ICFRE-T.F.R.I.

ANNUAL REPORT

2022-2023

ICFRE- TROPICAL FOREST RESEARCH INSTITUTE, JABALPUR

ICFRE Annual Report 2022-23(TFRI)

i. Overview: Please indicate most important achievements and new initiatives (approximately in 300 words) during the period under report.

- Prepared Forest Soil Health Cards of 63 forest divisions of Madhya Pradesh and revised form factors of *Tectona grandis* (Teak) and *Shorea robusta* (Sal) in different agroclimatic zones of Chhattisgarh.
- The losses due to forest fire were calculated and converted in monetary values in different types of forests of M.P.
- Status of forest land degradation with different land use types in three western districts (Dhar, Jhabua and Mandsaur) of Madhya Pradesh exhibited OF-grassland with maximum carbon stock in the soil compared to the OF-disturbed and OF-undisturbed (protected).
- Recommended site-specific short rotation forestry crops in Dubna-SakradihiManganese and Iron Ore mines of Odisha during intermittent period for augmenting ecological services.
- Two block plantations of *Litsea glutinosa* (Each block -200 plants) were established in Dellakhari Range (P-104 & P-97), Chhindwara West Forest Division.Besides, 1100 saplings were supplied to the Maharashtra Bamboo Development Board, Nagpur and200 saplings to the Tamia Range, Chhindwara West Forest Division.
- Among the improved sites of Teak, seeds of Seed Production Area (SPA), Bahrai in Madhya Pradesh and SPA Pali in Chhattisgarh were superior in terms of length, diameter, and seed weight. Emptiness was lowest and the viability was highest 72% and 85% respectively in seeds of SPA Bahrai (M.P.) and SPA Pali.
- 14 CPTs of *Haldina cordifolia* were selected from Katghora and Bilaspur Forest divisions of Chhattisgarh; Allapalli and Gondia Forest divisions of Maharashtra; and Balaghat Forest division of Madhya Pradesh.Seedlings of 30 selected CPTsraised for field trial.
- Plantation of *Pseudoxytenanthera stocksii* was established at KVK, Umaria, Madhya Pradesh with the objective of introduction of new species in central India.
- One clonal seed orchard/clonal trial of *Gmelina arborea* was established at TFRI, Jabalpur with quality planting material of 34 clones in RBD Design.
- In Germplasm Bank, maximum average plant height (150 cm) was obtained in plants of Keregaon in *Plumbago zeylanica* and maximum average plant height (110 cm) was obtained in plants of Bhatwatola in *Celastruspaniculatus*.
- *Jatrophacurcas* seed oil having high biopesticidal potential @ 1% concentration with 66.67% & 60.0 per cent larval mortality whereas *Madhuca longifolia*seed oil shows 53.33 & 60.0 per cent @ 1% concentration against Teak defoliator (*Hyblaeapuera*) and skeletonizer (*Eutectona machaeralis*) respectively.
- International Collaborative Project ICRAF-USAID tree outside forests of India (TOFI), Asia continental programmetoexpand area under agroforestry outside the

forests in seven states of India initiated at TFRI, Jabalpur.Organized workshops in Odisha, Tamilnadu and Rajasthan on 8th February, 2023, 23rd February2023 and 17th March2023 respectively and identified the promising species for the respective states.

- Evaluation trial o*f Melia dubia* in Central India -50 improved varieties/ genotypes, released by FRI, Dehradun were established in Morena (MP) and Nagpur (Maharashtra).
- Insect pests viz.*Notobiusmeleagris, Hieroglyphusbanian, Pelopedasmathias, Pyraustacoclesalis, Odontotermes sp., Estigmenachinensis, Oregmabamboosae, Sitrotrogaceralella*and *Cyrtotraculusdux* wererecorded on bamboo.
- Laboratory studies revealed that Monocrotophos 36 EC (0.05%), Profenofos 50 E.C (0.0%), Cypermethrin 25 E.C (0.03%),Chlorentreniprole 18.5 S.C (0.03%) were found effective with maximum mortality of 91.66, 83.33, 75.0 and 66.66 per cent mortality of *P. coclesalis* at 72 hrs after treatment.

ii. Summary of projects

Projects	Completed Projects	Ongoing Projects	New Projects Initiated During the Year
Plan	02	06	--
Externally Aided	06	15	04

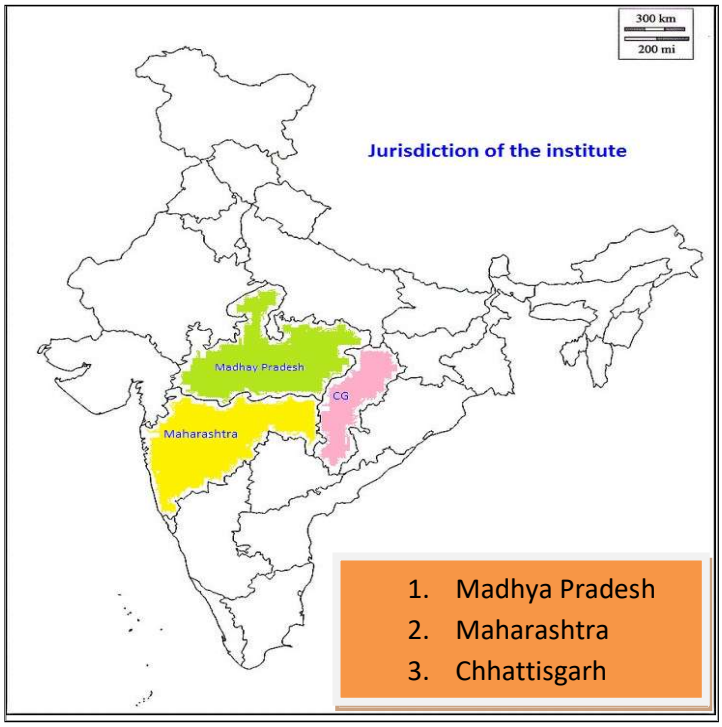
	Contents		
Sl. No.	**Particulars**		**Page No.**
1.	**Introduction**		4-7
2.	**Research Highlights**		
	2.1	Ecosystem Conservation and Management	7-10
	2.2	Forest Productivity	10-14
	2.3	Genetic Improvement	14-27
	2.4	Forest Management	27
	2.5	Wood Products	27
	2.6	Non-Wood and Forest Products (NWFPs)	27-33
	2.7	Forest Protection	33-34
3.	**Education Visits/Activities**		
	3.1	FRI University (Applicable for FRI Dehradun only)	35
	3.2	Training Organized	35
	3.3	Visits Abroad	35
	3.4	Participation in Seminars/Symposia/Workshops/Trainings	35
4.	**Extension Panorama / Activities**		
	4.1	Report on Van Vigyan Kendras (VVKs) and Demo Village (DV)	35-36
	4.2	Technologies transferred	36
	4.3	Intellectual Property - Patents Granted/Applied (during the year), any other information regarding IP	36-37
	4.4	Research Publications	37
	4.5	Seminars/Symposia/Workshops Organized	37
	4.6	Consultancies	37-38
	4.7	Technical Services	38
	4.8	Activities of Rajbhasha	38-41
	4.9	Awards and Honours	41-42
	4.10	Special Activities (Such as Van Mahotsava, Forestry Day and other occasions)	42-44
	4.11	**Extension Activities performed under CAMPA Extension** (this information is different from the information provided in the Chapter as above)	44
5.	**Administration and Information Technology**		
	5.1	Information Technology	44-45
	5.2	Administration	45
	5.3	Welfare measures for the SC/ST/Backward/minority communities.	45
6.	**Annexures**		
	1	RTI	46
	2.	Information on vigilance cases	46
	3.	Information on audit objections	46
	4.	Email and Postal addresses	46-47
	5.	List of abbreviation	47-48

1.

Introduction: MoUs signed, visit of dignitaries, new initiatives, RRCs organized etc.

Introduction:

ICFRE - Tropical Forest Research Institute (TFRI), Jabalpur (M.P.) with its satellite research centre, named ICFRE- Centre for Skill Development, Chhindwara provides research support to State Forest Departments of Madhya Pradesh, Chhattisgarh, Maharashtra and other stakeholders since 1973&1988. The institute is spread over an area of 109 ha, maintain constant liaison with state forest departments, NGOs working in the field of forestry and allied areas, universities imparting education in forestry and forest-based industries.



MoU Signed:

List of MoU's :

S No.	Year		For	Duration	Amount (in Lakh)
1	2022	MoU between TFRI, Jabalpur and St. Aloysius Institute of Technology (SAIT), Gour Ekta Market, Jabalpur	Discussed common research interests and allied activities between the two institutions and decided to enter in to collaboration for promotion of basic and advance research in subject of Forestry, Botany, Zoology, Environment Scinece, Africulture, Physics, Chemistry and other allied subjects.	5 years	--

Visit of dignitaries:

Sl. No.	Name	Purpose	Duration	From
1.	Shri Ramesh Shrivastava, IFS CEO, CAMPA	To discuss various issues and submission of new project proposals	1 day 09/06/2022	CEO, CAMPA, Bhopal, Madhya Pradesh.
2.	Dr. R. K. Wadhwa, Senior Doctor, ADLMS Visited TFRI.	To visit museum and collection of medicinal plants.	1 day 21/06/2022	Safdarjang Hospital New Delhi
3	Dr. Ashutosh Verma, Professor, IIFM Bhopal	Institutional assessment	1 day 22/07/2022	IIFM, Bhopal
4	Ms. Priyanka Das, Mission Director, National Health Mission, MP	Official visit	1 Day 30/07/2022	National Health Mission, MP.
5	Shri Arun Singh Rawat, Director General, ICFRE, Dehradun(UK)	To participate in National workshop on 'Availability, Sustainability, Processing issues and market linkages of Medicinal plants" . & Interaction with Scientist and Officers of TFRI	1 day 26/09/2022	DG, ICFRE, Dehradun
6	Shri R.K. Dogra, DDG (Admin and Research), ICFRE			DDG, Admin, ICFRE, Dehradun
7	Dr. Sudhir Kumar, DDG, Extension, ICFRE			DDG, Extension, ICFRE, Dehradun
8	Dr.Geeta Joshi, ADG, Media and Extension,ICFRE			ADG, Media and Extension, ICFRE, Dehradun
9	Shri Sudeep Nayak, IFS, CEO, SMPB, Odisha	To see TFRI activities	3 hrs 27/09/2022	Odisha
10	Dr. Dinesh Kumar, Scientist-G, FRI, Dehradun	To see TFRI activities	3 hrs 27/09/2022	FRI, Dehradun
11	Dr. Devendra Pandey, Ex DG,FSI and HoFF, Arunachal Pradesh	Resource person for IFS training programme	11/01/2023	New Delhi
12	Shri A.K.Bansal, Ex ADGF and HoFF, Odisha	Resource person for IFS training	11/01/2023	Bhubneshwar

		programme		
13	Dr. R. C. Mishra (VC) M.K. University, Prayagraj (U.P.)	Visit to Institute	08-02-2023	Prayagraj (U.P.)
14	Dr. A.K.Verma, Post graduate College, Prayagraj (U.P.)	Visit toTFRI	08-02-2023	Prayagraj
15	Dr. Sadguru Prakash, MLK PG College Balrampur (U.P.)	Visit to TFRI	08-02-2023	Balrampur (U.P.)
17	Pro. K.R.Aneja,Retd. Professor, Mycology,Kurukshetra University,Haryana	Discussion with Scientist of TFRI	24-02-2023	Kurukshetra University,Haryana
18.	Scientists of KVK Mandla Anooppur and Shahdol	Development of linkages with KVK and TFRI	03-03-2023	KVKs- Mandla Anooppur and Shahdoland Narsinghpur

New initiatives:

(A) New appointment during 2022-23:-

Scientist	**Technical Staff (07)**	**Ministerial staff (06)**	**Research Staff (03)**	**M.T.S. staff (12)**
NIL	Harshit, Sumit Singh, Alka Singh, Anand Kumar, AnujMaran, Deepak Kumar, Mukesh Mali	Ravikant Sahu, C.S. Sujit, Mansi Mishra, VinayAnkhiya, Payal Badge, Rahul Kumar	Ramkishan Maru, PriyanshNarnaure, Satish Kumar Pandey	Amisha Patel, Ankit, VivekPareek, Gopal Patel, SiddharthGautam, ShubamDubey, AlokRaut, Krishan Prasad Mishra, AkleshPawar, AakashAnwale, LataNarware, AnandAdhikari

(B) Promotion during 2022-23:-

(i) Scientist - 03

(ii) Technical services - Nil

Sl . No.	Name of Scientist/Technical staff/min. staff	Present post	Promoted post
Scientists			
1	Dr. HariomSaxena	Scientist-D	Scientist-E
2	Dr. NaseerMohhamad	Scientist-D	Scientist-E
3	Dr. N.D. Khobragade	Scientist-D	Scientist-E

(C) Transferred/Repatriation during 2022-23 :-

(i) Scientist/Deputation - 01

(ii) Technical services - Nil

(iii) Ministerial staff - Nil

Sl . No.	Name of Scientist/Technical	From (Place)	To (Place)

	staff/min. staff			
Scientist/Deputation				
1	Dr. G. RajeshwarRao	TFRI	CRIDA, Hyderabad	
Technical staff – NIL				
Ministerial staff - NIL				

(D) Retired during 2022-23 :-

(i) Scientist - 01
(ii) Technical services - 03
(iii) Ministerial staff - 01

Sl . No.	Name of Scientist/Technical staff/min. staff	Post	
Scientists			
1	Dr. M. Kundu	Scientist-F	
Technical staff			
1	Shri J.J. Satpathy	Technical Officer	
2	Shri I.T.K. Dilraj	S.T.O.	V.R.S.
3	Shri D.C. Kori	A.C.T.O	
Ministerial staff			
1	Shri Hansa Ram	Driver	

RRC organized: Jointly hosted with the AFRI, Jodhpur on 22.06.2022

2. Research Highlights

A. CAMPA Activities

Institutes are requested <u>NOT TO INCLUDE</u> progress made under CAMPA projects; progress for AICRPs & other projects under CAMPA will be obtained from directly from concerned NPCs and project coordinators.

Total (23+3)= 26 AICRP's, funded by CAMPA are being executed in TFRI, Jabalpur

B. Plan and External Projects

★ ***<u>Please provide major details of the important achievements/progress of the projects in following order as per point nos. 2.1 to 2.7 :</u>***

- ✓ ***Completed project – Please provide "<u>significant achievements"</u> in not more than 150 words.***
- ✓ ***Ongoing projects (projects continued from previous year and to be continued in next year)- Please provide "<u>progress made and outcome"</u> during the year in 100 to120 words. Also, please mention in 20 to 50 words progress of previous year(s).***
- ✓ ***New project initiated during the year- "<u>Progress made</u>" during the year under report in not more than 100 words.***

2.1 Ecosystem Conservation and Management

2.1.1 Overview

2.1.1.1 Projects under the Theme

Projects	Completed Projects	Ongoing Projects	New Projects Initiated During the Year
Plan	-	-	-
Externally Aided	01	-	02

2.1.2 Climate Change

2.1.3 Ecology & Environment

2.1.4 Biodiversity

Quantitative assessment of land degradation in forests of three western districts of Madhya Pradesh and suggest mitigation measures.

Achievements:

Three different land use types (i) OF-disturbed; (ii) OF-undisturbed (protected) and (iii) OF-grassland were selected in the category of 'OpenForest - OF' for understanding the land-use effects on carbon storage in vegetation and soil in three western districts (Dhar, Jhabua and Mandsaur) of Madhya Pradesh. Species diversity and density were assessed by laying ten quadratsof 0.1 ha along with measuring soil organic carbon (SOC) at two depths – 0-15 cm (surface) and 15-30 cm (sub-surface). The SOC in 'OF-disturbed' surface soils were lower than both 'OF-undisturbed' and 'OF-grassland'. The SOC stock in the surface (0–15 cm) soil constituted 6.95, 27.6 and 42.4 per cent of the total stock in the 1.05-m profile of OF-disturbed, OF-undisturbed (protected) and OF-grassland soils, respectively. The surface and subsurface soils of 'OF-grassland' contributed the highest to the total profile carbon stock. Carbon stock in vegetation as indicator to assess the level of degradation was studied. A spatial map on severity of degradation in forests of these 3 districts is being prepared.

Fig. 1*A view of soil sampling in the Open Forest areas of Dhar District*

Fig.2 *A view of Open Forest areas of Jhabua District*

Capacity building of Nursery staffs on preparation of Biofertilizers, Organic Fertilizer &its application in Teak and Bamboo.

Achievements:

Trainings on biofertilizers/organic fertilizers were organized for SFDs and method of preparation of Jivamurtwere demonstrated to scientific personnel/executives of SFDs/ NGOs. Bacterial populations were isolated from Jivamrut. Value additions of Jivamrut were carried out.


Fig. 3&4 Imparted trainings on "Biofertilizers and Organic fertilizers" to participants

Current status of nursery diseases and insect pests of important species in forest nurseries of Madhya Pradesh and their Eco friendly management.

Achievements:

Visited forest nurseries of Khamer, Karanj, Mahua, Aonla, Neem, Bamboo, Teak and Sissoo at Rewa, Satna, Singrauli and Sidhi Forest division. Seedlings of Karanj, Mahua and Bamboo were found severely affected due to attack of various groups of defoliator insects and leaf spot, blight and grasshopper damaged bamboo seedlings. The symptoms of insect pests attack and diseases incidence were noted on all the plants in the sample plots.A technical advisory was given to nursery staff for eco-friendly management of insect pests and diseases in nursery and young plantations.

Fig. 5 Documentation of insect pest attacking on teak seedlings

Fig. 6 Documentation of insect pest attacking *Gmelina* seedlings

Fig. 7 Defoliation by *Galerucella birmanica in* Gmelina seedlings

2.1.5 Forest Botany

2.1.6 Tribals and Traditional Knowledge System

2.2 Forest Productivity

2.2.1 Overview

2.2.1.1 Projects under the Theme (in table as given at 2.1.1.1)

Projects	Completed Projects	Ongoing Projects	New Projects Initiated During the Year
Plan	-	1	-
Externally Aided	-	7	1

2.2.2 Silviculture

Impact of Silviculture systems on the natural forests of Chhattisgarh with special reference to Sal and Bamboo.

Achievements:

Surveyed and collected data from the Bamboo forest of Khairagarh division of Chhattisgarh under silviculture systems -RDF (Rehabilitation of degraded forest) in compartments 260 and 319 and ANR in compartment 279 and 289. Prepared roadmap for executing the work in bamboo forest. It wasobserved that ANR better then that of RDF which is having associated species including *Lagerstromiaparvifolia*, Tendu, Saja (135cm girth, Dhawda-81cm, Bija 147cm) and in RDF dominated by Teak, Bija, Tinsa, Saja species.

a

b

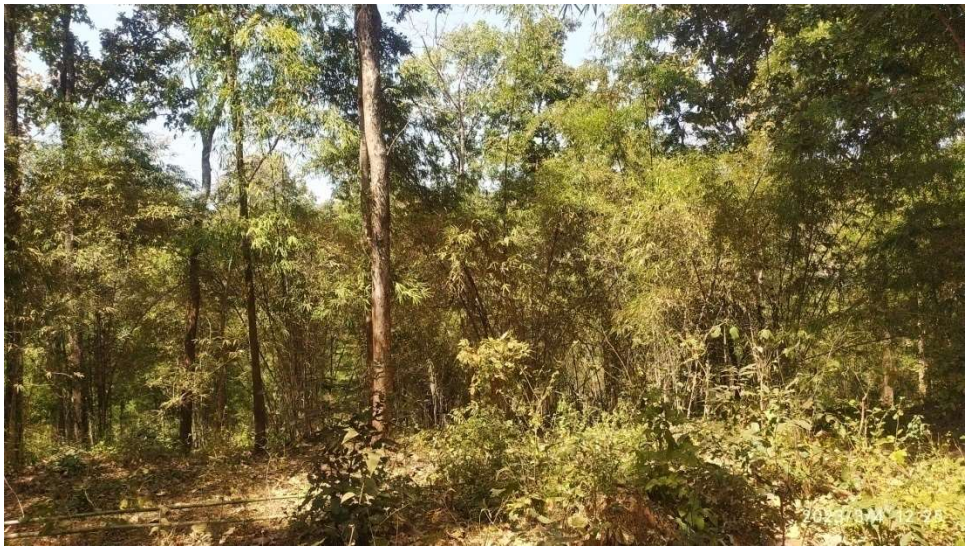


Fig. 8 Bamboo ANR & RDF system in Khairagarh forest division(Chhattisgarh)

Studies on the quality of nursery seedlings and its relation to outplanting performance of *Dalbergia latifolia* and *Pterocarpus marsupium*.

Achievements:

The seeds of *Dalbergia latifolia* and *Pterocarpus marsupium* were collected from Jabalpur and Chhindwara districts. 4000 seedlings were prepared in two types of culture: bareroot and root trainer to study the quality of nursery seedlings.The seedling growth based on age groups (6 months, 1 year and 1.5 year) was observed the project. Field plantation plot was established in RBD design at TFRI Jabalpur (M.P.) and morphological data (height, stem diameter, height: diameter ratio, form, no of leaves) of all planted seedlings were recorded.

Fig.9*Dalbergia latifolia* Field plantation

Fig.10 *Pterocarpus marsupium*

Fig. 11 Seedlings

2.2.3 Social Forestry, Agro-forestry/ Farm Forestry

Popularization of improved var. of *Leucaena leucocephala* (Lam.) de Wit. **based agroforestry system.**

Achievements:

Established *Leucaena* based agroforestry system by intercropping of kharif crop viz. *Cymposis tetragonaloba* and rabi crop viz.*Brassica juncea* and economics was worked out. Crop combination initially generated net return of Rs.12450 only. Visited farmer's field interacted and motivated themfor adoption of improved clone of *L. leucocephala* wich is in demand by the wood-based industry like BILT.

Farmershave adopted the model as block and woodlot with Sorghum crop inJalna district (MS).

Fig. 12*Leuceana* + Maize + Mustard agroforestry model in Jabalpur district

Promotion of Bamboo based Agroforestry System for economic upliftment and livelihood security of farmers in Madhya Pradesh

Achievements:

Established and maintained the bamboo based agroforestry systems at the farmer's field and recorded data on the growth parameter of bamboo as well as intercrops.Organized 2nd training on 4th November, 2022 for the NABARD beneficiaries and demonstrated the harvesting and management techniques of bamboo culms. Provided the agricultural tools to beneficiaries for management of bamboo culms like pruning and inter culture operations. Presented progress in annual regional review meeting held at Mandla on 29th November 2022.

A team of NABARD headed by the General Manager, Bhopal visited on 1st March, 2023 and interacted with farmers(beneficiary) to know about the benefits of the system.

Fig. 13GM, NABARD, Bhopal visited & interacted with farmers, established bamboo based

Capacity building on seed and nursery technology and Plantation techniques for prioritized species of Chhattisgarh state.

Achievements :

Fieldmanual on individual species were provided to the CCF, Raipur (MP), interacted with the field officials and shared the information of hi-tech plantation on sandalwood and *Melia dubia.* Organized training for field functionaries of Chhattisgrah forest department. Course material prepared and distributedto the trainees.

Development of form factors for important tree species of Chhattisgarh.

Achievements:

Revised form factors for *Tectona grandis* (Teak) and *Shorea robusta* (Sal) in different agroclimatic zones of Chhattisgarh.The revision of form factor for other important tree species such as *Terminalia tomentosa* (Saja)*, Pterocarpus marsupium* (Beeja Sal)*, Dalbergia sissoo* (Shisham)*, Adina cordifolia* (Haldu)*, Terminalia arjuna* (Arjun)*, Bridelia retusa* (Kasai)*, Ougeiniadalbergioides*(Tinsa)*, Gmelina arborea* (Khamhar), *Mitragyna parviflora* (Mundi), *Gardenia latifolia* (Papda), *Cleistanthuscollinus* (Karra), *Lagerstroemia parviflora* (Lendia), *Diospyros melanoxylon* (Tendu) and *Chloroxylon swietenia* (Bhirra) is in progress.

Fig. 14 Measurement of tree diameter at different height segments of *Bridelia retusa* at Dhamtari forest division using Basal Area Finder (BAF) Scope

Fig. 15 Measurement of tree diameter at different height segments of *Adina cordifolia* at Bastar forest division using Basal Area Finder (BAF) Scope

Tree outside forests of India.International Collaborative project ICRAF-USAID (TOFI), Asia continental programme.

Achievements:

With the aim to expand area under agroforestry outside the forests in seven states of India, organized workshops in Odisha, Tamilnadu and Rajasthan on 8 February, 2023, 23 February2023 and 17 March2023 respectively and identified the promising species for the respective states. Participated in the

National Launch of TOFI programme on 8th September,2022 at Paryawaran Bhawan, MoEF& CC, New Delhi, presented progress in review meetings held on 29thNovember 2022 and 3 February, 2023 under the chairmanship of ADG(WL),MOEF CC, New Delhiand participatedduring brain storming session on quality planting material on on 12 July, 2022 and 29August, 2022. Participated in the Innovation Workshop held at Coimbatore, on 22 June, 2022. Participated in various meetings with the consortium partners held on 30-31 May, 2022, 20-21 June at New Delhi and 6 July,2022 and 12 July, 2022 at Mettupalayumand presented progress to the funding agency.

Fig. 16Glimpses of the events under TOFI programme

Development of multitier agroforestry systems in selected agroclimatic zones of Madhya Pradesh.

Achievments:

Survey and documentation of existing agroforestry systems in the selected zones of Madhya Pradesh, standardize the multitier cropping model for site specific conditions and disseminate the developed model among the farmers.

2.2.4 Forest Soils & Land Reclamation

2.2.5 Watershed Management

2.3 Genetic Improvement

2.3.1 Overview

2.3.1.1 Projects under the Theme (in table as given at 2.1.1.1)

Projects	Completed Projects	Ongoing Projects	New Projects Initiated During the Year
Plan	02	03	--
Externally Aided	03	02	01

2.3.2

Conservation of Forest Genetic Resources

Assessment of diversity and natural regeneration status of *Sterculia urens* Roxb for development of conservation strategy in Madhya Pradesh.

Achievements:

Sterculia urens populations are shrinking in its natural ranges and suitable conservation strategy need to be devised and deployed for this economically important non-timber forestry species. All the morphometric traits assessed have large amount of variation. GBH recorded highest CV i.e. 63% followed by clear bole height (54%), crown diameter (50%), tree height (48%) and number of branches (46%). Natural regeneration status of *S. urens* at all the surveyed sites was observed to be very poor despite profuse flowering and fruiting. Mostly large, matured trees were found scattered on the hill tops and rocky crevices. Sand is observed to be best medium for germination, it gives 64% germination with faster rate/speed.Assisted natural regeneration (ANR) activities are recommended in its natural rangesto ensure regeneration and restoration.

Fig. 17Recording natural regeneration status in Gwalior Forest Division near Panihar village

Fig. 18Recording of morphological data in Mundi range of Khandwa forest division

Conservation of *Litsea glutinosa* (Lour.) C.B. Robinson through Population Establishment in Madhya Pradesh.

Achievement:

Litsea glutinosa is one of the important multi-purpose forest species dwindling in the forests of central India. Two block plantations (Each block -200 plants) were established in Dellakhari Range (P-104 & P-97), Chhindwara West Forest Division. Saplings (1100 nos.) were supplied to the Maharashtra Bamboo Development Board, Nagpur and 200 saplings to the Tamia Range, Chhindwara West Forest Division.

Fig. 19 Establishment of two block plantations (200 Sapling each) in compartment no. P-104 & P-97 under Dellakhari Range, Chhindwara West Forest Division

Fig. 20 Supply of planting stock to Tamia Range, Chhindwara West Forest Division (Madhya Pradesh) and Maharashtra Bamboo Development Board, Nagpur (Maharashtra).

Conservation of RET species of Chhattisgarh – *Plumbago zeylanica* and *Celastrus paniculatus* and production of quality planting material.

Achievments:

Plants of *Plumbago zeylanica* (Chitrak) and *Celastrus paniculatus* (Malkangni)were multiplied through cuttings and tissue culture. Carbohydrate, flavonoids and tannins were estimated in roots of *Plumbago zeylanica*. Carbohydrate was obtained in the range of 0.379 - 1.610 %, flavonoids from 0.024 – 0.053 mg/g and tannin from 0.021 – 0.166 %. Germplasm bank of *Plumbago zeylanica*and *Celastruspaniculatus* was maintained and recorded 91% survivl in *P. zeylanica*and94% in *C.paniculatus*. Maximum average plant height (150 cm) was obtained in plants of Keregaon in *P.zeylanica* and maximum average plant height (110 cm) was obtained in plants of Bhatwatola in*C.paniculatus*. Seed germination study in seeds of different locations of Chhattisgarh in *Celastruspaniculatus* exhibited maximum 43.13 % germination in seeds of Marwahi followed by 42.50 % in seeds of Dhamtari in the treatment of 0.7 % H_2SO_4.

Fig. 21Plants of *Celastrus paniculatus* (Malkangni) in germplasm bank

Fig. 22Plants of *Plumbago zeylanica* (Chitrak) in germplasm bank

Development of value chain for bamboos for mass multiplication, popularization in farmer's field and industrial linkage in central india.

Achievements:

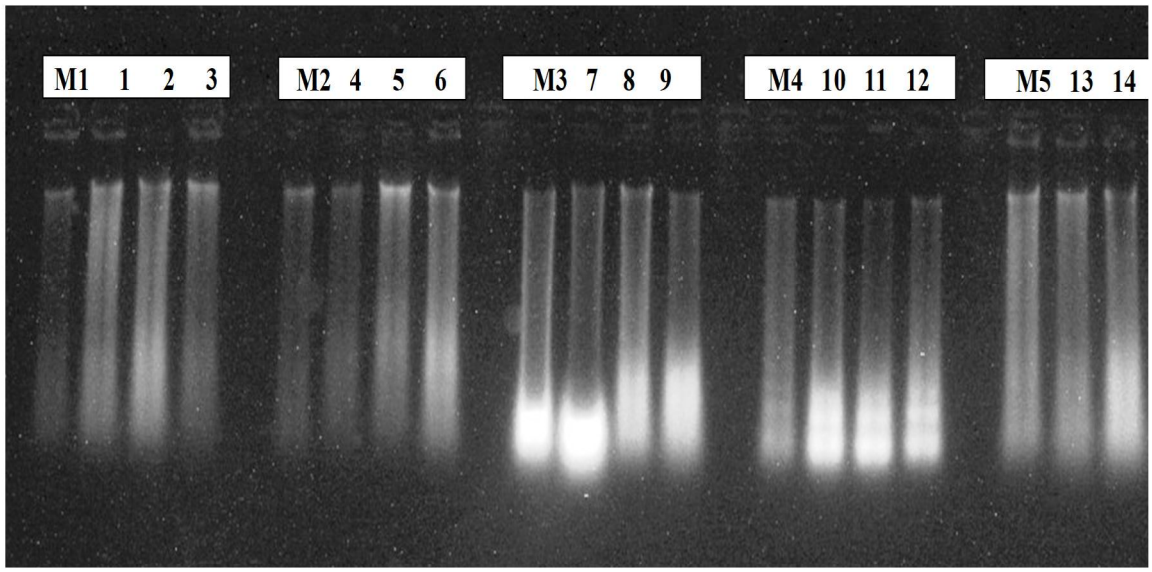
Established field trials at different locations were maintained. Plantation of *Pseudoxytenantheras tocksii* was established at KVK, Umaria, Madhya Pradesh with the objective of introduction of new species in central India. Macropropagation using culm cuttings and culm branch cuttings of *Bambusa nutan*s, *Bambusa vulgaris* var. green and *Bambusatulda* and micropropagation of different bamboo species was continued. Data analysis of species trials at Kundam and Jabalpur revealed maximum culm height 2.5 cm in *Bambusa vulgaris* (RAI-CL-1) at Kundam and 4.92 cm in *Bambusa balcooa* (BOT-CL-1) at Jabalpur. Recorded maximum number of culms (6.15) in *Dendrocalamus strictus* (BAL-CL-4) at Jabalpur and maximum number of culms (4) in *Bambusa balcooa* (BOT-CL-1) and *Dendrocalamus strictus* (SL-CL-2) at Kundam. Maximum culm diameter 2.5 cm was recorded in *Bambusa balcooa* (TCR-1) at Kundam and 4.80 cm in *Bambusa nutans* (GEN-CL-1) at Jabalpur. DNA extraction and quantification of *B. nutan*s, *B. vulgaris* var. green and *B.tulda* were carried out for clonal fidelity testing. Two ISSR primers number 801 and 810 were used for PCR.

Fig. 23Species trial at Kundam in farmer's field

Fig. 24Measurement of clump height, culm diameter and removal of weeds at species trial in Jabalpur

Fig. 25Plantation at Farmer's field at Naugaja, Chandia, Umariya

Fig. 26Plantation at KVK, Umaria



Bambusa nutans	*Bambusa nutans*	*Bambusa nutans*	*Bambusa nutans*	*Bambusa tulda*
M1-Mother BN-RCH-CL-1	M2- Mother BN-DM-8	M3-Mother BN-DM-9	M4-Mother BN-DM-2	M5-Mother BT-KO
1 – BN-RCH-CL-1 - 1	4 – BN-DM-8 - 1	7 – BN-DM-9 - 1	10 – BN-DM-2 - 1	13 – BT-KOS-CL-2
2 – BN-RCH-CL-1 - 2	5 – BN-DM-8 - 2	8 – BN-DM-9 - 2	11 – BN-DM-2 - 2	14 – BT-KOS-CL-2
3 – BN-RCH CL-1 - 3	6 – BN-DM-8 - 3	9 – BN-DM-9 - 3	12 – BN-DM-2 - 3	15 – BT-KOS-CL-2

Fig. 27Visualization of extracted DNA samples of *Bambusa nutans* and *Bambusatulda*

2.3.2 Tree Improvement

Improvement of Teak for Higher Productivity in Central/Peninsular India
Sub project I: Selection of plus trees, raising their progeny trials and establishing germplasm bank.

Achievements:

The candidate plus trees (CPTs) 191 numbers were selected following comparison tree method based on phenotypic traits and with more than 10% selection differential. In M.P., 118 CPTs from 16 forest divisions, in Chhattisgarh, 43 CPTs from Bilaspur and Raipur research circles, in Maharashtra, 17 CPTs from 8 divisions and in Odisha 13 CPTs from two forest divisions were selected. Most of the selections are from the forest areas marked for the seed production.

A progeny trial was established in 2019 within the Institute campus representing 29 open pollinated half sib families from M.P., Chhattisgarh, Maharashtra and Odisha. After three years of establishment families from Madhya Pradesh viz. MPSSNR-2, MPSSNK-4, MPSBG-1, families of Chhattisgarh viz. CGBSPCB-3, CGBSPCB-6, CGBSPCB-12, CGBSPCB-4, families of Maharashtra viz. MHJMLG-1, MHALP-2, and families of Odisha viz. ORAGL-11 are superior in their growth performance compared to the other families in the trial. This early evaluation expresses high reproducibility of growth traits for further breeding of these families.

A germplasm bank with 31 accessions representing M.P., Chhattisgarh, Maharashtra and Odisha was established in 2020 within the Institute campus. Growth performance of five accessions of M.P., four

each of Chhattisgarh and Odisha and three of Chhattisgarh were found superior over others after two years. Improved productivity of plantations will be secured by these new genetic resources for the future afforestation activities in central India.

Improvement of Teak for Higher Productivity in Central/Peninsular India:
Sub Project II. Development of Management Practices of Teak Seed Production Areas, Seedling seed orchards and Clonal seed orchards.

Achievements:

Surveyed Seed Production Areas (SPA), Clonal Seed Orchards (CSOs) and Seedling Seed Orchards (SSO) of Madhya Pradesh, Chhattisgarh and Maharashtra and recorded data on height, GBH, crown diameter, spacing, flowering, fruiting, fertilizer application and other management practices. Some of the SPAs having low seed productivity due to their age and closed canopy. However some of the SPAs are producing good quantity of seeds. Asynchronized flowering among clones in CSO and among families in SSO exhibited low to moderate seed production. Analysis of soil samples collected from surveyed fields' reveals low level of Nitrogen, Phosphorus and Potash in 70%, 25% and 54% samples respectively. Effect of N,P,K fertilizers was assessed on flowering and fruiting and found that treatment of urea with DAP/MoPenhances inflorescence and fruit production.

Established a Seedling Seed Orchard in 2019within the institute campus representing 33 families of MP, Chhattisgarh and Maharashtra in three replications. A Clonal seed orchard representing 15 clones of Madhya Pradesh was also established in 2021 within the institute campus and maintained.

Evaluating the impact of tree improvement activities on seed quality of *Tectona grandis* in Madhya P and Chhattisgarh.

Achievements:

Collected seeds from improved and unimproved sites. Among improved sites in Madhya Pradesh, seeds of SPA, Bahrai were superior in terms of length, diameter and seed weight. Emptiness was lowest and the viability was highest (72%) in seeds of SPA Bahrai. Among improved sites in Chhattisgarh, seeds of SPA, Pali were superior in morphological parameters like fruit length, diameter and fruit weight. Emptiness was lowest and the viability was highest (85%) in seeds of SPA Pali. Seed germination was highest in seeds of SPA Pali (CG) and minimum was in seeds of SPA Tikaria (M.P.). Among unimproved sites, most of the parameters were superior in seeds from Bahrai area of M.P. and Pali area of Chhattisgarh. Seedling growth was initially more in seedlings of improved site of SPA Moyeanala of M.P. and seedlings of SPA Amarua of Chhattisgarh.

Fig. 28Growth performance of seedlings of different sites.

Selection of pest and disease free CPTs of *Gmelina arborea* and production of clonal planting material.

Achievements:

Surveys were carried out in potential areas of *Gmelina arborea* in different agroclimatic zones of Madhya Pradesh andselection of 60 Candidate Plus Trees (CPTs) was done from different locations Betul (Sonaghati), Chhindwada, Sidhi (Dodaki), Singaruli (Badhura), Chourai, Shahpura, Katni (Saraswahi), Damoh (Nohta, Sanga) and Jabalpur (Barha, Deori, Moiyanala). The criteria for selection was based on clear bole height, GBH, total height, crown diameter; crown length, number of primary branches and healthy trees free from pest and diseases. The other quantitative traits measured were were selected. Flowering and fruiting status of selected trees was also recorded. Semi-hardwood branch cuttings of different locations were prepared and treated for 12 hours with different treatments (control, 100 ppm, 500 ppm, 1000 ppm, 2000 ppm and 5000 ppm IBA) and then planted in nursery. On treatment of 2000 ppm IBA solution 60-70% rooting was achieved and rooted plants were produced. Quick dip treatment in talcum powder paste (10gm) with different concentrations of IBA exhibited maximum rooting (73.13 %) with maximum root number (6.22) and root length (6.21 cm) in the cuttings treated with 200 ppm IBA. Soft-wood cuttings after treatment with 500 ppm and 1000 ppm IBA planted in root trainers in vermiculite produced 50 % rooting success on 1000 ppm. Scions were also collected from selected trees and cleft grafting was carried out on rootstocks. One clonal seed orchard/clonal trial has been established at TFRI, Jabalpur with quality planting material of 34 clones in RBD Design with 4 replications at spacing of 3m x3m.

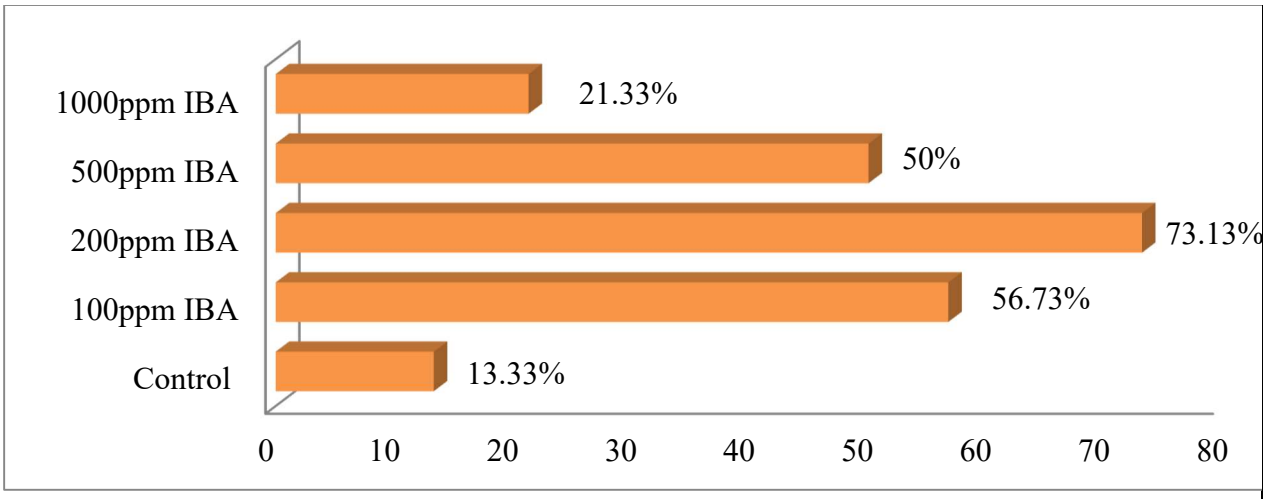


Fig. 29 Rooting % in semi hard wood cuttings of *Gmelina arborea*

Fig. 30 Preparation of field and layout for plantation

Fig. 31a) Produced quality planting material, b), c) plant after six monthsand d) plantation site after six months of plantation

Selection and evaluation of *Haldina cordifolia* for higher wood productivity.

Achievements:

Total 14 CPTs of *Haldina cordifolia* were selected from Katghora and Bilaspur Forest divisions of Chhattisgarh; Allapalli and Gondia Forest divisions of Maharashtra; Balaghat Forest division of Madhya Pradesh. Raised seedlings of all the selected CPTs and maintained in the nursery for further establishment of plantations. Permission letters for land allotments have been received from Madya Pradesh and Chhattisgarh.

Fig. 32Seedlings of *Haldina cordifolia*

Fig. 33Plus tree of *Haldina cordifolia*

Introduction and evaluation o*f Melia dubia* in Central India.

Achievments:

Evaluation trials of *Melia dubia* (50 improved varieties/genotypes with three replications in a randomized block design) were assessed for growth data on height and collar diameter.Variety No. 2080, 2087, 2068, 2048, 2030 and 267 are performing better in terms of height and collar diameter in *M. dubia* trial established in Morena (Madhya Pradesh).Variety No. 2068, 2061, 2023, 2079 and 2093 performing better in terms of height and collar diameter in *M. dubia* trial established in Nagpur (Maharashtra).

Variability for Growth, wood traits and natural regeneration status of *Hardwickia binata* a multipurpose tree species in Madhya Pradesh.

Achievments:

Natural population of *Hardwickia binata* has been selected from compartment number 161 and 162 of Narsinghpur range under Narsinghpur forests divisions of Madhya Pradesh for collection of seed, wood samples and regeneration study. No seed setting was observed. For regeneration study, three quadrates of size 10 x 10 m were laid out in each compartment and species composition, tree density, growth and natural regenerations were recorded. Regeneration count, particularly for *H. binata* was made in these quadrates in each site. The number of recruits of *H. binata* per plot was counted. It was observed that regeneration is poor.Seeds/samara variations collected from compartment number 35 of Zirpa range under west forest division, Chhindwara has been recorded. Total 14 suitable populations of *H. binata* has been selected from Khandwa, Burhanpur,Barwah and West Chhindwara forest divisions of Madhya Pradesh for collection of seeds, wood samples and regeneration study.

Evaluation of accessions of *Withania somnifera* (L.) Dunal (Ashwagandha) collected across India for varietal development.

Achievments:

Project initiated in the month of January, 2023. Permission letters regarding survey and selection of superior accessions have been sent to the PCCFs, Madhya Pradesh, Chhattisgarh and Maharashtra.

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 (in table as given at 2.1.1.1)
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 (in table as given at 2.1.1.1)
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

2.6.1.1 Projects under the Theme (in table as given at 2.1.1.1)

Projects	Completed Projects	Ongoing Projects	New Projects Initiated During the Year
Plan	--	02	--
Externally Aided	02	05	--

2.6.2 Resource Development of NWFPs
2.6.3 Sustainable Harvesting and Management

Selection of CPTs, standardization of collection practices and quality evaluation of Gum karaya (*Sterculia urens*) in Chhattisgarh state.

Achievmenets:

Rich pockets of *Sterculia urens*were identified in 03 different agroclimatic regions of Chhattisgarh state and CPTs were selected.Sustainable harvesting techniqueby semi-arc method for extraction of gum Karaya was standardized. Observations showed the yield of gum is directly proportional to the girth of the tree and increases with increasing number of blazes on trees. Effect of different concentrations of ethephon was studied and found more gum yield with ethephon. A validated HPTLC Method was developed for quantitative evaluation of glucuronic acid in gum samples which can be used to quality standardization of gum Karaya along with BIS parameters such as pH, viscosity, volatile matter, ash and foreign matter. Quality of gum samples collected from Kanker area was found superior in terms of viscosity (938±241 m. pass.).

Fig. 34Training programme on sustainable harvesting of gum Kayara (*Sterculia urens*) in Bijapur Forest division(C.G.)

Investigations on active chemical ingredients and propagation of critically endangered species *Dilleniapentagyna*Roxb. for its conservation in Madhya Pradesh.

Achievments:

Populations of critically endangered *Dillenia pentagyna* Roxb. were identified in 07 forest divisions (South Balaghat, Panna, East &Chhindwara, Alirajpur, North Balaghat& Sagar) of Madhya Pradesh. Morphological data were recorded. Total secondary metabolites i.e.alkaloids, flavonoids, phenols, tannin & terpenoids were estimated in stem and root bark of the species.Total alkaloid, flavonoid, phenol, tannin and terpenoid contents in root bark samples varied from 0.87±0.20 - 3.06±0.11

mg CE/g, 8.01±0.09- 15.83±0.01 mg QE/g, 44.34±0.12 - 64.14±0.25 mg GAE/g, 4.54±0.15 - 12.04±0.4 mg TAE/g, 8.48±0.12 - 9.92±0.03 (%) and 1.33±0.07 - 4.13±0.22 mg CE/g, 7.63±0.21 - 18.56±0.01 mg QE/g,48.74±0.22 - 68.3±0.18 mg GAE/g, 2.70±0.06 - 7.61±0.17 mg TAE/g, 8.61±0.07 - 9.96±0.05 (%),respectively.Variations in active chemical ingredients i.e. betulinic acid, β-sitosterol and lupeol in fruits, leaves, root, and stem bark of *D. pentagyna* were also studied.Experiments for vegetative propagation revealed 44% rooting with IBA 250 ppm + BA 50 ppm (2hr).

Fig. 35Adventitious rooting in *Dillenia pentagyna*

Investigation on variations and domestication of *Curculigo orchioides* Gaertn. (*Kali Musli*) in Madhya Pradesh.

Achievement:

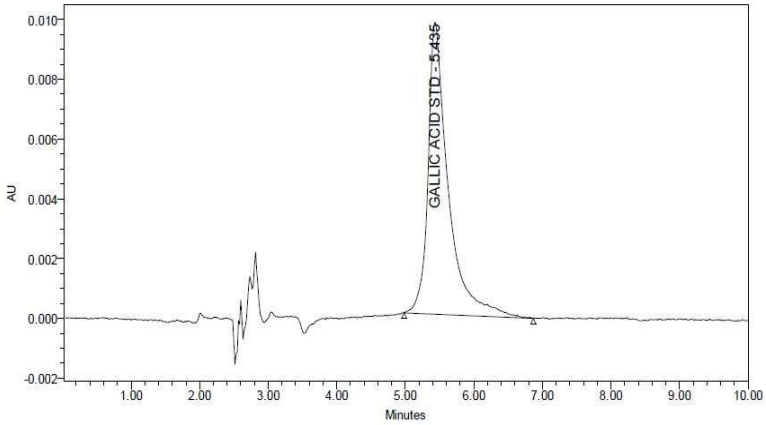
Tubers of *Curculigo orchioides* Gaertn. (*Kali Musli*) were collected from 11 MPCAs (Medicinal Plants Conservation Areas) of Madhya Pradesh and morphological data (rhizome length, rhizome thickness, number of rootlets, length of rootlets and rootlet thickness) were recorded. Tubers were screened for Curculigoside content through HPLC which showed the tubers of Budhni, Sehore (M.P.) with high curculigoside content.The results of germination indicatedthat the apical buds of tubers had the highest germination percentage than the segment and disc. *C. orchoides* is a shade loving crop, the experiments were laid out under three shade levels (0, 50 &75%) by applying 20 ton/ hec FYM and 3 ton/ hec poultry manure to study the growth performance of the tubers.

Fig. 36Growth of apical bud of *C. orchoides*

Identification of prominent locations and best populations of *Terminalia chebula* (Harra) and *Anogeissus latifolia* (Dhawda) in Madhya Pradesh in terms of their active chemical ingredients.

Achievement:

Fruits of *Terminalia chebula* (Harra) were collected from 03 ranges of Uamriya, Chhatarpur and Katni forest divisions. Morphological data (length, width and weight) of Harra fruits were recorded. Harra fruits were processed to make "*Kachariya*" and powdered andanalysed for total tannin content and gallic acid. Among the fruits of 44 locations studied so far, the highest content of gallic acid (2.26±0.18%) was found in the fruit samples of Kanhiwada range of South Seoni forest division.



	Peak Name	RT	Area	% Area	Height
1	GALLIC ACID STD	5.435	199078	100.00	9775

Fig. 37HPLC chromatogram for gallic acid

Fig. 38Measurement of fruits of *T. chebula*

Fig. 39*Kacharia* of *T. chebula* fruits

Standardize hydroponic systems suitable for cultivation of medicianl plants under soil less condition with species -*Bacopa monnieri, Centella asiatica, Acorus calamus* and *Stevia rebaudiana.*

Achievements:

Established indoor and outdoor hydroponic systems.- Wick, Nutrient film, Deep Merge technique, with different potting media and established with targeted species *B. monnieri,C. asiatica, A. calamus* and *S. rebaudiana.* Prepared different nutrient solutions with macro and micro nutrients utilizing inorganic salts and organic substrates at controlled pH and EC.

Recorded growth – root, shoot and number of leaves of *B. monnieri, C.asiatica, A.calamus* and *S. rebaudiana.* Established in different hydroponic systems in outdoor and indoor conditions.The growth (height/length) of *B. monnieri, C. asiatica, A. calamus* and *S. rebaudiana*varied from 2 to 12 cm (vertical) and 0.0-40 cm (horizontal), 4 to 75 cm, 17.5 to 40 cm, and 23 to 50 cm, while number of leaves varied 3 to 20, 150 to 680, 32 to 140, 5 to 7 leaves, respectively in different hydroponic systems and nutrient solutions. Variation was also observed in thickness of *B. monnieri* (0.26-0.59 mm), *C.asiatica* (0.23-0.31mm), *S. rebaudiana* (0.25-0.36) leaves and *A. calamus* rhizomes thickness varied 5.38- 9.38 mm. Ethanol extractives and total phenolic contents in different species grown in different system were varied 0.9 to 3.8% and 1.1 to 5.2%, respectively.

Fig. 40*Acorus calamus* In NFT oprn

Fig. 41*Bacopa monnieri Growth in NFT system*

Fig. 42Hydroponics systems established at ICFRE- TFRI,Jabalpur

Conservation of *Stereospermumsuaveolens* – A rare species in Madhya Pradesh.

Achievements:

The variation for 'Triacontanol', achemical marker compound in root bark samples as well as for morphological traits in populations of *S. suaveolens* were assessed from the central Indian state. Theresults indicated a high variation not only in chemical (Triacontanol) content, but also in morphological features. Rootbark collected from the Khandwa Forest division of the Nimar valley region was found to contain the highest amount oftriacontanol (0.545 ± 0.03%). Assessment of morphometric variation revealed that *S. suaveolens* have a highlevel of morphometric variation for tree height, girth at breast height, clear bole height, crown diameter, number of primarybranches, and leaf area. Correlation analysis revealed a significant positive association of triacontanol with tree height, girthat breast height, and clear bole height. Germplasm bank of *S. suaveolens* was also established.

Fig. 43 Germplasm bank of *S. suaveolens*

Impact Assessment of *Lantana camara* removal in Chhattisgarh State.

State Forest Department of Chhattisgarh employed manual and mechanical grubbing process to remove *Lantana camara* from infested forests. To assess the impact of *Lantana camara* removal operation, local biodiversity, regeneration status, soil physical and chemical status, soil micro fauna, NTFPs/medicinal plants and soil seed bank status were assessed in three forest divisions *viz.,* Balrampur (Northern Hilly zone), Marwahi (Chhattisgarh plains zone) and Bastar (Bastar Plateau zone).

It is observed that *Lantana* eradication created a positive impact on regeneration of native trees, shrubs and medicinal plant on site and improve soil microbial dynamics and soil P status.

Fig. 44 Observation on Phosphate solubilizing bacteria (A halo around the colony depicts solubilization)

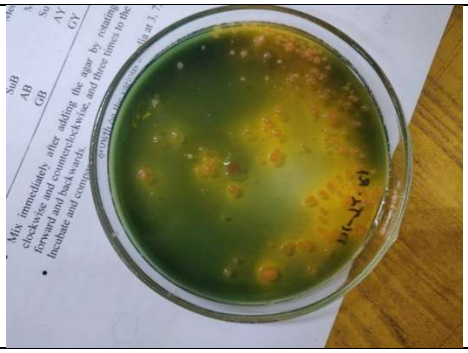


Fig. 45 Free living nitrogen fixing bacteria (Yellowing of the green color dye in the medium depicts their presence)

Fig. 46 Method of *Lantana camara* removal – 'Manual Grubbing' followed by Chhattisgarh SFD

2.6.4 Chemistry of NWFPs, Value Addition and Utilization

2.6.5 Biofuels and Bioenergy

2.7 Forest Protection

2.7.1 Overview

2.7.1.1 Projects under the Theme (in table as given at 2.1.1.1)

Projects	Completed Projects	Ongoing Projects	New Projects Initiated During the Year
Plan	-	-	-
Externally Aided	-	-	-

2.7.2 Insects pests, diseases and control
2.7.3 Mycorrhizae, rhizobia and other useful microbes
2.7.4 Weeds and Invasive species
2.7.5 Forest Fire and Grazing

Estimation of economic losses in real terms on a per-hectare basis due to forest fires in Uttarakhand & Madhya Pradesh.

Achievements:

Quantified losses in all the five carbon pools in tropical moist deciduous forests and tropical dry deciduous forests of Madhya Pradesh due to forest fire and converted the losses in monetary values. In tropical moist deciduous forests, the loss in five carbon pools due to forest fire were calculated to be 5.04 t/ha (Range - 0.68 to 7.39 t/ha), the monetary value of which is Rs. 18636 per ha (Range – Rs. 2514 to Rs. 27326 per ha). However, when the losses were classified into low, moderate and severely burnt classes these were calculated as Rs. 17329 (Range - 2514-27326), Rs. 19489 (Range - 12572-26401) and Rs. 21354 (Range - 19376-23332) per ha, respectively. Similarly, in tropical dry deciduous forest, the loss in five carbon pools due to forest fire were calculated to be 3.85 t/ha (Range - 0.29 to 19.70 t/ha) having the monetary value of Rs. 14236 per ha (Range – Rs. 1109 - 72918 per ha). However, the loss in different forest fire severity classes was calculated to be Rs. 7977 (Range - 1109-59754), Rs. 16276 (Rs. 5362-55761) and Rs. 20670 (Range - 2884-72918) per hectare, respectively for low, moderate and severely burnt classes.

Fig. 47 Soil sample collection for Bulk density

Fig. 48 Sample collection in a quadrat

3.	Education Vistas/Activities

3.1 FRI University (Applicable for FRI, Dehradun only)

--

3.2 **HRD Trainings Organized** : Topics must be indicated in annexure while providing numerical information in the table given below:

Note: Please indicate in numerals i.e. 1, 2, 3…n only. Please DO NOT write one week, six months etc.

No. of Trainings	Duration (in days)	No. of participants
--	--	--

Please provide details of HRD trainings in the given format as annexure - 6 (HRD Trainings)

3.3 Visits Abroad- NIL

3.4 Participation in Seminars/Symposia/Workshops/Trainings

No ofSeminars/Symposia/ Workshops/Trainings	Duration (in days)	No. of participants
141	304	1063

Please provide details in the given format as annexure-7 (participation in Workshops etc.)

4.	Extension Panorama/Activities

- **National Forest Library and Information Centre**(NFLIC) (Applicable for FRI, Dehradun only)
- Environmental Information System (ENVIS) (Applicable for FRI, Dehradun & IFGTB, Coimbatore only)

4.1. Trainings Organized : Topics must be indicated in text while providing information in the table given below:

No. of Trainings	Duration (in days)	No. of participants
a. Trainings under VVK		
03	03	195
b. Trainings under DV		
01	03	15
c. Trainings under GSDP		
	Nil	
d. Other trainings (excluding HRD trainings)		
20	49	645
Grand Total	Grand Total	Grand Total
24	55	855

Note: Please indicate in numerals i.e. 1, 2, 3…n only. Please DO NOT write one week, six months etc.

✯ ***Please provide details of trainings in the given format as annexure -6 (A) (Extension Trainings)***

4.2 Report on the activities performed under following:

4.2.1 Van Vigyan Kendras (VVKs)

4.2.2 Demo Village (DV)

4.2.3 Tree Growers Mela (TGM)

Institute	Participated/organized	Duration	Place
FRCSD, Chhindwara a center of TFRI	Participated in 5th Aadi Utsav 2022 (Tribal Fair) organized on 7-8th May 2022 by Ministry of Tribal Affairs.	07-05-2022 to 8-05-2022	Ram Nagar, Mandla (M.P.)

4.2.4 Prakriti

Sl. No.	Topic	Duration	No. of participants	Beneficiaries
1	Dr. Nanita Berry Scientist-F and Shri Manish Kumar Vijay, Scientist-B Coordinated Prakriti program organized for the student of Navodaya Vidhyalaya, Jabalpur	1 day 29-08-2022	57	Students

4.3 **Technologies transferred**- *A brief write up with suitable photographs on* ***Efforts made on extension /commercialization****of the following:*

4.3.1. Clones/Varieties released (species wise)

4.3.2. Packages of practices developed (species wise)

4.3.3. Products developed

4.3.4. QPM produced and supplied to stakeholders (species wise)

QPM of different species of Bamboo *viz*., *Bambusabalcooa*, *B. bambos*, *Bambusa nutans, B. tulda, B. vulgaris* var. green, *B. vulgaris* var. yellow, *B. burmanica*, *Dendrocalamusstrictus*, *D. longispathus*, Teak (*Tectona grandis*) and Shisham (*Dalbergia latifolia*) supplied to stakeholders and private growers. 1100 plants of Maida chaal (*Litseaglutinosa*) supplied to Maharashtra State Bamboo Development Board, Nagpur.

4.3.5. Patented technologies

4.3.5. License/Material Transfer Agreement signed-

Please provide details in the given format as annexure -11 (MTA details)

A total of 200 plants produced from four selected superior clumps were supplied to Maharashtra Forest Department (Social Forestry) under the approved rates through Material Transfer Agreement. Revenue of Rs. 2.00 lakhs were generated through these transactions.

4.4 Intellectual Property - Patents Granted/Applied (during the year), any other information regarding IP

4.4.1 Patents granted/ applied for

4.4.2 Others

4.5 Research Publications: Please provide information in the table given below (Numbers only):

Books	Booklets/ Brochure/ Bulletins/ Phamphlets	Article in Seminars/ Conferences/ Workshops etc.		Popular Article	Research Papers in Journals		Chapters in Books/ Proceedings
		Articles	Abstracts		Foreign	Indian	
02	**07 Leaflets/ 02 manuals**	**-**	**26**	**49**	**07**	**36**	**08**

Note – List of books along with photograph of cover page are to be submitted separately.

Please provide a list (with subheads as in 4.5 above) of all the publications (in the manner of enlisting references as followed in the Indian Forester) including impact factor (in case of research papers only) as annexure -10 (publications)

4.6 Seminars/Symposia/Workshops Organized

No. of Seminars/Symposia/ Workshops/ meetings organized	No. of days	No. of participants
11	**14**	**578**

Please provide details in the given format as annexure -8 (seminars etc. organized)

4.6.1 Awareness /Demonstration programmes organized

No. of Awareness/ Demonstration programmes organized	No. of days	No. of participants
23	**32**	**924**

Please provide details in the given format as annexure -9 (seminars etc. organized)

4.6.2 Consultancies

S.No	Consultancy	User agency
1.	Implementable forestry research for ash utilization promotion and development of research park at APML, Gondia	Adani Power Maharashtra Limited (APML), Maharashtra
2.	Pilot study on Raising short rotation forestry crops for intermittent periods at Dubna-Sakradhi Iron and	Odisha Mining Corporation Limited (OMCL), Odisha

	manganese ore mines in Keonjhar district of Odisha".	
3.	Wildlife Conservation Plan for endangered species found in and around the Dhelwadih UG, Bagdeva UG and Singhali UG mines of DSB Sub Area of SECL, Korba Area	South Eastern Coalfields Limited (SECL)

4.7 Technical Services

4.7.1 Identification and testing services

- Soil samples of Mandla Forest Division, Madhya Pradeshwas analyzed for pH, Electrical conductivity, Organic carbon and Macro nutrients.
- Water samples brought by School childrens of Govt. Higher secondary school, Kanhwara,Katni was analyzed for pH, Electrical conductivity, and Heavy metals.
- Extended HPTLC based testing services to students of NDVSU, Jabalpur and generated revenue of Rs. 7000/-

4.7.2 Advisories given to SFDs and other stakeholders

4.7.3 Other technical services not covered elsewhere in the report

1. Concluded five years monitoring of NTPC accelerated plantations in 107 land parcels of Madhya Pradesh and Maharashtra through 372 permanents and 212 temporary quadrats. In M.P., the average survival percentage of saplings was found to be 83.52%, while in Maharashtra it was 78.42% after five years of plantation.
2. Conducted floral and faunal survey for the pre-monsoon season in opencast coal mines of WCL at Umrer and Niljay, Nagpur.
3. Attended field enquiry and provided scientific advisories to forest officials, nursery staffs regarding production of pests and diseases free Teak seedlings at Oberi forest nursery, Sidhi Forest Division, (MPRVVNL) M.P.

4.8 Activities of Rajbhasha

भा.वा.अ.शि.प.-उष्णकटिबंधीय वन अनुसंधान संस्थान, (टी.एफ.आर.आई) जबलपुर में व 2022-23 दौरान संचालित राजभाषा गतिविधियां

उष्णकटिबंधीय वन अनुसंधान संस्थान, (उ.व.अ.स.) जबलपुर में निदेशक के पर्यवेक्षण में संघ की राजभाषा नीति का अनुपालन सुनिश्चित किया गया, इस दौरान, निदेशक की अध्यक्षता में प्रत्येक तिमाही में राजभाषा कार्यान्वयन समिति की तिमाही बैठकें तय समयावधि में आयोजित की गई एवं बैठकों में उपस्थित सदस्य अधिकारी वर्ग को 'संघ का राजकीय कार्य हिन्दी में करने के लिए राजभाषा विभाग, गृह मंत्रालय, भारत सरकार, नई दिल्ली द्वारा जारी एवं सहायक महानिदेशक (मीडिया एवं विस्तार), विस्तार निदेशालय, भारतीय वानिकी अनुसंधान एवं शिक्षा परिषद् देहरादून द्वारा संसूचित किया गया राजभाषा विभाग का वार्षिक कार्यक्रम में उल्लेखित बिन्दुओं से अवगत कराते हुए इस संस्थान के अधिकार क्षेत्र में आने वाले संबंधित बिन्दुओं पर हस्ताक्षरकर्ता अधिकारी एवं पदाधिकारी वर्ग द्वारा सतर्कता से अमल किया गया।

14 सितंबर 2022 को राजभाषा विभाग द्वारा जारी माननीय गृह मंत्री एवं सहकारित मंत्री का हिन्दी दिवस-2022 पर जारी संदेश का श्रीमती नीलू सिंह, समूह समन्वयक (अनुंसधान) द्वारा संस्थान के प्रशासनिक भवन के प्रांगण में

सामूहिक रूप से वाचन किया गया।

14-29 सितंबर, 2022 तक हिन्दी पखवाड़े का अयोजन किया गया जिस दौरान संस्थान में कार्यरत पदाधिकारियों एवं शोधछात्रो के लिए राजभाषा हिन्दी की विविध प्रतियोगिताएं जैसे कि- वैज्ञानिक तथा तकनीकी शब्दावली का हिन्दी ज्ञान, प्रशासनिक शब्दावली, टिप्पण एवं आलेखन, हिन्दी भाषण, हिन्दी निबंध, हिन्दी में देशभक्ति गीत, एवं हिन्दी में स्वरचित काव्य पाठ की प्रतियोगिताएं आयोजित कर सफल प्रतियोगियों को उचित पुरस्कार प्रदान कर प्रोत्साहित किया गया।

इस दौरान, पदाधिकारी वर्ग द्वारा राजभाषा अधिनियम 1963 यथा संशोधित 1967 की धारा 3(3), राजभाषा नियम, 1976 के नियम 5 का अनुपालन सुनिश्चित किया गया और 'क' 'ख' क्षेत्र स्थित केन्द्र एवं राज्य सरकार के कार्यालयों के साथ हिन्दी में तथा 'ग' क्षेत्र स्थित केन्द्र सरकार के कार्यालयों के साथ हिन्दी-अंग्रेजी अर्थात् द्विभाषी रूप में पत्राचार कर हिन्दी पत्राचर के निर्धारित लक्ष्य को हासिल करने के साथ-साथ संस्थान के शासकीय काम-काज हेतु प्रयोग में रखी हुई प्रचलित फाईलों में मूल हिन्दी में टिप्पणियां लिखकर हिन्दी टिप्पणियां लिखने का निर्धारित लक्ष्य भी हासिल किया गया। यह संस्थान, जबलपुर स्थित नगर राजभाषा कार्यान्वयन समिति कार्यालय-02 का सदस्य कार्यालय है, इस संस्थान द्वारा राजभाषा कार्यान्वयन कार्य में किये गये उत्कृष्ठ कार्य के लिए नगर राजभाषा कार्यान्वयन समिति द्वारा प्रशिस्ति-पत्र प्रदान कर सम्मनित किया गया।

इस दौरान, संस्थान में सेवारत पदाधिकारी वर्ग में अपने संस्थान के नेमी शासकीय कामकाज में राजभाषा हिन्दी का प्रगामी प्रयोग अधिकाधिक बढ़ाने के वर्तमान उत्साहवर्धक वातावरण को बनाये रखने की दृष्टि से प्रत्येक तिमाही में पदाधिकारी वर्ग के लिए निदेशक की अध्यक्षता में श्री विजयकुमार डी. काम्बले, सहायक निदेशक (रा.भा.) द्वारा हिन्दी कार्यशालाओं का आयोजन किया गया।

In the Tropical Forest Research Institute, (TFRI) Jabalpur, under the supervision of the Director, the compliance of the official language policy of the Union was ensured. During this, quarterly meetings of the Official Language Implementation Committee were organized in every quarter under the chairmanship of the Director. And issued by the Department of Official Language, Ministry of Home Affairs, Government of India, New Delhi and Assistant Director General (Media and Extension), Directorate of Extension, Indian Council of Forestry Research and Education, Dehradun Communicated by informing about the points mentioned in the annual program of the Department of Official Language The related points coming under the jurisdiction of this institute were carefully implemented by the signatory officer and office bearers.

On September 14, 2022, the message issued by the Department of Official Language of the Honorable Home Minister and Cooperative Minister on Hindi Day-2022 was collectively read out by Smt. Neelu Singh, Group Coordinator (Research) in the premises of the Institute's administrative building.

Hindi fortnight was organized from September 14-29, 2022, during which various competitions of official language Hindi were held for the officials and research scholars working in the institute, such as Hindi knowledge of scientific and technical terminology, administrative terminology, noting and drafting, Hindi speech, Hindi Essay, patriotic songs in Hindi and self-composed poetry recitation competitions were organized and the successful contestants were encouraged by giving appropriate prizes.

During this period, compliance of Section 3(3) of the Official Language Act 1963 as amended in 1967, Rule 5 of the Official Language Rules, 1976 was ensured by the office bearers and the Central and State Government offices located in the 'A' 'B' Region were in Hindi and to achieve the set target of Hindi correspondence by conducting correspondence in Hindi-English i.e. bilingual form with the Central Government offices located in 'C' region. The prescribed target of writing noting in Hindi was also

achieved by writing comments in the original Hindi in the existing files kept in use for the official work of the Institute. This institute is a member office of City Official Language Implementation Committee Office-02 located at Jabalpur, this institute was felicitated by the City Official Language Implementation Committee by awarding a certificate for the excellent work done in official language implementation work.

During this period, with a view to maintain the present encouraging environment for increasing the progressive use of official language Hindi in the regular official work of the Institute, in every quarter under the chairmanship of the Director, Shri. Vijaykumar D. Kamble, for the office bearers, Hindi workshops were organized by the Assistant Director (OL)

Fig. 49हिन्दीदिवसपरराजभाषाविभागद्वारजारीमाननीयगृहमंत्रीजीकेसंदेशकावाचनकरतेहुएश्रीमतीनीलूसिंह, समूहसमन्वयक (अनुंसधान) उ.व.अ.सं., जबलपुर

Fig. 50हिन्दीपखवाड़ासमापनसमारोहकोसंबोधितकरतेहुएनिदेशक

Fig. 51उ.व.अ.सं.,
जबलपुरद्वाराराजभाषाहिन्दीकेकार्यान्वयकार्यमेंउत्कृष्ठकार्यकियेजानेआधारपरनगरराजभाषाकार्यान्वयनसमिति,जबलपुर द्वाराप्रदानकियेप्रशस्तिपत्रस्वीकारकरतेहुएश्रीमतीनीलूसिंह, समूहसमन्वयक (अनुसंधान)

Fig. 52उ.व.अ.सं.,जबलपुरमेंआयोजितराजभाषाकार्यान्वयनसमितिकीबैठकसंबोधितकरतेहुएडॉ. नितिनकुलकर्णी, निदेशक

4.9 Awards and Honours

1. Dr. Mohan C, Sci- B, conferred "**H.S. Pruthi Award in the field of Entomology**" during International Conference on "Global initiatives in Research, Innovation and Sustainable Development of Agriculture and allied Sciences" held during 06- 08 June, 2022 (Virtual mode), Guru Kashi University, Talwandi, Punjab.
2. Dr. Mohan C, Sci- B awarded "**Best oral Presentation Award** in National Virtual Conference on Post-Harvest Management under the theme I- Technologies for reducing post-harvest loss, held at NIFTEM, Thanjavur, Tamil Nadu.
3. Dr. Mohan C., Scientist -B,conferred **"Best Article Award**" for article ID No. 38037 entitled Occurrence of Mealybug infestation in Ber (*Ziziphus mauritana*) and their management which got published in Food e Newsletter, Volume 04, issue 09.
4. Manish Kumar Vijay, Scientist "B" received **'Best Oral Presentation Award'** in the 1st"National Conference on Plant Genetic Resources Management" held at National Agriculture Science

Centre (NASC), Pusa Campus, New Delhi organized by ISPGR, ICAR, NBPGR, CIAT, TAAS and PPVFRA.

5. Shri. Ajin Sekhar, Scientist -B received "**Young Scientist award**" for the year 2021 of the "Society for Science of Climate Change and Sustainable Environment (SSCE)"on 10 December, 2022.
6. Shri. Rathod Digvijay, Scientist -B received the **Best Poste**r Presentation award in the 3rd International Weed Conference (IWC) 2022 on "Local adaptations and seed production rate of *Lantana camara* in the tropical forests area".
7. Dr. Jangam Deepika, Scientist -B received "**Young Researcher in soil science award**" for the contribution and achievement in the discipline of agricultural Sciences during Venus International Research Awards 2023 organized by Venus international foundation on 07 January 2023.
8. Dr. Hari Om Saxena, Scientist-E, Ms. Samiksha Parihar, JPF and Shri Ganesh Pawar, Sr. Technician of SFM & AF Division received **Dr. P.D. Sethi Memorial Annual National Award - 2021** (2nd Prize) on dated 25/11/2022 for best research paper entitled "Simultaneous determination of betulinic acid, β-sitosterol and lupeol in fruits, leaves, root and stem bark of *Dilleniapentagyna*Roxb. by a validated high-performance thin-layer chromatography method" on Application of TLC/ HPTLC in pharma, herbal and other chemical analysis.
9. Dr. Hari Om Saxena, Scientist-E received **best paper presentation award** under the Theme – Documentation, Validation, and Standardization of Herbal formulations in the "National Seminar on Securing Human Health through use of Medicinal Plants" held on 03-04, September, 2022 organized by Minor Forest Produce Processing and Research Center (MFP-PARC) sponsored by MP State Minor Forest Produce (T&D) Cooperative Federation Limited, Bhopal (M.P.).

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

1. Celebrated "International Day for Biological Diversity" with the theme "Building a shared future for all life" on 22 May 2022.
   No. of participants: 40; Beneficiaries: Research scholars, Scientists, technical staff
2. Celebrated "World Environment Day" on 05 June 2022 with the theme "Only One Earth".
   No. of participants: 150; Beneficiaries: Research scholars, Scientists, technical staff
3. Under "Azadi Ka AmritMahostav (AKAM)" FE&CC Division organized "Awareness among farmers on nature based solution to combat desertification and Drought" near Chambal ravines of Morena, M.P. on 24- 25 July 2022
   No. of participants: 15; Beneficiaries: Farmers of Morena
4. Under "Azadi Ka Amrit Mahostav (AKAM)" FE&CC Division organized "Green trail visit for bird Watching" on 23 July 2022.
   No. of participants: 25; Beneficiaries: Scientists and project fellows and dissertation candidates
5. Under "Azadi Ka Amrit Mahostav (AKAM)" FE&CC Division organized "Visit of school children to botanical garden" on 29 July, 2022
   No. of participants: 25; Beneficiaries: Students of KV, TFRI
6. Under "Azadi Ka Amrit Mahostav (AKAM)" FE&CC Division organized a visit to Kosam Ghat to list out riparian flora on 03 August 2022.
   No. of participants: 25; Beneficiaries: Scientists and project fellows
7. Conducted "Best out of waste competition for environmental amelioration among women and project fellows" on 11 November 2022 with the theme "Empowerment of women and children" under Azadi Ka Amrit Mahostav.
   No. of participants: 20; Beneficiaries: Research scholars, Scientists, technical staff

8. Organized a programme on "Creating awareness on recognition of natural resources linked to rural livelihoods in Chambal ravines" on 05December 2022 under the theme "Sustainable development under the concept of LiFE" as a part of Azadi ka Amrit Mahotsav.
   No. of participants: 20; Beneficiaries: Farmers
9. FE&CC Division organized a programme on "Healthy Soils: The foundation of healthy food and better environment " on 05December 2022 under the theme "Sustainable development under the concept of LiFE" as a part of Azadi ka Amrit Mahotsav.
   No. of participants: 45; Beneficiaries: Professors, students, Research scholars, and farmers.
10. Organized a programme "Awareness on the global initiative of Lifestyle for the Environment (LiFE) Movement" for the school students of Kendriya Vidyalaya, TFRI on 09December 2022 under the theme "Sustainable development under the concept of LiFE" as a part of Azadi ka Amrit Mahotsav.
    No. of participants: 45; Beneficiaries: Students of KV, TFRI
11. Organized a programme on "Interaction with farmers regarding emphasis on plantation of trees and its impact on climate change" on 25December 2022 under the theme "Sustainable development under the concept of LiFE" as a part of Azadi ka Amrit Mahotsav.
    No. of participants: 30; Beneficiaries: Villagers of Chhindwara
12. Conducted "Awareness Programme on Start Biodiversity Conservation at Community Level" with the theme "Healthy Lifestyles Adopted" under "Mission LIFE" on 02 March 2023.
    No. of participants: 25; Beneficiaries:Villagers

Radio Talk: 02

1. Dr. Nanita Berry, Scientist F and Head, Forest Extension division delivered a talk on 'BaansAdharitkrishivanikipaddhatidwaraaayutpadan' on 21st October, 2022 at AIR, Jabalpur (MP**).**
2. Manish Kumar Vijay Scientist "B" a talk" वृक्षारोपणऔरवनविकासकेलिएबीजभण्डारणतकनीक"on 17th Nov 2022. Broadcasted on 25/11/2022.

Other activities carriedout by the Institute :

- TFRI, Jabalpur and FRC-SD, Chhindwara celebrated "World Earth Day" on 22 April 2022
- TFRI, celebrated "Mass Yoga " on 6th May 2022 as pre-preparation of 8thInternational Yoga Day 2022
- TFRI, Jabalpur observed "Anti-Terrorism Day**"** on 20 May 2022.
- FRCSD, Chhindwara celebrated "International Biodiversity Day" on 22.5.2022 and conducted field visit for the 10th& 11 th students of Jawahar Navodaya Vidyalay, Singodi, Chhindwara. 74 students participated in the aforesaid Programmeto create awareness towards protection of Mother Earth**,** SingodiChhindwara.
- TFRI Jabalpur& FRC-SD Chhindwara celebrated "**World Environment day**" on 05 June 2022
- **8th International Yoga Day** was celebrated at TFRI and FRC-SD, Chhindwara on 21.06.2022
- Plantation was carried out in TFRI, Jabalpur on celebration of **Van Mahotsav** on 15/07/2022.
- TFRI, Jabalpur and FRC-SD, Chhindwara celebrated **Independence Day, 2022**.
- TFRI observed **Parthenium Awareness Week** from 16th to 22nd August, 2022.
- **Fit India Run 3.0** Celebrated on 21 Oct 2022
- TFRI Conducted **Vigilance Awreness Week** Programme on 03th Nov 2022 with the theme "Corruption Free India for A Developed Nation".
- **National Unity Day** Celebrated on 31st oct 2022
- **Rashtriya Ekta Divas Pledge**" was conducted by FRCSD, Chhindwara on 31.10.2022.
- FRC-SD, Chhindwaracelebrated an event on **Women Empowerment** under AKAM activies on 3 rd Nov 2022.

- ❖ Tropical Forest Research Institute, Jabalpur celebrated the Birth Anniversary of Birsa Munda on 15.11.2022 at Rani Durgawati Samadhi Sthal, Gram Narrai, Jabalpur, Madhya Pradesh.
- ❖ Constitution Day Celebration on 26 Nov. 2022
- ❖ Cleanliness activities conducted at FRC-SD Chhindwaraon 30-11-2022
- ❖ Plantation of 75 species" under the scheme of Sustainable Development in Life. (Azadi ka Amrit Mahotysav) on 02 Jan 2023
- ❖ TFRI, Jabalpur and FRC-SD, Chhindwara celebrated Republic Day, 2023.
- ❖ Swatchhata Abhiyan was conducted by the FRC-SD Centre on 12.01.2023.
- ❖ Swatchhata Abhiyan was conducted by the ICFRE-TFRI on 10-02-2023.
- ❖ Awareness Programme on Participate in and mobilize participation for clean-up drives of cities and water bodies. on 14-03-2023
- ❖ Painting competition organized during the celebration of **International Day of Forests on 21 March 2023.**
- ❖ Training Programme on Plant medicinal plants such as neem tulsi, giloy, mint, curry leaves, ashwagandha, etc. within household premises at Pindrai High schoolVillage on 27- 03 -2023.

4.11 **Extension Activities performed under CAMPA Extension** (this information is different from the information provided in the Chapter as above)- NIL

5.	**Administration and Information Technology**

Introduction

5.1 Information Technology

- The institute has 100 MBPS NKN link provided under the National Knowledge Network (NKN) scheme of NIC project. The NKN comprises an ultra-high speed CORE (multiples of 10 Gbps), complimented with a distribution layer at appropriate speeds to support Overlay, Dedicated and Virtual Networks.
- The institute has a 100 MBPS fast Ethernet fiber optic backbone LAN, which is used for Internet access and other online activity. Video Conferencing facility also been used throughout the year.
- The local area network has been extended to 10 new locations at Vehicle section, Insectary building and Extension building of the institute.
- Non-functional uplink between Genetics wing to Old Building has been replaced with OFC along with fiber modules.
- Two non-functional manageable 48 port switches have been installed at Genetics and Old building wing have been checked and replaced with new one under warranty period for around the clock network connectivity.
- Under IFRIS project, Personal Information Management System (PIMS) has been in operation successfully.
- Material prepared for Hindi version of Institutes website and after development and security audit at ICFRE level the same has been published over ICFRE server.
- The web pages of institute's website both English (http://tfri.icfre.org) and Hindi (http://tfrihindi.icfre.org) version have been updated on regular basis and also for the institute's online open access e-magazine 'Van Sangyan' (ISSN 2395 - 468X), institute's journal "Indian Journal of Tropical Biodiversity" linked with institute's web site on regular basis and issues have been uploaded on monthly basis over it for easy access to the users.
- You Tube account for wide circulation of institute's activities has been uploaded the videos on regular basis throughout the year. The account is also integrated with institutes' web site.
- The social media accounts like Facebook, Instagram, Koo, and Twitter are also integrated with institutes' web site for ease of access.

- The web site of institute's satellite centre, Forest Research Centre for Skill Development (FRCSD), Chhindwara) has been designed in new format and published over ICFRE server. The social media accounts like YouTube, Facebook, Twitter, Instagram, Koo have been created and integrated with website for ease of access.
- The website and social media accounts of institute's satellite centra have been updated with latest information on regular basis throughout the year.
- Reports have been generated for all the activities undertaken at the institutes level - conferences/seminars/workshops/trainings/visits of dignitaries/visits etc. are uploaded on institute's web site and also sent to the headquarter for uploading over ICFRE website.
- Various networking facilities extended within the institute. All the circulars, notifications, office orders, proceedings of monthly seminars and other documents have been regularly uploaded over the Online Office Records (Order /MoM / Agenda etc.) System for wider circulation.
- All the virtual meetings have been organized through VC end point, Webex, googlemeet, Zoom, Microsoft Teams for trainings, workshops, seminar, In-house meetings and meetings with headquarter and other organizations throughout the year.

5.2 Administration: A brief note on general administration activities along with information on the following:

5.2.1 Sevottam: Activities relating to the Citizens/Clients Charter as detailed below has to be included in the Annual Report.

5.2.1.1Action taken to formulate the Charter for the Department and its subordinate formation;(**In case the Charter is yet to formulate**)

5.2.1.2 Action taken to implement the Charter;

5.2.1.3 Details of Training Programmes, Workshops, etc. held for proper implementation of Charter;(**this is not the same as provided in chapter no. 4.3 and 4.4. Trainings organized for implementation of charter only is to be given**)

5.2.1.4 Details of publicity efforts made and awareness campaigns organized on Charter for the Citizen/Clients**;(awareness campaigns organized for charter only)**

5.2.1.5 Details of **internal and external<u>evaluation of implementation of Charter</u>** in the Organization and assessment of the level of satisfaction among Citizen/Clients.

5.**3Welfare measures for the SC / ST/ backward / minority communities**

- The interests of the above section are being safeguarded and as per the guidelines of Government of India a Liaison Officer is in position that monitors the promotion / recruitment as per the roster.

5.4 Welfare measures for women

- A internal complaints committee on sexual harassment of women at workplace constituted at this institute.

5.4. HR News

Annexure 1-11 (total 12nos.)

1. Format for information on RTI –Annexure -1

RTI Applications/ Requests	No. of applications received as transfer from other P/As u/s 6(3)	Received during the month (including cases transferred to other Public Authority)	Number of cases transferred to other Public Authorities u/s6(3)	Decisions where requests/ Appeals rejected	Decisions where requests/ Appeals accepted
1st Quarter	-	28	-	-	28
2nd Quarter	-	29	-	-	29
3rd Quarter	-	06	-	-	06
4th Quarter	-	21	-	-	21
Total		**82**			**82**
RTI First Appeals					
1st Quarter	-	01	-	-	01
2nd Quarter	-	01	-	-	01
3rd Quarter	-	00	-	-	00
4th Quarter	-	00	-	-	00
Total		**02**			**02**

2. Format for information on Vigilance Cases -Annexure-2

Information on the vigilance cases						
Sl.No	Vigilance cases carried forward from previous years	Vigilance cases initiated in the year	Vigilance cases disposed	Vigilance cases pending	Nature of such cases	Remarks, if any
NIL						

3. Format for information on Audit Objections- Annexure-3

Information on the Audit objections						
Sl.No	Audit objections carried forward from previous years	Audit objections initiated in the year	Audit objections disposed	Audit objections pending	Nature of Audit objections	Remarks, if any
NIL						

4. Email and postal addresses- Annexure-4

Director
ICFRE- TROPICAL FOREST RESEARCH INSTITUTE
(*Indian Council of Forestry Research & Education*)
P.O. – R.F.R.C, Mandla Road, Jabalpur – 482021 (M.P), India
Phones: 0761 – 4044002, 2840483(O) , Fax: 0761 – 4044002, 2840484
***E-mail* – dir_tfri@icfre.org**

Scientist In-charge,
ICFRE- Centre for Skill Development
(Indian Council of Forestry Research & Education)
Poama, P.O- Kundalikala, Parasia Road, Chhindwara - 480 001 (M.P)
Phones: 07162 – 292061 (O)
e-mail: head_cfrhrd@icfre.org/dir_cfrhrd@rediffmail.com

5. List of abbreviations- Annexure-5

AICRP – All India Coordinated Research Project
AM – Arbuscular Mycorrhiza
AKAM -Azadi Ka Amrit Mahostav
APML – Adani Power Maharashtra Limited
ARS – Agriculture Research Services
BA – Benzyl Adenine
BAF - Basal Area Finder Scope
BIS – Bureau of Indian Standards
CAMPA – Compensatory Afforestation Fund Management and Planning Authority
CCF – Chief Conservator of Forests
CEO- Chief Executive Officer
CG – Chhattisgarh
CGM- Chief General Manager
CPT- Candidate Plus Tree
CRIDA – Central Research Institute for Dry Land Agriculture
CSO – Clonal Seed Orchard
DDM – Deputy Development Manager
DFO – Divisional Forest Officer
DNA –Deoxyribonucleic acid
DPR – Detailed project report
EAP- Externally Aided Project
ESIP – Earth Science Information Partners
ESIP – Ecosystem services improvement project
FGP – Final Germination Percentage
FRCSD – Forest Research Centre for Skill Development
FRI – Forest Research Institute
FSI – Forest Survey of India
GBH – Girth at Breast Height
GIS – Geographical Information System
GPS – Global Positioning System
GRI – Germination Rate Index
GSDP – Green Skill Development Programme
HoFF – Head of Forest Force
HPLC – High Performance Liquid Chromatography
HPTLC – High Performance Thin Layer Chromatography
HRM – Heat Ratio Method
IAA – IndoleAceticAcid
IBA – Indole Butyric Acid
ICAR – Indian Council of Agricultural Research
ICFRE – Indian Council of Forestry Research and Education
IFRIS – Integrated Forest Resource Information System

IFS – Indian Forest Service
IPM – Integrated Pest Management
ISSR- Intra Single Stranded Repeats
JNKVV – Jawaharlal Nehru Krishi Vishwavidyalaya
JNV – Jawahar Navodaya Vidyalaya
KVK – Krishi Vigyan Kendra
MoEF&CC – Ministry of Environment, Forests and Climate Change
MoU – Memorandum of Understanding
MP – Madhya Pradesh
MPCA – Medicinal Plant Conservation Area
MPCST – Madhya Pradesh Council of Science and Technology
MPFDC – Madhya Pradesh Forest Development Corporation
MPSFD – Madhya Pradesh Forest Department
MS – Murashige and Skoog
MS – Maharashtra
NAA – Napthyl Acetic Acid
NABARD – National Bank for Agriculture and Rural Development
NGO – Non Government Organisation
NPC- National Project Coordinator
NTFP – Non-Timber Forest Produce
NTFPs – Non Timber Forest Products
NTPC – National Thermal Power Corporation
NWFP – Non Wood Forest Produce
PCCF – Principal Chief Conservator of Forests
PIMC – Project Implementation and Monitoring Committee
PIO- Public Information Officer
PMS – Payroll Management system
PSB – Phosphate Solubilizing Bacteria
PSP – Permanent Preservation Plots
QPM – Quality Planting Material
RAG – Research Advisory Group
RFRC – Regional Forest Research Centre
RIMS – Research Information System
RSP – Rourkela Steel Plant
RTI – Right to Information
SC – Schedule Caste
SECL – South Eastern Coalfields Limited
SHGs – Self Help Groups
SPA – Seed Production Area
SSO – Seedling Seed Orchard
ST – Schedule Tribe
TFRI – Tropical Forest Research Institute
TOFI – Tree ouside forests of India
TSG – Time Spread of Germination
TSO – Teak Seed Orchards
UNDP-GEF – United Nations Development programme –Global environment facility
VVK – Van Vigyan Kendra

6. Format for details of trainings organized - annexure-6 (HRD Trainings)

Trainings organized						
SN	**Topic**	**Duration and period**		**Participants**		**Overall feedback of Participants**
		Days	**Date**	**Category**	**Numbers**	
NIL						

7. Format for details of trainings organized - annexure-6(A) (Extn. Trainings)

Trainings organized						
S No.	**Topic**	**Duration and period**		**Participants**		**Overall feedback of Participants**
		Days	**Date**	**Category**	**Numbers**	
a. Trainings under VVK						
1.	Agroforestry, Seed Technology and Bio fertilizers	1 day	14 Sept. 2022	Field functionaries of Sukma, Bijapur, Dantewada and Jagdalpurdivisions ofJagdalpur, Forest	60	Good
2.	Agroforestry, Jaivurwarak and nursery technology	1 day	27 Jan 2023	SFDs Officials of Mandla, Dindori, Katni, Jabalpur, Shahpura divisions of Madhya Pradesh	50	Good
3.	Promising Agroforestry Models for Maharashtra	1 day	10 March 2023	SFDs Officials of Maharashtra	85	V. Good
b. Trainings under DV						
1.	Interaction with farmers for establishment of Demo Village in Barbati (25-08-2022), Chhewla (26-08-2022) and Tilhari (31-08-2022).	3 days	25, 26 & 31 Aug. 2022	Farmers	15	
c. Trainings under GSDP						
NIL						
d. Other Trainings (except HRD trainings)						

SN	Topic	Days	Date	Category	Number	Overall feedback of Participants
1.	Bamboo: processing & management"	2 days	05& 06 April2022	Members of Foundation of MSME Cluster, New Delhi and Maharashtra	20	

2	Standard operation procedures for forestry plantation.	1 day	21 April 2022	Odisha Forest Department front line staff	150	Satisfactory
3	Recycling of waste paper'.	1 day	24 May 2022	Students CAMPA Extension	20	
4	'Recycling of waste paper'	1 day	25 May2022	Students CAMPA Extension	16	
5	Field training cum demonstration on "Lac cultivation"	1 day	11 July 2022	IFFDC Farmers	15	
6	Bamboo Handicrafts	4 days	30 August 2022 to 02 Sept. 22	Bamboo artisans under CAMPA Extension	30	
7	Agroforestry and its management	3 days	21 Sept. 2022 to23 Sept. 2022	Assistant Professor, Researcher, NGOs (Collaborative TFRI-MANAGE, Hyderabad)	114	
8	An Online collaborative TFRI-MANAGE, training programme on "Non-Wood Forest Produce and Livelihood Opportunities"	3 days	18 Oct. 2022 to 20 Oct. 2022	Diverse group including Scientist, FPOs, NGOs, Students, KVKs etc.	130	
9	"Agroforestry & its Management for Livelihood Security."	3 days	10 Jan. 2023 to 12 Jan. 2023	IFS Officers of India	14	
10	Training Programme for B.Sc.II year students of Guru Ram Das Khalsa College, Jabalpur	5 days	09 Jan. 2023 to 13 Jan. 2023	B.Sc. Students	05	
11	Nursery Techniques of some important forestry species at Social Forestry Division, Nagpur under VVK, Chhindwara	1 day	13 Jan. 2023	SFD officials	29	
12	Organic farming & Uses under LiFEChhindwara	1 day	17 Jan. 2023	Farmers	21	
13	Awareness cum Training on NTFP processing and Value Addition under VVK, Chhindwara	1 day	18 Jan. 2023	B.Sc (First Year) Students Danielson Degree College, Chhindwara.	40	
14	Training to Newly recruited lower division clerk and Technical Assistant.	5 days	16 Jan. 2023 to 20 Jan. 2023	TFRI newly recruited staff	10	
15	'Harvesting and management of Lac'	1 day	31 Jan. 2023	Beneficiaries of IFFDC, jaitpuri, Bhunia,Kachwaha, Sagar(MP)	35	

16	Instrumentation	5 days	30 Jan. 2023 to 03 Feb. 2023	-	10	
17	Propagation and Nursery Management of Bamboo.	5 days	20 Feb. 2023 to 24 Feb. 2023	-	25	
18	'Method for preparation of Organic Manure" Lifestyle for Environment	1 day	10 March 2023	Farmers, Maniyakhapa, Chhindwara	27	
19	Vegetative Propagation of Forestry Species and High-Tech Nursery Techniques	5 days	20 March2023 to 24 March2023	Forest officials of Chhatisgarh Forest Department	20	
20	Vegetative Propagation of Forestry Species and High-Tech Nursery Techniques	5 days	27 March2023 to 31 March2023	Forest officials of Chhatisgarh Forest Department	14	

Category = Students, farmers, ladies, officers from SFDs, Members of JFMCs etc.

8. Format for details of participation in workshops etc. Annexure-7

Workshops/seminars/symposiam/meetings/training etc. participated in					
SN	**Topic**	**Duration and period**		**Participants from the institute**	
		Days	**Date**	**Category**	**Numbers**
1.	Shri A.K.J. Asaiya Scientist-C and Shri Manish Kumar Vijay, Scientist-B participated in National webinar on "Traditional knowledge and ethnobotany" organized by BSI Kolkata.	1 day	20 April 2022	Scientists	02
2.	Rathor Digvijay Ummedsinh, Scientist-B delivered lecture on" SOPs for forestry species of Odisha" in Virtual Training – Cum Workshop on Standard Operation Procedures for forestry plantation.	1 day	21 April2022	Scientist	01
3.	Dr. Darshan K., Shri Neeraj Prajapati Sci.-B and Dr. Jangam Deepika attended International Workshop on the "Climate Proofing of Watershed Projects with Special Reference to Soil and Water Conservation Technologies" Organized by ICAR-IISWC, Research Center, Udhagamandalam.	2 Days	02 May 2022 to 03 May2022	Scientists	03
4.	Manish Kumar Vijay, Sci-B attended online workshop on Neem Seed Collection and Processing organized by AFRI, Jodhpur.	1 day	10 May 2022	Scientist	01
5.	Dr. Mohan C, Scientist - B, Participated in National Virtual Conference on "Post - Harvest Management" organized by National Institute of Food Technology,	2 days	18to 19 May 2022	Scientist	01

	Entrepreneurship and Management (NIFTEM), Thanjavur, Tamil Nadu.				
6.	Dr. Jangam Deepika, scientist-B attended "Sensitization Cum Review Workshop National Clean Air Programme (NCAP) and XV-FC Million Plus Cities Challenge Fund (XV-FC MPCCF)" by MOEF&CC on	1 day	21Feb. 2022 to 22 May 2022	Scientist	01
7.	Mr. Ajin Sekhar participated in an international webinar on "Exploring the role of the tree biodiversity in resilient agro forest landscape" organized by Mizoram University, India.	1 day	23May2022	Scientist	01
8.	Mr. Ajin Sekhar participated in an international webinar on "What can we learn about Climate Change from Antarctic Soil Biodiversity" by Global Soil Biodiversity Initiative (GSBI) – FAO, Rome.	1 day	25May2022	Scientist	01
9.	Shri A.K.J. Assaiya, Scientist-C and Dr Darshan K., Scientist-B delivered lecture in regional workshop on 'Preparation and application of organic fertilizers & Biofertilizers' organized by MP Van Vikas Nigam, at Seoni.	1 day	25May2022 and 31May2022	Scientists	02
10.	Dr. Avinash Jain, Sci.-F, Dr. Jangam Deepika, Sci-B and Dr. Darshan K., Sci.-B participated in Workshop on "Rehabilitation of Degraded Forest Ecosystems in Madhya Pradesh: Emerging Scenario & Way Forward" organized by Madhya Pradesh Forest Department, Bhopal and SFRI, Jabalpur.	02 Days	09 June 2022 to 10June 2022	Scientists	03
11.	Mr. Ajin Sekhar, Sci-B and Dr. Jangam Deepika, Sci-B and Manish Kumar Vijay, Sci-B, participated in Celebration of "World Day to Combat Desertification and Drought" organized by ICFRE, Dehradun.	1 day	17June 2022	Scientists	03
12.	Dr. Jangam Deepika, Sci-B participated in Webinar on "Forest Fires, Climate Change and Tendu Patta: Evidence to Improve Policy Outcomes" organized by International Forum for Environment, Sustainability & Technology (FOREST).	1 day	02June 2022	Scientist	01
13.	Sh. N. D. Khobragade, Sci-D attended online seminar on Agroforestry for wood production-issues and challenges conducted by extension division FRI, Dehradun.	1 day	10June 2022	Scientist	01
14.	Lecture delivered by Dr. Mohan C, Scientist-B and Mr. Ram Bhajan Singh (T.O) on "Integrated Pest Management for forest insects" for the front-line staffs of (Kundam project Division, Rewa-	01 day	15June 2022	Scientist and Technical officer	02

	(Sidhi) and Umariya project divisions)				
15.	Dr. Mohan C, Scientist-B, presented paper on "Occurrence of Sal Heartwood borer *Hoplocerambyxspinicornis* infestation in Chhattisgarh". In International Conference on "Global initiatives in Research, Innovation and sustainable development of Agriculture and allied Sciences", Guru Kashi University, Talwandi, Punjab.	03 days	06June 2022 to 08June 2022	Scientist	01
16.	Scientists and officers of TFRI and FRC-SD, Chhindwara attended AFRI-TFRI Joint Regional Research Conference.	1 day	22June 2022	Scientists and officers of TFRI	Approx. 50
17.	Shri Rathod Digvijay Singh, Sci-B participated in USAID – TOFI Programme Stakeholders consultation cum capacity building workshop organized by FC& RI, TNAU, Mettupalayam.	2 days	21June 2022 to 22June 2022	Scientist	01
18.	Dr. Nanita Berry, Scientist-F delivered lecture on Agroforestry to the stakeholders during workshop on Agroforestry and its importance, organized by KVK, Mandla.	1 day	24June 2022	Scientist	01
19.	Dr. Nanita Berry, Scientist 'F' participated in the workshop on 'Sensitization of Course Director, IFS training programme' held at MoEF& CC, New Delhi	1 day	06 July 2022	Scientist	01
20.	Dr. Nanita Berry, Scientist 'F', interacted with Country Director and TOFI partners and attended plantation programme organized by the TOFI, at NASC, New Delhi.	1 Day	07July2022	Scientist	01
21.	Mr. A.J.K. Asaiya, Sci- C, attended Webinar on Natural Farming for Chhattisgarh farmers organized by Regional Center for Organic and natural farming Jabalpur, M.P.	1 Day	7July2022 to 15July2022	Scientist	01
22.	Dr. Fatima Shirin, Sci-G, Dr. Naseer Mohd., Sci-E And Dr. Pramod Kumar, Sci-D participated in Webinar on, "Clonal Plantation of Teak" organized by IWST Bengaluru.	01 day	21July2022	Scientists	03
23.	Mr. M. Raj Kumar, Sci-D, Mr. Ajin Sekhar, Sci-B and Dr. Jangam Deepika, Sci-B attended Webinar on "Plant functional traits based evaluation of forest ecosystem services" organized by FRI, Dehradun.	01 day	26July2022	Scientists	03
24.	Sh. N. D. Khobragade, Scientist-D, of the centre, attended webinar on Extent and Scope for cultivation of *Melia dubia* in South India, organized by the Institute of Wood Science and Technology,	01 day	26July2022	Scientist	01

	Bangalore.				
25.	Manish Kumar Vijay, Scientist-B attended webinar on "Tissue Culture of Tree/Woody Plants: Significance & Quality Management Practices and Way Forward". Organized by BCIL, APAARI,APCoAB, CIFOR-ICRAF	1 day	29July2022	Scientist	01
26.	Dr. Darshan K, Sci- B, Participated "MycoAsia-Fungipedia Workshop on Mushroom Cultivation for Beginners" (Online).	1 day	15 Aug. 2022	Scientist	01
27.	All Scientists and staff participated in Parthenium Awareness Day on 16.8.2022. Parthenium eradication work carried out by all scientists, officers, Project staffs and all employees of TFRI.	1 day	16Aug. 2022	All TFRI Employees	65
28.	Shri Manish Kumar Vijay, Sci-B participated and presented lead paper (oral) and Poster in the 11th National Seed Congress 2022 organized by RVSKVV, Gwalior and ICAR-NSRTC	3 days	21Aug. 2022 to 23Aug. 2022	Scientist	01
29.	Shri A J K Asaiya Scientist-C attended National webinar on "IPR & Patenting: Road map to make India the next innovation Hub" organized by Aadrsh Mahavidyalaya, Dhamangao,Amaravati University, Maharashtra.	2 days	23Aug. 2022 to 24Aug. 2022	Scientist	01
30.	Dr. Nanita Berry Scientist-F and Shri A. J. K Asaiya Scientist-C attended online seminar on "Agroforestry for climate change mitigation" organized by FRI,Dehradun.	1 day	26Aug. 2022	Scientists	02
31.	USAID – TOFI Programme Stakeholders consultation cum capacity building workshop organized by FC& RI, TNAU, Mettupalayam dated on 21 & 22 June, 2022	2days	21 &22June, 2022	Scientists	02
32.	"Application of Seed Science and Technology in forest restoration: A way forward"	1day	04/07/2022	Scientist	01
33.	"Natural and Anthropogenic Impact on Cytology of the Plants: A Cyto- genetical Approach"	1 day	25/07/2022	Scientists	02
34.	Technical Workshop on TOF expansion at Guwahati, 19th October, 2022, Organised by CIFOR-ICRAF & Partners	1 day	19th October, 2022	Scientists	02
35.	Shri Manish Kumar Vijay, Sci-B delivered a talk on Single Use Plastic: Possible Alternatives to the student of Navodaya Vidhyalaya, Jabalpur under PRAKARTI Program.	1 day	29Aug. 2022	Scientist	01
36.	Dr. Nanita Berry, Sci-F, Co- PI of USAID funded project on 'Trees Outside	1 day	8 Sept. 2022	Scientist	01

	Forests of India' attended and participated in National Launch of the project at Paryavaran Bhawan, New Delhi.				
37.	Dr. Jangam Deepika, Scientist B attended "International Conference on Salt-affected Soils" co-organized by Ministry of Agricultural and Rural Affairs of China and Global Soil Partnership of FAO.	02 days	07Sept. 2022 to 08Sept. 2022	Scientist	01
38.	Dr. Mohan C, Sci- B and Mr. A.J.K. Asaiya, Sci- C, Attended Webinar on "Molecular intervention in Plant Pathology and Entomology", organized by Division of Forest Protection, Forest Research Institute, Dehradun.	1 day	22Sept. 2022	Scientists	02
39.	One day National Scientist conference at Forest Research Centre for Eco-Rehabiliotaion, Prayagraj on "**भारत का 'ून्य कार्बनउत्सर्जनकालक्ष्यइरषादअलीसौदागर, विवेकवर्मा, ड९ फातिमाषिरीनऔरकुलदीपचौहान**	1 day	26Sept. 2022	Scientist and Research scholar	03
40.	Dr. Nanita Berry, Scientist F participated in Brainstorming session on 'Certification of NTTPs under TOFI programme' as organized by CIFOR-ICRAF & Partners at NASC, New Delhi.	1 day	06 Oct. 2022	Scientist	01
41.	Dr. Darshan K., Scientist 'B' participated as Keynote Speaker during National Virtual Conference on "Technological Advancements in Crop Protection – 2022" on the topic "Forest Pathology: Current trends and future prospects" Organized by School of Agricultural Innovations & Advanced Learning (VAIAL) Vellore Institute of Technology Vellore-632014, Tamil Nadu, India.	02 days	07Oct. 2022 to 08Oct. 2022	Scientist	01
42.	Dr. Darshan K., Scientist 'B' participated in the "Advanced Phylogenetic Analysis Workshop" conducted online by Associate Editor, Dr. Mubashar Raza from the State Key Laboratory of Mycology, Institute of Microbiology, Chinese Academy of Sciences, Beijing. P.R. China organized by Myco Asia.	01 day	09Oct. 2022	Scientist	01
43.	Dr. Jangam Deepika, Scientist B attended "International Conference on "Microplastics in soils – a threat for human health and the environment" organized by German Environment Agency.	01 day	19Oct. 2022	Scientist	01
44.	Dr. Nanita Berry, Scientist F and Rathod Digvijay Sinh, Scientist B participated in the Technical Workshop on TOF expansion at Guwahati organized by CIFOR-ICRAF & Partners	2 days	18Oct. 2022 to 19Oct. 2022	Scientists	02

45.	Manish Kumar Vijay, Scientist-B, participated and delivered oral presentationon "Conservation and cultivation of *Commiphorawightii* (Arn.) Bhandari: An IUCN Red listed critically endangered medicinal plant species"in the **National Conference on Agriculture, Applied and Life Sciences, 2022** held at Uttarakhand Open University Campus, Haldwani, Nainital organized by PLANTICA Association of Plant Science Researchers (APSR).	2 days (online mode)	18 Nov. 2022 to 19Nov.2022	Scientist	01
46.	Naseer Mohammad, Scientist-E and Manish Kumar Vijay, Scientist-B, participated and delivered an oral presentation on "Preservation of Central India's Forest Genetic Resources through the establishment of a seed gene bank at Tropical Forest Research Institute, Jabalpur, Madhya Pradesh" in the 1st National Conference on Plant Genetic Resource Management(NCPGRM 2022) held at National Agriculture Science Centre (NASC), Pusa Campus, New Delhi organized by ISPGR, ICAR, NBPGR, CIAT, TAAS and PPVFRA.	3 days (Physical mode)	22Nov.2022 to 24Nov.2022	Scientists	02
47.	Mr. M. Raj Kumar Scientist-D, and Mr. Dheeraj Gupta, Scientist-D, attended "Workshop on understanding hydrological processes in forests through sap flow instrumentation" under AICRP – 19 at Forest Research Institute, Dehradun.	5 Days	28Nov.2022 to 02 Dec. 2022	Scientists	02
48.	Mr. Ajin Sekhar Scientist- B participated in 2nd Online Conference on "Restoration of Mediterranean Wetlands: The Wetland-Based Solutions", organized by the Union for the Mediterranean and Med Wet.	1 Day	01Dec. 2022	Scientist	01
49.	Mr. Ajin Sekhar Scientist- Bparticipated in an international webinar on "Let's Talk Land": The proposed EU restoration law, a game changer in the landscape organized by G20 Global Land Initiative UNCCD.	1 Day	01Dec. 2022	Scientist	01
50.	Dr. Jangam Deepika Scientist- B delivered lead talk on "Dynamics of soil organic carbon and carbon sequestration under different land use systems"	02 Days	05Dec. 2022 to 06Dec. 2022	Scientist	01

	National seminar cum workshop on the "Managing soil carbon for monetizing carbon credits to benefit Indian farmers" organized by Guru Ghasidas Vishwavidyalaya.				
51.	Mr. Ajin Sekhar Scientist- Bparticipated in a Webinar on "Eco-restoration of Forests in India: Technical, Social and Policy Dimension" organized jointly by Indian Council of Forestry Research and Education (ICFRE) and The Nature Conservancy (TNC India)	1 Day	05Dec. 2022	Scientist	01
52.	Dr. C. Mohan Scientist – B, Participated and presented poster on research findings of AICRP 20 in "National Symposium on Entomology 2022" at PJTSAU, Hyderabad, Telangana.	3 Days	08Dec. 2022 to 10Dec. 2022	Scientist	01
53.	Mr. Rathod Digvijay, Scientist- B Participated and presented poster on "Local adaptations and seed production rate of *Lantana camara* in the tropical forests area" in the 3rd International Weed conference on "Weed problems and management challenges: Future perspectives" held at Anand Agricultural University, Anand, Gujarat.	04 Days	20Dec. 2022 to 23Dec. 2022	Scientist	01
54.	Mr. Ajin Sekhar Scientist- B delivered oral presentation on "Evaluating the impact of *Latana camera* removal on native biodiversity, regeneration status and soil quality in forests/three climatic zones of Chhattisgarh, India" and received "Certification of Merit" in the 3rd International Weed conference on "Weed problems and management challenges: Future perspectives" held at Anand Agricultural University, Anand, Gujarat.	04 Days	20Dec. 2022 to 23Dec. 2022	Scientist	01
55.	Dr. VishakhaKumbhare, Scientist-E delivered lecture on "LiFE" Lifestyle for Environment Action in National Seminar titled "21st Century Life Style Problem, Challenges and solution in the changing scenario organized at Rajmata VijyarajeScindia Govt. Girls College, Chhindwara.	1 day	24 Jan. 2023	Scientist	01
56.	Dr. Avinash Jain, Sci-F delivered a lecture on "Economic valuation of forests for their tangible and intangible benefits" in the online refresher course in Forestry	1 day	24Jan. 2023	Scientist	01

	& Environmental Studies: 21st century Issues, Challenges & Solutions (Interdisciplinary) organized by GGU, Bilaspur.				
57.	Mr. Ajin sekhar, Scientist- B participated in a session on Forests and Life by UNCCD Prof. Tony Simons organized by UNCCD at ICFRE headquarters.	1 Day	15 Feb. 2023	Scientist	01
58.	Dr. Jangam Deepika, Scientist- B attended NAU-IES-IUFRO conference on "Tree based diversified land use system: Augmenting livelihood security and industrial growth" organized by Navsari Agricultural University, Navsari, Gujarat and presented poster on "A bird's eye view on influence of forest management practices on soil carbon stock and greenhouse gas emissions.	03 Days	15Feb. 2023 to 17Feb. 2023	Scientist	01
59.	Sh. M. RajKumar, Sci-D participated in the 3rd International workshop on "Biodiversity and Climate Change – Sustainable Development Perspective" and delivered oral presentation on "Wildlife Conservation plan – key for habitat management in and around coal mining projects" at IIT Kharagpur.	03 Days	17Feb. 2023 to 19Feb. 2023	Scientist	01
60.	Dr. Nanita Berry, Scientist F, delivered talk on 'Commercially valuable medicinal plant-based agroforestry models for income generation' during webinar organized by Regional cum facilitation centre for Central region, Jabalpur (MP)	1 Day	03 March 2023	Scientist	01
61.	Mr. Ajin sekhar Scientist- B, participated in international webinar on "Accelerating Nature Based Solutions" organized by G20 Global Land Initiative – G20 ICO.	1 day	09March 2023	Scientist	01
62.	Shri Ganesh Pawar, Technician, presented paper titled"Effect of different drying methods on the quality of stem bark of *Holarrhenaantidysentrica* L." in the National Conference on "Recent Advances in Chemical & Environmental Sciences (RACE – 2023).	02 days	16March 2023 to 17March 2023	Technical officer	01
63.	Mr. M. Raj Kumar, Scientist- D and Dr. Jangam Deepika, Scientist- B and Dr. Nidhi Mehta ACTO attended Webinar cum Special Lecture on "Dynamics of photosynthetic apparatus in plants for combating climate change".	1 day	22March 2023	Scientists and Technical officer	03
64.	All Scientists were attended International Workshop on "Enhancing ecosystem services by improving forest quality and	03 days	22March 2023 to 24March 2023	Scientists	25

	productivity, and SLEM knowledge dissemination" organized by ICFRE, Dehradun through online mode.				
65.	Mr. Dheeraj Gupta Scientist- D, attended international symposium on "Intersectional cooperation for resilient landscapes" organized by FRI, Dehradun.	02 days	29March 2023 to 30March 2023	Scientist	01
PARTICIPATION IN MEETINGS:					
66.	Dr. Nanita Berry, Scientist F and Rathod Digvijaysinh, Sci-B participated and attended TOFI Partners meeting to discuss implementation plan physical at NASC Complex Pusa, New Delhi, 31/05/2022	1 day	31 May 2022	Scientists	02
67.	Shri Manish Kumar Vijay, Scientist-B attended meeting on Pan India Application of multilingual Tree genie application	1 day	31May 2022	Scientist	01
68.	Scientists and Officers of TFRI participated in Chintan Satra: Research Road Map of ICFRE for the next 25 Years at TFRI under the chairmanship of Director TFRI.	01 day	27 June 2022	TFRI Scientists	15
69.	Dr. Nanita Berry, Scientist 'F' and Manish Kumar Vijay, Scientist 'B' attended meeting on Progress review of CAMPA Extension	01 day .	20 July 2022	Scientists	02
70.	Scientists and Technical Officers of TFRI attended meeting with Dr. Ashutosh Verma, IIFM Bhopal for institutional assessment	01 day	22July 2022	All staff of TFRI	40
71.	Dr. Nanita Berry, Scientist 'F' and Manish Kumar Vijay, Scientist 'B' attendedattended a meeting on Environment Education Programme of MoEF&CC, to discuss the possibilities and modalities of implementation of the programme, as the institutes will be the regional implementing agency for this programme.	01 day	26July 2022	Scientists	02
72.	Attended and presented progress of HRD trainings as organized by the DDG, Research, ICFRE, Dehradun (UK).	1 day	28July 2022	ICFRE Institutes	10
73.	Dr. Nanita Berry, Head Forest Extension Division Organized interactive meeting with a group of farmers and public representative for selection of site and implementation of TFRI technology in Barbati village as Demo Village.	1 day	25 August 2022	Scientist	01
74.	Dr. Nanita Berry, Head Forest Extension Division Organized interactive meeting with a group of farmers and public representative for selection of site and implementation of TFRI technology in	1 day	26August 22	Scientist	01

	Chhewla village as Demo Village.				
75.	Dr. Nanita Berry, Head Forest Extension Division Organized interactive meeting with a group of farmers and public representative for selection of site and implementation of TFRI technology in Tilhari village as Demo Village.	1 day	31August 22	Scientist	01
76.	Dr. Nanita Berry, Scientist 'F', participated as a Panelist in the meeting on 'Restoration Policy Dialogues' held from 19 - 20 September, 2022 as organized by World Resources India, New Delhi	2 days	19 Sept. 2022 to 20Sept. 2022	Scientist	01
77.	TFRI Staff participated in a meeting chaired by Director General, ICFRE and co-chaired by Director, TFRI, DDGs and ADGs from ICFRE Dehradun for performance review of TFRI staff	1 day	26Sept. 2022	TFRI employees	50-60
78.	Dr. Nanita Berry, PI & Head, Forest Extension division presented progress of CAMPA, Extension component during a review meeting chaired by ADG (Media & Extension), ICFRE The meeting was assisted by Mr. Manish Kumar Vijay Scientist- "B".	1 day	24Sept. 2022	Scientists	02
79.	Shri M. Rajkumar, Nodal Officer – DPR attended meeting to discuss Rejuvenation of River Narmada with a special focus at Amarkantak under the chairmanship of DG F&SS, MoEFCC, New Delhi.	01 day	15 Oct. 2022	Scientist	01
80.	Dr. VishakhaKumbhare, Scientist In charge / Scientist-E, of the centre attended the Review meeting of AICRP-29 research project organized by National Project Co-Ordinates, TFRI, Jabalpur	01 day	07Oct. 2022	Scientist	01
81.	Scientists & Staff of the centre attended Review meeting of Centre through ON-LINE MODE organized by ICFRE, Dehradun.	01 day	21Oct. 2022	All staff	12
82.	TFRI employees attended a lecture on "Corruption Free India for a developed Nation" by Shri Ajay Kumar, S.P. CBI, Jabalpur on the occasion of Vigilance week.	1 Day	03 Nov. 2022	TFRI Staff	50
83.	Smt. Neelu Singh, Scientist- G, and Director, TFRI and Dr. Nanita Berry, Scientist- F, & Head Forest Extension Division attended and Participated in Review meeting with HoFF, Madhya Pradesh to present Progress on TFRI Project and Agroforestry achievement.	1 Day	20 Dec. 2022	Scientists	02
84.	Dr. Avinash Jain Scientist- F, attended meeting at SFRI Jabalpur as the member of technical committee to organize International Workshop on "Wildlife	1 Day	20Dec. 2022	Scientist	01

	Conservation" to be organized by MP state forest department, as declared by Chief Minister of the state.				
85.	Scientists and technical officers of FE&CC division attended meeting with project executives of Himadri Energy International, Gurgaon, Haryana for discussing about the "Formulation of climate offset projects to mitigate national and international carbon emissions "	1 Day	13Dec. 2022	Scientists and Technical officers	08
86.	Shri Dheeraj Gupta, Scientist-D attended one day consultation workshop organized by National Disaster Management Authority (NDMA), Ministry of Home Affairs, Government of India in association with MoEF&CC for drafting a national project on forest fire management.	1 day	07 Jan. 2023	Scientist	01
87.	Dr. Avinash Jain, Scientist-F attended meeting organized by Department of Agriculture and Farmers Welfare for discussion about the modalities of developing the mechanism of carbon market in agriculture.	1 day	09Jan. 2023	Scientist	01
88.	Dr. Avinash Jain, Scientist-E, Shri M. Rajkumar, Scientist-D and Shri Dheeraj Gupta, Scientist-D attended one-day workshop on finalizing training module for capacity building of stakeholders on issues related to sustainable land management organized by Centre of Excellence- Sustainable Land management BCC division, ICFRE.	1 day	11Jan. 2023	Scientists	03
89.	Dr. Nanita Berry, Scientist 'F', PI-TOFI project and Digvijay Sinh, Scientist 'B', participatedin the meeting on 'Discussion of implementation plan of Tree Outside Forest in Assam'	1 day	13Jan. 2023	Scientists	02
90.	Mr. M Rajkumar, Scientist-D Saikat Banerjee, STO and Deepak Gupta participated in the "Research and industrial conclave in IIT Indore.	1 day	20Jan. 2023	Scientist, Technical Officer and Research scholar	03
91.	Dr. Nanita Berry, Scientist 'F', participated as Nodal officer in a meeting to finalize the parameters for preparation of booklet on Agroforestry	1 day	24Jan. 2023	Scientist	01
92.	Dr. Nanita Berry, Scientist 'F' & PI-TOFI project, participated in a meeting to finalize the certification of QPM of targeted species for TOFI project with NCCF, New Delhi officials	1 day	27Jan. 2023	Scientist	01
93.	Dr. Nanita Berry, Scientist 'F', PI-TOFI projectand Digvijay Sinh, Scientist 'B',	1 day	28Jan. 2023.	Scientist	01

	Participated in the meeting to organize the 'QPM workshop in Odisha'				
94.	Dheeraj Gupta, Scientist –D Mr. Ajin Sekhar, Dr. Jangam Deepika, Dr. Nidhi Mehta and Smt. Pooja Singh delivered lectures and demonstrated various instrumentsused for Vegetation Studies and Soil analysis on 02.02.2023 during training programme on Instrumentation	01 day	02 Feb. 2023	Students and Technical officers	04
95.	All Scientists of the Institute and ICFRE-FRCSD, Chhindwara, attended the RPC meeting organized by ICFRE, Dehradun.	2 days	13Feb. 2023 to 14Feb. 2023	Scientists	25
96.	Shri. N.D.Khobragade, Scientist-D, of the centre attended Scientific Advisory Committee meeting at Krishi vigyaan Kendra, Chhindwara.	1 day	22Feb. 2023	Scientist	01
97.	All scientists of the institute attended and presented their project's progress during annual review meeting in the presence of Dr. Sumit Chakrabarti, ADG (Monitoring & Evaluation), ICFRE, Dehradun (Uttarakhand) at TFRI.	2 days	28Feb. 2023 to 01 March 2023	Scientists	30
98.	FE & CC division organized pre-consultation meet for Soil health cards of forest divisions of Madhya Pradesh at Bhopal.	1 Day	15 March 2023	Scientists, and technical officers	15
99.	Issue relating to flow of fund and difficulties in releasing funds, Organised by ICFRE	1.45 minutes	Oct. 2022	Administrator, Directors, Scientists, NGOs, Research institute representatives	63
100.	31st Research Advisory Group Meeting, Organised by TFRI Jabalpur	1 day	12/10/2022	TFRI Scientist and Technical staffs	35
101.	Participated in meeting on "The plan for the Next 12 months with activity-wise timelines and backlog related to TOFI project" headed by CIFOR-ICRAF.	2.45 minutes	Nov. 2022	Scientists	60
102.	MPSFD Project Presentation at Bhopal	2hr.	06 Dec. 2022	Scientists	25
103.	Participated and presented the new project proposal in Pre-RPC meeting at TFRI	4 hours	2 Feb., 2023	Scientists and Technical Staff	25
104.	Attended the online review meeting of AICRP-12	4 hours and 20 mins	12 Feb. 2023	Scientists	20
105.	Online Joined the Discussions with UNCCD official	2 hours	February, 2023	Scientists	More than 120
106.	Online attended Special review By DG on AICRP projects,	1 hours and 20 minutes	24 Feb. 2023	Scientists	30
107.	Attended the online quarterly review meeting of AICRP-12	1 hr	27 March 2023	Scientist	10
PARTICIPATION INTRAINING:					
108.	Dr. Darshan K, Sci- B, Attended training on Statistical Techniques for	45 days	31 May 2022 – 17July2022	Scientist	01

	Agriculturists				
109.	Mr. A.J.K. Asaiya, Sci- C, delivered Invited lecture on नर्सरीमेंलगनेवालेरोगऔरउनकानिदान at Webinar on औषधीयपौधोंमेंलगनेवालेकिटऔररोगकीपह चानएवंउसकानियंत्रणorganised by क्षेत्रीय-सह-सुविधाकेंद्र,मध्यक्षेत्र,जबलपुर(NMPB),SFRI JABALPUR.	01 day	15July2022	Scientist	01
110.	Manish Kumar Vijay, Scientist-B, Kaushal Tripati, Scientist-B, Kandhi Singh, ACTO and Irshad, JPF attended Training on "Prediction Mapping of National Forest Genetic Resources (NFGRs)"	3 days	27July22-29 July 22	Scientists and Technical officers	04
111.	"Ethics & values in public governance/good governance/right to information/Gender sensitization/ Sexual harassment"	3 days	29Aug. 22 to 31 Aug. 22	Staff of TFRI	80 Approx
112.	Dr. Nanita Berry, Scientist 'F', delivered a lecture on 'Importance and scope of Agroforestry in Chhattisgarh' under VVK at Jagdalpur (CG).	1 day	14Sept. 2022	Scientist	01
113.	Dr. Nanita Berry, Scientist 'F', delivered a lecture on 'Overview of Agroforestry and Value chain of Bamboo based agroforestry system' under MANAGE-TFRI collaborative online training program on "Agroforestry and Its Management" held from 21st to 23rd Sep. 2022)	1 day	21Sept. 2022	Scientist	01
114.	Manish Kumar Vijay, Scientist-B delivered a lecture on **नर्सरीप्रबंधनः वर्तमानऔरभवि";"** in a training programme at VVK, Jagdalpur on Agroforestry, seed technology and bio fertilizers on 14th Sep. 2022	1 day	14Sept. 2022	Scientist	01
115.	Manish Kumar Vijay, Scientist-B delivered a lecture on**वृक्ष बीजप्रबंधनः संग्रहण, प्रसंस्करण, गुणवत्तापरीक्षण, भंडारण एवंबीजउपचार**ina training programme at VVK, Jagdalpur on Agroforestry, seed technology and bio fertilizers on 14th Sep. 2022	1 day	14Sept. 2022	Scientist	01
116.	Manish Kumar Vijay, Scientist-B delivered a lecture on "Quality Planting Material for Agroforestry" in a MANAGE-TFRI collaborative online training program on "Agroforestry and Its Management" on 22nd Sep 2022 (21stto 23rd Sep. 2022)	1 day	22Sept. 2022	Scientist	01
117.	Dr. Jangam Deepika, Scientist-B and Manish Kumar Vijay, Scientist-B	1 day	30Sept. 2022	Scientists	02

	attended a training on "Harnessing Intellectual Properties: From Innovation to Economic Growth" at IFGTB, Coimbatore for Scientist of ICFRE through Virtual Mode				
118.	M. Rajkumar, Sci-D delivered a lecture on "Biodiversity conservation potential of agroforestry systems" on 23 Sept, 2022 under 3 days Collaborative Online Refresher Training Program (RTP) on "Agro forestry & its Management" organized by TFRI, Jabalpur with MANAGE, Hyderabad.	1 day	23Sept. 2022	Scientist	01
119.	Dheeraj Gupta delivered lecture on "Introduction to Remote sensing and GIS in Forestry" on 22Sept, 2022 under 3 days Collaborative Online Refresher Training Program (RTP) on "Agro forestry & its Management" organized by TFRI, Jabalpur.	1 day	22Sept. 2022	Scientist	01
120.	Mr. Ajin Sekhar attended 05 days offline training program on "New Analytical methods in soil research" at ICAR-CAFRI, Jhansi, UP under ICFRE-HRD training program during 12 – 16 Sept, 2022	05 days	12Sept. 2022 to 16Sept. 2022	Scientist	01
121.	Shri Kandhi Singh, Dr. Nidhi Mehta, Mr. Sanjay Komra and Mrs. Pooja Singh attended training on "Advance techniques in soil, plant and water analysis" at IISS, Bhopal under ICFRE-HRD training program during 19 – 23 Sept, 2022	05 days	19Sept. 2022 to 23 Sept. 2022	Technical officers of ICFRE	04
122.	"Content Management Software" for technical staff of ICFRE, Dehradun,	05 days	10Oct. 2022 to 14Oct. 2022	Technical staff	15 approx
123.	Smt. Neelu Singh, Scientist-G& GCR delivered 5 lectures on 1. "Introduction to important NTFP's-Medicinal plants and their market value" 2. "Introduction on non-destructive collection practices of NTFP's 3. "Different methods of Processing of NTFPs and value addition techniques of NTFPs" 4. "Introduction to different essential oils yielding species and their marketing" 5. "Introduction to different fatty oil yielding species and their value addition preparation of different products –soap, bio fertilizer and bio pesticides" -in a MANAGE-TFRI collaborative online training program on "Non-Wood Forest Produce and Livelihood	3 days	18Oct. 2022-20Oct. 2022	Scientist	01

	Opportunities"				
124.	Dr. Nanita Berry, Scientist 'F' delivered lecture on 'Conservation medicinal plants through agroforestry system for income generation'-in a MANAGE-TFRI collaborative online training program on Non-Wood Forest Produce and Livelihood Opportunities	3 days	18Oct. 2022-20Oct. 2022	Scientist	01
125.	Shri Manish K. Vijay, Scientist B delivered two lectures on 1. "Seed quality assurance for the Cultivation of Medicinal and Aromatic Plants: Lacunas and strategies to overcome seed problems" 2. "Seed handling of NTFP yielding species: Problem and Solution" in a MANAGE-TFRI collaborative online training program on Non-Wood Forest Produce and Livelihood Opportunities	3 days	18Oct. 2022-20Oct. 2022	Scientist	01
126.	Shri Neeraj Prajapati, Scientist B Delivered 2 lectures on 1. "Cultivation of selected medicinal tree species" 2. "Cultivation Medicinal plants" in a MANAGE-TFRI collaborative online training program on Non-Wood Forest Produce and Livelihood Opportunities	3 days	18Oct. 2022-20Oct. 2022	Scientist	01
127.	Mr. M. Rajkumar, Mr. Dheeraj Gupta, Mr. Ajin Sekhar and K.S. Sengar attended A training programme at ICFRE, Dehradun for "Carbon Flux Measurement Through Eddy Covariance Towers "	3 days	31 Oct. 2022 to 02Nov. 2022	Scientists and Technical officers	04
128.	Dr. Avinash Jain delivered lecture on "Forest Landscape Restoration" during exposure visit to TFRI	1 Day	17 Nov. 2022	Scientist	01
129.	Dr. Avinash Jain delivered lecture on "Understanding land degradation in the context of forest ecosystem" during capacity building workshop on forest landscape restoration (FLR) and restoration opportunities assessment methodology (ROAM), Bhopal	3 days	14Nov. 2022 to 16Nov. 2022	Scientist	01
130.	Dr. S.N. Mishra, Scientist 'C', Dr. Darshan K., Scientist 'B' and Dr. Jangam Deepika attended Training on "Statistical Methods in Forestry Research"as a part of the HRD training for ICFRE Scientists conducted by Division of Statistics, ICFRE, Dehradun	05 Days	14Nov. 2022 to 18Nov. 2022	Scientists	03
131.	Dr. Avinash Jain delivered lecture on "Understanding land degradation in the	3 days	23Nov. 2022 to 25 Nov. 2022	Scientist	01

	context of forest ecosystem – Forest Land Restoration" during capacity building workshop on forest landscape restoration (FLR) and restoration opportunities assessment methodology (ROAM), Chandrapur				
132.	Mr. Manish Kumar Vijay Scientist- B, Participated in International Faculty Development Program (FDP) organized by SKUAST-Kashmir, Just Agriculture-the Magazine and AEEFWS, Punjab.	7 days	15Dec. 2022 to 21 Dec. 2022	Scientist	01
133.	Sh. Neeraj Prajapati Scientist 'B' Participated in training on "Application of GIS & Remote Sensing in various field of forestry" at FRI	5 days	16Jan. 2023 to 20 Jan. 2023	Scientist	01
134.	Sh. A.J.K. Asaiya, Scientist 'C' and Dr. Mohan C., Scientist-B delivered a lecture in "Training on instrumentation" organized by Division of silviculture, Forest Management & Agroforestry, TFRI, Jabalpur.	1 day	03Feb. 2023	Scientists	02
135.	Dr. Mohan C., Scientist 'B' delivered a lecture in "Training on Propagation and Nursery Management of Bamboos" organized by Division of Genetics and Tree Improvements, TFRI, Jabalpur.	5 days	20 Feb. 2023 To 24Feb. 2023	Scientist	01
136.	Dr. Jangam Deepika attended DST sponsored training programme on "Climate Change: Challenges and Response" for women scientists and technologists. at LBSNAA, Mussoorie.	5 days	13 March 2023 to 17March2023	Scientist	01
137.	Sh. A.J.K. Asaiya, Scientist 'C' delivered lectures on Organic Fertilizer/ Bio-pesticide in the 02 trainings on Vegetative Propagation organized by, Division of Genetics and Tree Improvements, ICFRE-TFRI, Jabalpur.	10 days	20March2023 to 24March2023 27March2023 to 31March2023	Scientist	01
138.	Dr. Mohan C, Scientist –B, participated in ICAR sponsored 14 days training programme under HRD on 'Tools and Techniques for analysis of Biomolecules' organized by Dept. Of Biochemistry, ICAR- IARI, New Delhi, through online mode.	14 days	18 Jan. 2023 to 31 Jan. 2023	Scientist	01
139.	Mr. M. Rajkumar, Scientist –D Dheeraj Gupta, Scientist –D and Ajin Sekhar, Scientist- B attended training on "Eddy Covariance flux theory and instrumentation"organized by Campbell Scientific India Pvt Ltd at Hyderabad.	02 days	07 Feb. 2023 to 08 Feb. 2023	Scientists	03
140.	Mr. Dheeraj Gupta, Scientist –D attended training on "Eddy Covariance flux theory and instrumentation" organized by Campbell Scientific India Pvt Ltd at Dehradun.	2 days	09 Feb. 2023 to 10 Feb. 2023	Scientist	01

141.	Dr. S.N. Mishra, Sci-C, Ajin Sekhar, Sci - B, Rathod Digvijay ummedsinh, Sci -B attended five days training program on "Invasive weed Management", organized by Directorate of Weed Management, Jabalpur. M.P.	5 days	26 Sept. 2022 to 30 Sept. 2022	Scientist	03

Category =Scientists,TOs, Forest Officers, etc.

9. Format for details of Workshops/symposia etc. organized- Annexure-8

Workshops/seminars/symposia/meetings etc. organized						
SN	**Topic**	**Duration and Period**		**Participants**		**Overall feedback of Participants**
		Days	**Date**	**Category**	**Numbers**	
1.	Regional workshop on "Organic fertilizer/Bio fertilizers"atBelkund Nursery of Madhya Pradesh Van VikasNigam.	1 Day	25 April 2022	Forest Officials	50	
2.	Regional workshop on "Organic fertilizer/Bio fertilizers"atKanchangao Nursery of Madhya Pradesh Van VikasNigam.	1 Day	27 April 2022	Forest Officials	50	
3.	तकनीकी अधिकारी वर्ग हेतु एक दिवसीय हिन्दी कार्यषाला	1 Day	23June 2022	तकनीकी अधिकारी	25	
4.	"Mid Term Workshop Cum Field Training under All India Co-Ordinated Research Projects (AICRP 12 & 13)".	04 Days	06 July2022 to 09 July2022	Scientists, Technical officers and Researchers of ICFRE Institutes/centers	25	
5.	"Availability, Sustainability, Processing issues and market linkages of Medicinal plants"	1 day	26 Sept. 2022	Researcher, Pharmaceutical industry, students	110	
6.	TFRI organized the 31st RAG meeting, 2022	1 day	12 Oct. 2022	ICFRE- TFRI organized the 31st RAG meeting, 2022 on 12th Oct 2022.	50approx	
7.	"Application of Seed Science and Technology in Forest Restoration: A Way Forward"	1 day	04 July2022	Scientist and research Scholars	50	
8.	"Natural and Anthropogenic Impact on cytology of plants: A cytogenetically approach".	1 day	25 July 2022	Researcher and students	40	
9.	"Hydroponics a soil less cultivation technique allied to sustainability".	1 day	29 August 2022	TFRI researchers	50	
10.	FE & CC division organized	1 Day	15	State forest	80	

	pre-consultation meet for Soil health cards of forest divisions of Madhya Pradesh at Bhopal.		March2023	department Scientists, and technical officers		
11.	Third one-day workshop in collaboration with state TOFI team on 'Roadmap of QPM delivery and Scope of TOF expansion in Rajasthan state' at Jaipur (Rajasthan).	1 day	17 March 2023	SAU, Local University, Women SHGs, SFD, Nursery grower, Progressive farmer and Industrialist	48	

Category = Students, farmers, ladies, officers from SFDs, Members of JFMCs etc.

9. *(A) Format for details of Awareness/ Demonstration programmes organized- Annexure -9*

Awareness/ Demonstration programmesorganized						
SN	**Topic**	**Duration and period**		**Participants**		**Overall feedback of Participar**
		Days	**Date**	**Category**	**Numbers**	
1.	Demonstration of Bamboo plantation to the members of Foundation of MSME Cluster, New Delhi and Mahrashtra.	02 days	05& 06 April 2022	Members of Foundation of MSME Cluster, New Delhi and Maharashtra	20	
2	Demonstration of Jeevamrut, Veejamrut, vermicompost and plant-based Bio pesticides to B.Sc. students	04 days	18 April 2022 to 21 April 2022	B.Sc. Students	24	
3	Demonstrated Museum and Agroforestry model to the group of B.Sc. Agroforestry Student, RDVV University	1 day	27 May 2022	Students	30	
4	Organization of demo on Charcoal and paper plate making to the students of KV, TFRI staff and DPS Schools on the occasion of World Environment Day.	3 hrs	05 June 2022	Students	30	
5	Sandalwood based agroforestry model established at TFRI campus shown to the following dignitaries • Scientist of CAFRI, Jhansi • A group of students, JNKVV	1 days	16 July 2022	Scientists Graduate level students	5 10	
6	Demonstration of various activities of TFRI in the Museum cum Interpretation center to the student of Navodaya Vidhyalaya,	1 Hrs	29 August2022	Students	57	

	Jabalpur under PRAKARTI Programme					
7.	Demonstrated Sandalwood based agro-forestry model established at TFRI campus.	1 day	11 Oct. 2022	Assistant professor, PDKV, Akola (MS)	02	
8.	Conducted demonstration for students of class 11th& 12th from Vision International Public School, Jabalpur	1 day	17Oct. 2022	Jabalpur	26	
9.	Forest Ranger Officers Trainees	1 day	08 Nov. 2022	Chandrapur Forest Academy of Chandrapur (Maharashtra) and Gujarat Forest Academy	98	
10	Teachers of CM Rise School on 09-11-2022	1 day	09 Nov. 2022	Teachers	100	
11	Students of Guru Ramdas Khalsa Institute of Science and Technology Kurkikheda,Barela Jabalpur(M.P.) on 04-11-2022, Class 7th& 8th Stemfield International School Jabalpur (M.P.) on 07-11-2022, Krishna Kids School Jabalpur (M.P.)andGovernment P.G. College, Damoh, (M.P.)on 14-11-2022, Jawahar Lal Nehru Krishi Vishwa Vidhyalaya, Jabalpur. (M.P.)on 16-11-2022, FCRI, Telangana on 18-11-2022	5 days	04 Nov. 2022 07 Nov. 2022 14 Nov. 2022 16 Nov. 2022 18 Nov. 2022	Students		
12	IFS Probationers (IGNFA, Dehradun) Exposure Visit at TFRI	1 day	17 Nov. 2022	IFS Probationers	69	
13	Demonstration to (B.Sc. Forestry) of Rani laxmi Bai Central Agriculture University college of Horticulture Jhansi (U.P.)	1 day	07 Dec. 2022	students	26	
14	A group ofstudents,B.Sc. (Botany) Govt. P. G. College, Chhindwara (M.P.).	1 day	13 Dec. 2022	students	20	
15	A demonstration to students, B.Sc. Zoology and Botany GroupGovt. Science College, Pandhurna, Chhindwara (M.P.).	1 day	14 Dec. 2022	students	35	
16	A group of students of Kendriya Vidyalaya, Jabalpur visited TFRI for exposure of jungle and it's bird and floral diversity.	1 day	30 Jan. 2023	students	91	
17.	A group of Students ofAjay Satya Prakash School Panagar, Jabalpur(M.P.) visited Tropical	1 day	10 Jan. 2023	students	85	

	Forest Research Institute, Jabalpur.					
18	A group of Forest Guard Trainees, Ranger College of Balaghat (M.P.)visited Tropical Forest Research Institute, Jabalpur.	1 day	15 Feb. 2023	Forest Guard Trainees	50	
19	Bamboo Artisans Visited Tropical Forest Research Institute,Jabalpur	1 day	20 April 2022	Bamboo Artisans	12	
20	Students of B.Sc First Year, Solapur University, Maharashtra	1 day	22 Feb. 2023	Students	25	
21	A group of Students of Royal Heritage School, Jabalpur (M.P.)	1 day	27 Feb. 2023	Students	60	
22	Demonstrated bamboo-based agroforestry system established in the farmers field, Patan to the team of NABARD officials	1 day	02 March2023	NABARD beneficiaries	05	
23	Forest Guards of Chhatisgarh Forest Departmentvisited Tropical Forest Research Institute, Jabalpur	2days	20 March 2023& 31March 2023	Forest Guards of Chhatisgarh Forest Department	20 14	

Category = Students, farmers, ladies, officers from SFDs, Members of JFMCs etc.

10. .Format for details on License/ Material Transfer agreements annexure -10

Sl. No.	***Name of Technology/ package of practices***	***Name of species***	***Name of the party***	***Revenue details including revenue generated and mode of payment, if any***
1	Quality Planting Material of Candidate Plus Clumps (100 plants of two clumps)	*Bambusa bambos*	Maharashtra Forest Department (Social Forestry)	Rs. 1,00,000, NEFT mode
2	Quality Planting Material of Candidate Plus Clump (50 plants of one clump)	*Bambusa balcooa*	Maharashtra Forest Department (Social Forestry)	Rs. 50,000, NEFT mode
3	Quality Planting Material of Candidate Plus Clump (50 plants of one clump)	*Bambusa tulda*	Maharashtra Forest Department (Social Forestry)	Rs. 50,000, NEFT mode

11. List of publications - annexure -11 (publications) - Please prepare the list in the following order:

Books:

S. No.	Authors	Year	Title	Journal/ publisher name	Volume, Issue and page no	Thompson, Reuters Impact factors & NAAS
1.	Nanita Berry & Neelu Singh	2023	Agroforestry & its management for livelihood security	A course Book for IFS officer, published by TFRI	1 - 91	-

				under MOEF CC, New Delhi		
2.	SowmyaPriya S, Geethalakshmi M, Kalarani M.K and **Mohan C**.	2022.	Fundamentals of Crop Physiology (1st ed.)A.E. Publication.			

Chapters in Books/ Proceedings:

S. No.	Authors	Year	Title	Publisher name	Page no
1.	Akshay Kumar H M., Mehulee Sarkar., Darshan K.,ThungriGhoshal., Kaavya B S., Bishnu Maya Bashayl., Asaiya A J K and Nanita Berry	2022	Ganoderma: Biodiversity, Ecological Significances, and Its Management. Fungal Biology	In Springer Nature publisher	978-981-16-8876-8, 516623_1
2.	Nanita Berry	2023	Chapters contributed in the Book titled FAQs on Agroforestry 'Eds. Dr.Geeta Joshi *et a*l 2023.	ADG, Media and Extension, ICFRE, Dehradun publication.	1-164pp
3.	Mohan C., and Ajin Sekhar	2022	Insect pests of Egg plant*Solanum melongena* and its integrated management. In. Hassan *et al* (Ed.) *Pests and Disease Management of Horticultural Crops.*	Pp.133-142. Biotech Book publishers.	ISBN. 978-81-7622-543-4.
4.	**Mohan C,** SowmyaPriya Sand AjinSekhar	2022	Factors influencing insect pests damage under storage ecosystem. InVignesh*et al* (Ed.) Sustainable Food resource Management: Technological interventions, safety aspects and future trends	Akinik Publications. ISBN.978-93-5570-533-4.	Pp.219-230
5.	G.R. Rao, A. Sekhar and M. Raj Kumar	2022	Evaluation trails and carbon sequestration potential of *Jatropha curcas* and *Pongamia pinnata*: Technologies and way forward.	Book chapter In "Advanced biodiesel - Technological advances, challenges, and sustainability considerations", Intech open limited publisher	1-18
6.	Saikat Banerjee, P.K. Khatri and S.K. Banerjee	2022	Soil and vegetation in Pachmarhi biosphere Reserve and their correlation	Book chapter in Soil health and Environmental sustainability	87-106

7.	Irshad Ali Saudagar and Fatima Shirin	2022	Genotyping and Phenotyping through next-generation sequencing for next- generation breeding in plants and crops.	Frontier on Recent Developments in Plant Science and Plant Biotechnology. SCIENG PUBLICATION, Tamilnadu	Edited Book, Volume- 1, Chapter 117-125
8.	G. Rajeshwar Rao, AjinShekhar and Manish Kumar Vijay	2022	Tree borne oil resources: Prospects & challenges	Lead paper published in the book released during 11th National Seed Congress 2022 organized by RVSKVV and ICAR-NSRTC	

Booklets/Brochures/Bulletins/ Pamphlets etc.:

1. **Training Manual** on Vegetative Propagation of Forestry Species and High-tech Nursery Techniques, 20-24 March and 27-31 March 2023.
2. **Training Manual** on "**कृषिवानिकी, बीज प्रोद्योगिकी एवं जैव उर्वरक**" P.No.1-48, for the training at VVK, Jagdalpur on 14th Sep. 2022
3. Leaflet on following
   (i) '***मधुका लॉंगीफोलिया***(महुआ) :मध्य प्रदेश की एक महत्वपूर्णगैरकाष्ठवनउत्पाद (एनटीएफपी) प्रजाति' (2022).
   (ii) Sustainable harvesting and processing of Gum Karaya (*Sterculia urens*Roxb.)
   (iii) Collection, processing, and storage of *Mucuna pruriens* (L.) DC.
   (iv) Collection, processing, and storage of *Helicterisisora*L. fruits
   (v) Brochure on "Single Use Plastic: Possible Alternatives" (TFRI/BROC-01/2022/33)
   (vi) Scope of medicinal plants in agroforestry and livelihood opportunities throughvalue addition.Author: Neelu Singh and G. Rajeshwar Rao
   (vii) ICFRE contribution in the development of Medicinal Plants sector.

Article in Seminars/Conferences/Workshops etc

- **Abstracts**

i. Saxena HO**,** Pawar G and Sahu VR (2022). Development of a validated HPLTC method for quantification of glucuronic acid in gum karaya (*Sterculia urens* Roxb.). Published in souvenir of National seminar on "Screening Human Health through use of Medicinal Plants"organized by MFP-PARC, Bhopal (M.P.) on 03-04 September, 2022 [page no. 14].
ii. U. Rathod Digvijaysinh, Neelu Singh, Ajin Sekhar, Sourabh Dubery, Himanshu Mahaur Anand Saiyam (2022) Local adaptations and seed production rate of *Lantana camara* in the tropical forests area. 3rd International Weed Conference on "Weed problems and management challenges: Future perspectives", Anand Agricultural University, Anand, Gujarat (India) 20-23 December, 2022.
iii. Himanshu Mahawar, Sushil Kumar, Ajin Sekar, Digvijaysinh Rathod, Anand Saiyam and Neelu Singh (2022). Impact of invasive shrub, *Lantana camara*, removal on biological properties of soil in Chhattisgarh

Forest.3rd International Weed Conference on "Weed problems and management challenges: Future perspectives", Anand Agricultural University, Anand, Gujarat (India) 20-23 December, 2022.

iv. Ajin Sekhar, Digvijaysinh Rathod, Neelu Singh, Himanshu Mahawar, Shashank Gupta, Sourabh Dubey, Nikita Rai and Sushil kumar (2022). Evaluating the impact of *Lantana camara* removal on native biodiversity, regeneration status and soil quality in three agro-climatic zones of Chhattisgarh 3rd International Weed Conference on "Weed problems and management challenges: Future perspectives", Anand Agricultural University, Anand, Gujarat (India) 20-23 December, 2022.

v. Manish Kumar Vijay and Maitryee Kundu (2022). Conservation and Cultivation of *Commiphorawightii* (Arn.) Bhandari: An IUCN Red Listed Critically Endangered Medicinal Plant species. 5th PSRM 2022 Abstract book 5PSRM2022/134 Page No. 119

vi. Manish Kumar Vijay, Maitryee Kundu, Nanita Berry and Neelu Singh (2022). Preservation of central India's forest genetic resources through the establishment of a seed gene bank at Tropical Forest Research Institute, Jabalpur, Madhya Pradesh. NCPGRM-2022 Abstract book 107 (O-25) page No. 10

vii. Manish Kumar Vijay, G. Rajeshwar Rao (2022). Lack of good quality seed: A key challenge for the cultivation of Tree Borne Oilseeds (TBOs). Proceedings of the 11th National Seed Congress 2022 organized by RVSKVV and ICAR-NSRTC from 22nd to 24th November 2022

viii. Manish Kumar Vijay (2023). "Conservation of medicinal tree diversity of central India: Seed technological Perspectives" Proceedings of the National Conference on Medicinal Plants: Frontier Areas of Research and Development organized by Hansraj College, University of Delhi

ix. Fatima Shirin and Irshad Ali Saudagar (2022). "जलवायु परिवर्तन में बांस का महत्वपूर्ण योगदान" In National Scientist Conference (hybrid mode) on "Role of forestry in climate change control" at Forest Research center for Eco- rehabilitation, Prayagraj, Uttar Pradesh, September 26, 2022, Page 27.

x. Irshad Ali Saudagar, Vivek Verma, Fatima Shirin and Kuldeep Chauhan (2022). "भारत का शून्य कार्बनउत्सर्जन का लक्ष्य"In National Scientist Conference (hybrid mode) on "Role of forestry in climate change control" at Forest Research center for Eco- rehabilitation, Prayagraj, Uttar Pradesh, September 26, 2022, Page 10.

xi. Vivek Verma and Fatima Shirin (2022). "जलवायुपरिवर्तनऔरवनों का प्रभाव" In National Scientist Conference (hybrid mode) on "Role of forestry in climate change control" at Forest Research center for Eco-rehabilitation, Prayagraj, Uttar Pradesh, September 26, 2022, Page 34.

xii. Irshad Ali Saudagar, Vivek Verma, Sushma Maravi and Fatima Shirin (2023). "Estimation of Phytochemicals During Different Processing Methods in the Aromatic herb *Kaempferia galanga* (Chandramool)", In International Seminar on Gingers, KSCSTE-Malabar Botanical Garden and Institute for Plant Sciences, Kozhikode, Kerala, March 01 - 03, 2023, Page 47.

xiii. Vivek Verma, Irshad Ali Saudagar and Fatima Shirin (2023). "*Curcuma involucrata* King Ex. Baker Skornick, An Underrated Medicinal Plant of Tropics " In International Seminar on Gingers, KSCSTE-Malabar Botanical Garden and Institute for Plant Sciences, Kozhikode, Kerala, March 01 - 03, 2023, Page 44.

xiv. Vivek Verma and Fatima Shirin (2022). "Azaddhirakt- Nature's True Wonder" in Online International Conference on Research Methodology, Jointly organized by Dr. Shakuntala Mishra National Rehabilitation University and Science Tech Institute, Lucknow, Uttar Pradesh, October 28-30, 2022, Page 183.

xv. Kaushal Tripathi, Moni Mishra, Ravishanker, Jyoti Yadav and Fatima Shirin (2023). "A Study on floral Biology and cytology of An Important Vulnerable Tree Species: *Dalbergia latifolia* (Indian Rosewood) " ESW-X Annual research international conference, Khajuraho, Madhya Pradesh, Page 92

xvi. Kaushal Tripathi and Fatima Shirin (2023). "Conservation of Forest Genetic Resources: Opportunities and Challenges"in SBSRD International Conference, Prayagraj, Uttar Pradesh, Page 50.

xvii. Mohan C (2022). Insect Pests of Forest Seeds and Their Management. In National virtual Conference on Post-Harvest Management under the theme I- Technologies for reducing post-harvest loss, held during 18-19th May, 2022, NIFTEM, Thanjavur, Tamil Nadu.

xviii. Mohan C (2022). Occurrence of Sal Heartwood borer *Hoplocerambyxspinicornis* infestation in Chhattisgarh. In International Conference on "Global initiatives in Research, Innovation and sustainable development of Agriculture and allied Sciences", held during 06- 08th – June, 2022 (Virtual mode), Guru Kashi University, Talwandi, Punjab.

xix. Darshan K. and S. N. Mishra. (2023). Bamboo phyllody or witches' broom in Maharashtra: Could a new Threat to Bamboo Cultivation. International Symposium on Intersectoral Cooperation for Resilient Landscapes, 29-30 February 2023.

xx. Jangam Deepika (2022). 'A bird's eye view on influence of forest management practices on soil carbon stock and greenhouse gas emissions', published in the Proceedings of the NAU-IES-IUFRO conference on "Tree based diversified land use system: Augmenting livelihood security and industrial growth".

xxi. M. Rajkumar, Dheeraj Gupta, Ajin Sekhar and Avinash Jain.(2023). Wildlife Conservation Plan - Key for Habitat Management in and Around Coal Mining Projects published in 3rd International Workshop on Biodiversity and Climate Change - Sustainable Development Perspective, 16-19th February 2023, IIT, Kharagpur.

xxii. Sekhar. A, Rathod. D, Singh. N, Mahawar. H, Gupta. S, Dubey. S, and Rai. N.(2022). "Evaluating the impact of *Lantana camara* removal on native biodiversity, regeneration status and soil quality in three agro-climatic zones of Chhattisgarh, India" published In Third International Weed Conference on Weed problems and management challenges: Future perspectives held during 20 -23 December, 2022 at Anand Agricultural University, Gujarat.

xxiii. Nanita Berry, Akash Shukla andNityanand Mishra (2023). Dependence of tribals on minor millets for nutrition: a case study of Mandla district (MP) Abstract published in National Conference on production, Processing and Marketing of Millets : Issues & Solutions , held from 1-2 March2023 at JNKVV, Jabalpur (MP). PP191-192.

xxiv. Akash Shukla, Pooja Sharma, Nanita Berry, Nityanand Mishra and Mukul Anand Ray (2023).Kodo and Kutki: Millets for food & nutrition security in tribal areas of Madhya Pradesh. Abstract published in National Conference on production, Processing and Marketing of Millets : Issues & Solutions , held from 1-2 March2023 at JNKVV, Jabalpur (MP). PP191.

xxv. Parul Sharga and Nanita Berry (2023). Quantification of Carbon Footprint in plantations of clonal eucalyptus with special reference to Madhya Pradesh. Abstract in Souvenir of 8th International Conference on 'Recent Advances in Agricultutre, Animal Husbandry, Sciences & Technology for sustainable Entrepreneurship (RAAAHSTSE-2023),eds. Bhaduria, Singh, Jha and karanjalker, Pub. RVSKVV, Gwalior (MP), 44pp.

xxvi. Nanita berry (2023).Evaluation of *Piper betle* performance under *Gmelina arborea* based agroforestry system in Madhya Pradesh, India. Abstract published in Proceedings of the NAU-IES-IUFRO Conference On 'Tree Based Diversified Land-use System'- augmenting Livelihood Security and Industrial Growth held from 15-17 February, 2023, Publisher NAU, Navsari,Gujrat.130pp.

Popular articles:

Sl. No.	AUTHORS	TITLE	YEAR OF PUBLICATION
1.	Ajin Sekhar	Peatlands and Paludiculture for the Indian Subcontinent	ENVIS Newsletter. Sarovar Saurabh: Wetland Ecosystems including Inland Wetlands. 17(4): 1-3. 2022
2.	एम. राजकुमार, परनिकागुप्ता, सैकतबनजी, अविनाश जैन	वर्ष 2021 में उष्णकटिबंधीय वनोंकी हानि	Van Sangyan. 9(5): 14-18. 2022
3.	Saikat Banerjee and Somak Banerjee	Overpopulation and its impact	Van Sangyan. 9(5) :19-24. 2022
4.	Ajin Sekhar and Muthu Rajkumar	Wetlands: Not wastelands	Van Sangyan. 9(5) :25-29. 2022
5.	Jangam Deepika	Assessment of soil erosion – Physical, empirical and remote sensing methods	Van Sangyan. 9(4) :17-20. 2022
6.	M Rajkumar, Ajin Sekhar and Avinash Jain	United Nation's Post- 2020 Global Biodiversity Frame Work: Opportunities for Local Action	Van Sangyan. 9(3) :37-40. 2022
7.	Ajin Sekhar and M. Raj kumar	Degradation of primary natural habitats and avian biodiversity loss	Van sangyan. 9(6): 32-36. 2022

8.	Saikat Banerjee and K.S. Sengar	Atmospheric ozone –Its beneficial and harmful effects	Van sangyan. 9(7): 30-36. 2022
9.	Saikat Banerjee, M. Raj Kumar, K.S. Sengar and S.K. Banerjee	Forests and soils of India: their distribution, types and importance	Vaniki Sandesh. 13 (1&2): 10-19. 2022
10.	Saikat Banerjee, and S.K. Banerjee	Soil physical parameters and their interrelationship	Vaniki Sandesh. 13 (1&2): 38-47. 2022
11.	Sekhar. A	Environmental cost of mining in the state of Chhattisgarh.	Agriculture and food e Newsletter. 5: 249-252. 2023
12.	श्रीमतीनीलूसिंह	प्लास्टिक का विकल्प : समयकी मांग	तरुचिंतन, Pg. No. 85
13.	प्रमोद कुमार एवं मुकेश कुमार सोनकर	व्यावसायिक रूप से महत्वपूर्ण बांस प्रजातियों बम्बूसा टूल्डा और बम्बूसा नुटांस का कल्म-शाखा द्वारा कायिक प्रजनन.	वन अनुसंधान ई-पत्रिका, 2022, (7):10-12.
14.	Manish Kumar Vijay, Nanita Berry	देववनः प्राकृतिक वन ससांधन संरक्षण में नया आयाम.	वनदर्पण 2022, 32:57-61
15.	Manish Kumar Vijay, Nanita Berry	बीज द्वाराबांस का प्रसार : समस्याए और समाधान	Van Anusandhan e-PatrikaJan-Dec, 2022, 07: 7-9
16.	Manish Kumar Vijay and Nanita Berry	Bamboo seed propagation: Challenges and solutions.	*Van Sangyan,* 2022, Vol. 9(5): 8-13
17.	Manish Kumar Vijay, Nanita Berry	स्थानीय वृक्ष प्रजाति : वनउत्पादकतावृद्वि मेंअहम योगदान.	तरूचिन्तन, pno.46-48.
18.	Manish Kumar Vijay	Nanotechnology based Carbon Nano Tubes (CNTs): An innovative tool for seed quality enhancement.	TFRI newsletter bimonthly (March-April) VOL-2 MAR-APR 2022
19.	Nanita Berry, Manish Kumar Vijay and RinkyPateriya	Ban on single-use plastic: Possible alternatives.	Van Sangyan, 2022, Vol. 9, No. 8,
20.	Manish Kumar Vijay	Droneochory: A novel approach to forest restoration	Vansangyan.2022, Vol. 9, No. 8,
21.	Manish Kumar Vijay	Seed health problem in woody plants: Causes and solutions.	Vansangyan. 2022, Vol. 9, No. 9,: (page no 18-21)
22.	Irshad Ali Saudagar and Fatima Shirin	India's Heritage: Mahua Wine.	International Society of Tropical Foresters, Sept. 2022.
23.	Vivek Verma, Irshad Ali Saudagar and Fatima Shirin	Nature's Wonder-Azaddirakht	International Society of Tropical Foresters, Sept. 2022.
24.	Irshad Ali Saudagar, Fatima Shirin, Rama Soni and Sushma Maravi	*Oroxylum indicum* –An important medicinal tree of tropics	International Society of Tropical Foresters 11(4): 16-19.
25.	SharmisthaGangopadhyay	*Dalbergia latifolia* : A pharmacologically essential tropical tree species	International Society of Tropical Foresters 11(4): 28-31.
26.	Rathod Digvijay Umedsinh, NanitaBery, Niraj Prajapati, Darshan	A single Peepal tree acting as a building foundation stone for constructing multiple houses to	Society of Nature Healers Conservators and Local Tourism Development, Bhopal. Page no:

	and Kaushal Tripathi	Honeybees	30-32.
27.	निखिल वर्मा, फातिमा शिरीन, कौशल त्रिपाठीएवं नीरज प्रजापति	महुआ का फूल- आय का अतिरिक्त एवं सतत स्त्रोत	तरुचिन्तन, पेज 51
28.	निखिल वर्मा	वनों की आग: समाधान समस्या में छिपा है	वन दर्पण
29.	नीरजप्रजापति, नीलूसिंह, निखिलवर्मा, निकितासोनी	**लोधसंरक्षणसेआजीविकाकेअवसर**	**"लघुवनोपजसन्देश"स्मारिकाअंतर्राष्ट्रीयवनमेला-2022,** पेजसंख्या**80-82.**
30.	Rekha R. Warrier, Animesh Sinha, Ajay Thakur, Bilas Singh, Fatima Shirinand Ramasamy Yasodha	Small holder teak agroforestry plantations: Scope and Prospects in India	Tropical Forest research Institute, Jabalpur. Wood is Good, Vol.3, Issue 1, pp. 3-5.
31.	Mohan C	Wood destroying insects "Timber borer" and their control measures	*Van sangyan* 9 (3): 16-20**.**
32.	Mohan C	Leaf gall forming insect *Triozaobsoleta* (Psyllidae; Homoptera) on *Diospyros melonoxylon* and their Management	Times of Agriculture - e magazine (25); 130-131
33.	Mohan C	Eucalyptus gall insect *Leptocybeinvasa* (Hymenoptera; Eulophidae) and their integrated management	*Agriculture and food e Newsletter*. 4: 511- 512.
34.	Mohan C	Termite damage and their control in forest nurseries and young plantations.	*Van Sangyan.* 9 (4): 22-25.
35.	**मोहन सी0 एवं आर0के0 मालवीय**	**वन रोपणी एंवरोपणमेंव्हाइटग्रब एवम् दीमक का प्रकोप एव उसकानियंत्रण**	*वनसंज्ञान.* 9 (5): 30-34.
36.	Mohan C	Occurrence of Mealybug Infestation in Ber (*Ziziphus mauritiana* L.) and their Management	*Agriculture and food e Newsletter*. 4 (9): 109-111.
37.	Mohan Cand S. SowmyaPriya	Strategies for Ecofriendly Insect Pest Management – An overview.	*KaalnadaiVelanmai*in Tamil Language. 4 (1): 40- 43.
38.	Mohan C	Recent Advances in Stored Product Pest Management	*Agriculture and food e Newsletter*. 4 (7): 380- 385.
39.	Mohan C	"Bio pesticides" - An overview.	*Agriculture and food* e-*Newsletter*. 4 (8): 327- 329.
40.	Mohan C	Light trap: An Ecofriendly tool of Integrated Pest Management	*Van Sangyan* 9 (6) 37-42.
41.	Mohan C	"Entomophagy"	*Van Sangyan*. 9 (7) 24-29.
42.	G. RajeshwarRao, Fatima Shirin, Pramod Kumar, Naseer mohammed and Mohan C	"A brief research profile on Genetic improvement of *Tectona grandis* at Tropical Forest research Institute, Jabalpur	*Wood is Good*. 3 (1): 95-98.
43.	Santhoshini E, Darshan K, VivekVerma, RathodDigviaysinh U	Forest Litter Degradation and it's Drivers	Krishi Science e-Magazine.

44.	Mohan C*, RamkishoreMahobe, SourabhDubey and GulshanChakravarty	Techniques of Vermicompost Production	*Vansangyan*. 9 (4), 19-24.
45.	Mohan C,Ramkishore mohabe, SourabDubey and GulshanChakravarty.	Application of Nanotechnology in insect Pest management	*Van sangyan* 9 (12): 29-31.
46.	Mohan C	Beekeeping in Agroforestry- A potential role for a sustainable rural livelihood	*Van sangyan* 9 (8): 24-28
47.	DP Jhariya&Nanita Berry	Maida lakdi (*Litsea*): agarbattiudhogke lye mahatpurna prajati	Taru Chintan, 2022: 49-50
48.	Manish Kumar Vijay &Nanita Berry	Sthaniyavrikshaprajati: van utpadkta me ahamyogdaan	Taru Chintan, 2022: 46-48
49.	Nanita Berry &Kuver Singh	जंगलीफलों का औषधियों एवं आर्थिकी में महत्व	वनदर्पण 2022 Article no.40 page no 74-77

Chapters in Training Manual :

S. No.	Authors	Year	Title	Publisher name	Page no
1.	Fatima Shirin, Irshad Ali Saudagar, Vineet Mehra and P.K. Rana	2023	Vegetative Propagation and Tissue culture of Bamboos.	In: Training Manual on Vegetative Propagation of Forestry Species and High-Tech Nursery Techniques.	63-78
2	फातिमा शिरीन, इरशाद अली सौदागर, सुषमा मरावी एवं मुकेश कुमार सोनकर	2023	वन वृक्षों का कायिक प्रजनन.	In: Training Manual on Vegetative Propagation of Forestry Species and High-Tech Nursery Techniques.	1-27
3	फातिमा शिरीन एवं त्रिलोक गुप्ता (2023)	2023	उत्तम गुणवत्ता के वृक्षों का चयन.	In: Training Manual on Vegetative Propagation of Forestry Species and High-Tech Nursery Techniques.	28-33
4	प्रमोद कुमार, हरे कृष्ण पाण्डेय एवं मनोज कुमार पूसाम	2023	कायिक प्रजनन द्वारा महत्वपूर्ण वृक्ष प्रजातियों के उन्नत गुणवत्ता वाले रोपण स्टॉक को तैयार करना.	In: Training Manual on Vegetative Propagation of Forestry Species and High-Tech Nursery Techniques.	34-41
5	नसीर मोहम्मद एवं योगेश पारधी	2023	मैदा (लित्सिया ग्लुतिनोसा) के पौधे उगाने की पद्धति.	In: Training Manual on Vegetative Propagation of Forestry Species and High-Tech Nursery Techniques.	42-43
6	Rathod Digvijay Singh	2023	Production of quality planting material through nursery techniques.	In: Training Manual on Vegetative Propagation of Forestry Species and High-Tech Nursery Techniques,	44-52
7	Nanita Berry	2023	Promising agroforestry models for central india developed by TFRI	A course Book for IFS officer, published by TFRI under MOEF CC, New Delhi	1 - 17

8	Nanita Berry	2023	Value chain linked agroforestry models for additional income to farmers	A course Book for IFS officer, published by TFRI under MOEF CC, New Delhi	76-91
9	Manish Kumar Vijay Nanita Berry	2022	**वृक्ष बीज प्रबंधनः संग्रहण, प्रसंस्करण, गुणवत्ता परीक्षण, भंडारण एवं बीज उपचार**	A book chapter in the training manual	32 - 40
10	Manish Kumar Vijay Nanita Berry	2022	**"नर्सरी प्रबंधनः वर्तमान और भविष्य"**	A book chapter in the training manual	41 - 48

- **Research papers (please include impact factor against each paper)**

Published in Indian Journals :

S. No.	Authors	Year	Title	Journal/ publisher name	Volume, Issue and page no	Thompson Reuters NAAS score/ Impact Factors
1.	Hari Om Saxena, SamikshaParihar, Ganesh Pawar, G. Rajeshwar Rao, Hemant Kumar and Sant Kumar	2022	Phytochemical Screening and Variation Studies in Secondary Metabolite Contents in Rhizomes of *Curculigo orchioides* from Madhya Pradesh State of India	*Chem Sci Rev Lett.,*	11 (42): 151-158.	-
2.	Pramod Kumar, Pawan Kumar Patel and M.K.Sonkar	2022	Propagation through juvenile shoot cuttings in difficult –to- root *Dalbergia latifolia* – examining role of endogenous IAA in adventitious rooting.	*Plant Physiology Reports.*	27(2):242-249 https://doi.org/10.1007/s40502-022-00664-x	5.5 /0.9
3.	Deepti Bhadrawale, Fatima Shirin, Kavita Patel, Shalu Panika, Priyanka Hardaha, Trilok Gupta, NaseerMohhamad and G Rajeshwar Rao	2021	Effect of different plant growth regulators and additives on *in vitro* culture establishment of *Pseudoxytenantherastochsii.*	*Indian Journal of Tropical Biodiversity (Special Issue on Bamboo)*	29(1): 32-39	4.02
4.	Fatima Shirin, Irshad Ali Saudagar, VineetMehra, SushmaMaravi, Mukesh Kumar Sonkar, Pramod Kumar and	2021	Influence of genotype on adventitious rhizogenesis through macropropagation in *Bambusa vulgaris* and *Bambusanutans*.	*Indian Journal of Tropical Biodiversity (Special Issue on Bamboo)*	29(1) : 47-53	4.02

	Rajeshwar Rao					
5.	Pramod Kumar, Fatima Shirin and G. Rajeshwar Rao	2021	Enhancement of productivity of bamboo plantations through selection of superior clumps and management interventions.	*Indian Journal of Tropical Biodiversity (Special Issue on Bamboo)*	Vol. 29(1) : 66-71	4.02
6.	Hari Om Saxena, Samiksha Parihar, Ganesh Pawar and Ved Ram Sahu.	2022	High Performance thin layer Chromatography method validation for quantification of glucoronic acid in gum samples of *Sterculiaurens.*	*JPC Journal of planer chromatography.*	-	-
7.	Naseer Mohammad, SK MujibarRahaman, MasjudaKhatun, MuthuRajkumar, Sanjay Gorai, Ashish Ranjan and Sharad Tiwari	2022	Teak (*Tectona grandis* L.f.) demonstrates robust adaptability to climate change scenarios in central India" http://doi.org/10.1007/s4535-022-00444-w	*Vegetos*	-	5.27
8.	Khobragade N. D. and Pooja Patel	2022	Effect of pretreatment on seed germination and seedling growth of *Terminalia chebula* Retz.	*International Journal of Applied and Universal Research.*	IX, (II): 9- 13	-
9.	Khobragade N. D. and Kumbhare V.	2022	Nutritional composition of *Buchnanialanzan* seeds collected from candidate plus trees.	*Indian Journal of Nutrition.*	9(1)	-
10.	Khobragade N. D., Nasser Mohammad. and Nikita Rai	2022	Variation in germination percentage and related attributes in candidate plus trees of *Buchnania chochinchinensis* (LOUR.).	*Indian journal of Tropical Biodiversity*	30 (1)	-
11.	S.K. Banerjee, Avinash Jain, M. Rajkumar and Saikat Banerjee	2021	Characteristics of fly ash of thermal power plant and its possible utilization in agriculture and foretsry	*Indian Journal of Tropical Biodiversity*	29(2) : 87-101	-
12.	RathodDigvijay Umedsinh,Nanita Berry, Neeraj Prajapati, Darshan K. and Kaushal Tripathi	2021	A single Peepal tree acting as a building foundation stone for constructing multiple houses to Honeybees	*SNHC JOURNAL*	8(3) : 30-32	-
13.	S.K. Banerjee, Saikat Banerjee and P.K. Shukla	2022	Sustainable development through Joint Forest Management with special reference to eco-restoration	*Journal of Tropical Forestry*	38 (1 & 2) : 60-77	-

			of degraded soils in lateritic region and their carbon sequestration potential.			
14.	Singh, J., Aggarwal, R., Bashyal, B.M., **Darshan, K.,** Meena, B.R., Yadav, J., Aditya, S. and Hussain, Z.	2022	Physiological and Growth Responses of Tomato Plants to Different Delivery Methods of Biocontrol Agent *Chaetomium globosum*	*Journal of Community Mobilization and Sustainable Development*.	17(2): 420-428	-
15.	Nanita Berry, Pankaj Kumar, Akash Shukla and Ekta Barkade	2022	Variation in seed germination behavior of *Santalumalbum*based on pre sowing treatment enhancer	*The Pharma Innovation Journal*	11(11): 1461-1465	5.23
16.	Nanita Berry, Nikita Rai and Akash Shukla	2022	Carban pool Assessment in *Gmelinaarborea* under Agro forestry system at Jabalpur district of Madhya Pradesh.	*Indian Journal of Agro forestry*	24(2):13-18	5.23
17.	Mukul Ray and Nanita Berry	2022	Effect of seed treatments on germination percentage of Aegle marmelos	*Journal of Tropical Forestry*	38(3 & 4) : 15-19	-
18.	Manish Kumar Vijay, Maitryee Kundu, Nanita Berry, Neelu Singh, G. Rajeshwar Rao	2022	Wild Edible Fruits: A Valuable Non-timber forest produce to protect livelihoods and Nutrition of forest dweller's.	*Indian Journal of Tropical Biodiversity*	30(1&2)	-
19.	Harshita Agrahari, Devshree Gupta, Raj Singh Yadav, Yogesh Pardhi and Nikhil Verma	2022	*Aegle marmelos* (Bael) – A tree with immense medicinal value	*Indian Journal of Tropical Biodiversity*	30 (1&2): 31-35	4.02
20.	Mohan C., Pawan Kumar, RajeshwarRao G, Rajkumar Mishra and ShashikiranBarve	2022	Predatory potential of *Cantheconafurcellata* (Pentatomidae: Hemiptera) against key defoliator pests of teak in nursery and chickpea under field conditions.	*Journal of Ecology and Environment conservation*.	28 (4). 141-143.	-
21.	Mohan C., SowmyaPriya, Sourabh Dubey and GulshanChakravarty	2022	Botanical Pesticides: An innovative and Ecofriendly approach for insect pest management.	*Indian J. Trop. Biodiversity*	30 (1&2): 20-23.	-
22.	ShephaliSachan, Sandeep Kumar, Pooja Kattiparambil,	2022	Impact of drought stress on *Dalbergia Latifolia Roxb.* And *Pongamia Pinnata L.* Pierre under nursery	*Annals of Forest Research*	65(1): 10853-10873	-

	Anil Kumar, Neeraj Kumar Kushwaha and Avinash Jain		condition: the morphological, physiological and biochemical overview			
23.	Hariom Saxena, SamikshaParihar, Naseer Mohammad and Ganesh Pawar	2023	Variability studies in *Stereospermum suavelens*(Roxb.)DC: a threatened Dashmool species from Central India	Vegetos	https://doi.org/10.1007/s42535-023-00581-w 6:1-9	5.27
24.	Saikat Banerjee, and S.K. Banerjee	2022	Mangrove Ecosystem of Indian Sundarbans: A review	My Forest	58(3):67-90	-
25.	Shephali Sachan, Sandeep Kumar, Pooja Kattiparambil, Anil Kumar, Neeraj Kumar Kushwaha, and Avinash Jain	2022	Morphological, physiological and biological overview on four tropical forest tree species under different drought and salinity interaction stages	Annals of Forest Research.	65(1): 7615-7632.	7.52
26.	Fatima Shirin, Priyadarshani Chhetri, Hariom Barmaiya, Niraj Yadav, SharmishthaGangopadhyay, Mukesh Kumar Sonkar and Shushma Maravi	2022	Evaluating the effect of genotypes and IBA concentration on vegetative propagation of *Gmelina arborea* through semi hardwood cuttings.	Indian Journal of Tropical Biodiversity	30 (1&2): 59-66.	4.02
27.	Irshad Ali Saudagar, Vineet Kumar Mehra, Trilok Gupta, Mukesh Kumar Sonkar, Sushma Maravi and Fatima Shirin	2022	Variation in morphological characters of leaf and culm sheath of *Bambusa vulgaris* Schrad. ex. Wendl. In central India	International Journal of Plant and Soil Science	34(24): 1005-1017	5.07
28.	Irshad Ali Saudagar, Farhat Jahan, Fatima Shirin, Ashish Tiwari, Arvind Pal and Sushma Maravi	2022	Investigation of phytochemicals and determination of compounds of *Phyllanthus emblica* Linn. and *Citrus limon* (L.) Burm. Through proximate analysis and *in vitro* antimicrobial activity against pathogenic fungi *Aspergillus flavus*	World Journal of Advanced Research and Reviews	14(3):203-213	-
29.	Jeevanandham N, Marimuthu M, Natesan S,	2022	Molecular cloning and quantitative real time PCR analysis to study the	Phcog Mag.	18:476-93.	-

	Gandhi K, Prabakar N, and Mohan C		expression of tryptophan decarboxylase gene from *C.annuum* L. against whitefly			
30.	Saxena H.O., Parihar S and Pawar G	2022	Quantitative estimation of Betulin in different plant parts of *Dillenia pentagyna* Roxb. through validated HPTLC method	*Indian Forester*,	148(4): 441-446.	-
31.	Saxena H.O., Kobragade ND, Parihar S, Kundu M, Rao GR & Pawar G	2022	Chemical and morphological variations in *Terminalia bellirica* (Gaertn.) Roxb. – a species of commercial ayurvedic formulation triphla from central India.	*Environment Conservation Journal*	23(1&2): 410–416.	-
32.	Saxena H.O., Das A and Parihar S	2022	*Dillenia pentagyna* Roxb.: A Review on Phytochemistry and Pharmacology	*The Journal of Phytopharmacology*,	11(4):295-299	-
33.	Manish Kumar Vijay, Nanita Berry, Neeraj Prajapati and Rathod DigvijaysinhUmmedsinh	2022	Conservation and Seed Quality enhancement of *Buchananialanzan*Spreng: an endangered NWFP species of Madhya Pradesh	*Biological Forum – An International Journal.*	14(2): 1111-1116.	5.11
34.	Saxena H.O., Parihar S and Das A	2023	Assessment of Variations in PhytochemicalComponents in Stem and Root Bark of *Dilleniapentagyna* from different Locations of Madhya Pradesh	*Biological Forum – AnInternational Journal*,	15(2): 185-190.	5.11
35.	Kaushal Tripathi, Girjesh Kumar and Moni Mishra	2023	Mutagenic impact of ethyl methane sulphonate on morphological and cytological effect on *Trifolium alexandrinum* L https://doi.10.5958/0974-4517.2023.00009.5	Applied Biological Research	25(1):83-92. 2023	4.96
36.	Mohan C., Ramkishormohabe, Ram Bhajan Singh, Neelu Singh and Fatima Shirin	2023	Evaluation of different insecticides against leaf roller, *Pyraustacoclesalis* Walker (Pyraustidae; Lepidoptera) in Bamboo.	*Biological Forum-An International Journal*	15(2): 680-682	

Published in foreign Journals:

Sl. No.	Research paper	Journal and Date	NAAS Rating/ Impact factor
1	Mohammad N, Dahayat A, Pardhi Y., et al. (2022) Inferring genetic diversity and population structure of India's National Teak (*Tectona grandis*L.f.) Germplasm Bank. Genetic Resources and Crop Evolution. 69, 1695–1705 (2022). https://doi.org/10.1007/s10722-021-01335-w	Genetic Resources and Crop Evolution. 69, 1695–1705 (2022).	7.88/ 1.876
2	Naseer Mohammad, Saravanan S and Shirin F (2023) Heartwood-Sapwood-Bark profiles and association studies in *Pterocarpus marsupium*Roxb., a vulnerable antidiabetic forestry species of sub-tropical forest.Scientia Forestalis, 51(e3811):1-9. https://doi.org/10.18671/scifor.v51.12	Scientia Forestalis, 51(e3811):1-9.	-/0.316
3	Gupta R, Sharma LK, Rajkumar M, and Naseer Mohammad, Khan ML (2023) Predicting habitat suitability of *Litseaglutinosa*: a declining tree species, under the current and future climate change scenarios in India. Landscape and Ecological Engineering, (19): 211–225. https://doi.org/10.1007/s11355-023-00537-x	Landscape and Ecological Engineering, (19): 211–225.	8.15/ 2.147
4	Pramod Kumar, Archana Chaturvedi and Vivek Vaishnav (2022) Relationship between endogenous auxin (Indole-3-acetic acid) and adventitious rooting in *Dalbergia* species of different rooting ability. Journal of Tropical Forest Science 34(2): 149-158. https://doi.org/10.26525/jtfs2022.34.2.149	Journal of Tropical Forest Science 34(2): 149-158. April-2022	6.50/ 0.770
5	Rekha R. Warrier, Animesh Sinha, Ajay Thakur, Bilas Singh, Fatima Shirin and Ramasamy Yasodha (2022). Smallholder teak agroforestry in the globalising world: Opportunities and challenges for India. Agriculture and Forestry Journal Vol. 6, Issue 1, pp. 32-40, June, 2022.	Agriculture and Forestry Journal Vol. 6, Issue 1, pp. 32-40, June, 2022.	-
6	**Saxena HO**, Parihar S, Pawar G and Sahu VR (2022). High performance thin layer chromatography method development and validation for quantification of glucuronic acid in gum samples of *Sterculia urens*Roxb.	*JPC–Journal of Planar Chromatography–Modern TLC*, 35 (2): 153-159.	-
7	Ramesh, K. R., Deshmukh, H. K., Sivakumar, K., Guleria, V., **Umedsinh, R. D.,** Krishnakumar, N., and Senthil, K. (2023). Influence of Eucalyptus Agroforestry on Crop Yields, Soil Properties, and System Economics in Southern Regions of India	Sustainability, 15(4), 3797.https://doi.org/10.3390/su15043797	-/3.889

===xxx====