkbox"/>						
10.	List of abbreviations is attached separately.	<input checked="" type="checkbox"/>						
11.	Date format has been checked and it is in required format.	<input checked="" type="checkbox"/>						
12.	Addresses, email addresses and telephone numbers of institute/centre are correct and up-to-date	<input checked="" type="checkbox"/>						
13.	RTI information is given separately in the report.	<input checked="" type="checkbox"/>						
14.	Tables have been incorporated indicating the following :							
	i. Chapter- 3 – Trainings organized & participation in seminars, symposia etc.	<input checked="" type="checkbox"/>						
	i. Chapter- 4- Publications (3 tables) and seminars etc. organized	<input checked="" type="checkbox"/>						
15.	Information on five points of Sevottam has been incorporated	<input checked="" type="checkbox"/>						
16.	Information on welfare measures for SC/ST/backward/minority communities has been incorporated.	<input checked="" type="checkbox"/>						
17.	Information on Vigilance cases and audit objections has been incorporated.	<input checked="" type="checkbox"/>						
18.	Information on five points of patents- IPR incorporated	<input checked="" type="checkbox"/>						
19.	Overview (not more than 200 words) highlighting the important achievements during the period are provided in a separate sheet.	<input checked="" type="checkbox"/>						
20.	Scientific jargon/Technical equations etc. have been avoided as far as possible and the achievements have been described in simple language.	<input checked="" type="checkbox"/>						
21.	Appointed Nodal Officer for AR 219-2020 with the following details:	<input checked="" type="checkbox"/>						
	<table> <tr> <td>Name and Designation</td><td>Contact details i.e., phone numbers including mobile No.</td><td>E-mail address</td></tr> <tr> <td>Dr. Pankaj Singh Scientist-C</td><td>040 66309501 09709024018</td><td>psingh@icfre.org</td></tr> </table>	Name and Designation	Contact details i.e., phone numbers including mobile No.	E-mail address	Dr. Pankaj Singh Scientist-C	040 66309501 09709024018	psingh@icfre.org	
Name and Designation	Contact details i.e., phone numbers including mobile No.	E-mail address						
Dr. Pankaj Singh Scientist-C	040 66309501 09709024018	psingh@icfre.org						



Signature and Name of the Authority with seal