

GOVERNMENT OF INDIA
MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE

RAJYA SABHA
UNSTARRED QUESTION NO. 1326
TO BE ANSWERED ON 09.12.2021

Rain Forest Research Institute, Jorhat

1326. SHRI KAMAKHYA PRASAD TASA:

Will the Minister of ENVIRONMENT, FOREST AND CLIMATE CHANGE be pleased to state:

- (a) whether it is a fact that the objectives of Rain Forest Research Institute (RFRI) are to achieve long-term ecological stability, sustainable development, and economic security through conservation and scientific management of forest ecosystems;
- (b) if so, the details thereof;
- (c) the details of ongoing new projects in RFRI at Jorhat, Assam;
- (d) the total fund granted to RFRI, Jorhat for all schemes during the last two years;
- (e) the new research achievements of RFRI, Jorhat; and
- (f) the total number of vacant posts in RFRI along with the time by when the said posts are likely to be filled?

ANSWER

MINISTER OF STATE IN THE MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE
(SHRI ASHWINI KUMAR CHOUBEY)

(a) & (b) Yes Sir, the Rain Forest Research Institute (RFRI), Jorhat is an institute under the Indian Council of Forestry, Research and Education (ICFRE), Dehradun aiming at long term ecological stability in the region. The RFRI aims to extend knowledge on forestry related issues through research, education and extension in general and to support forestry research in north eastern states. The multidisciplinary scientific manpower of the Institute delivers need based technological achievements in forests science leading towards conservation, protection, restoration and management of forest resources. Therefore, it has taken up studies on means to improve productivity from shifting cultivation areas, so that the need for clearing forests is reduced. It is also working in restoration of the degraded jhum fallows. The RFRI has prepared a Detailed Project Report on rejuvenation of Brahmaputra through forestry interventions, which has provisions for catchment area treatment, containment of river bank erosion and management of wetlands. Recently, RFRI has successfully restored a coalmine overburden dump of North Eastern Coalfields, and transferred the technology to the Coal India Ltd.

Simultaneously, RFRI is also aiming at sustainable development and economic security of the region. RFRI has developed high yielding fast growing clones of bamboos and transferred them to various planting agencies, such as, Assam State Bamboo Development Agency, Madhya Pradesh State Bamboo Mission, Bihar Forest Department, and also private tissue culture labs. Use of these clones can improve the productivity of bamboo by 15 to 20 per cent. In order to streamline the export of agarwood and its products, RFRI has done the Non Detriment Findings (NDF) study on agarwood and suggested export quota to the CITES Management Authority, for the first time. This will permit legal exports from India, and benefit the agarwood farmers, industries processing the wood and the exporters.

(c) The details of ongoing new projects in RFRI at Jorhat, Assam is given at **Annexure-I**.

(d) The total fund granted to RFRI, Jorhat is Rs. 1958.20 lakhs in the financial year 2019-20 and Rs. 2169.47 lakhs in the financial year 2020-2021.

(e) The new research achievements of RFRI, Jorhat is given at **Annexure-II**.

(f) The total number of vacant post in RFRI is 34 out of which 4 posts are to be filled on deputation. All the vacant posts required to be filled at RFRI level by 31st March, 2022.

ANNEXURE-I

Annexure referred to in reply to part (c) of the Rajya Sabha Unstarred Question No. 1326 due for reply on 09.12.2021 regarding “Rain Forest Research Institute, Jorhat”.

Details of ongoing new project in RFRI at Jorhat, Assam

Sl.No.	Title of the project/Duration	Budget outlay (Rs. in lakhs)	Funding Agency	
1.	AICP programme for Genetic Improvement of <i>Melia</i> (Under AICP on <i>Melia</i>) Duration: 10 years (2012-22)	107.00	Indian Council of Forestry Research and Education (ICFRE)	
2.	Co-ordinated Research Programme on Agar (<i>Aquilaria malaccensis</i> Lamk.) Duration: 10 years (2017-27)	153.43		
3.	Conservation and Evaluation of Bamboo Genetic Resources in Northeast India Duration: 10 years (2017-27)	95.08		
4.	Utilization of Ectomycorrhizal diversity for the quality stock production of Junipers, Oak and Chestnut in Sikkim, India. Duration: 3 years + 1 year extension (2018-22)	14.95		
5.	Genetic improvement of <i>Parkia roxburghii</i> Duration: 3 years (2019-22)	24.58		
6.	Genetic diversity of plant growth promotory diazotrophs and fluorescent pseudomonads associated with traditionally distinct mountain agroecosystems of Nagaland. Duration: 2 years (2020-22)	22.42		
7.	Assessment of soil carbon pools under different land uses and carbon stock simulation in climate change scenario. Duration: 3 years (2020-23)	13.50		
8.	Assessment of population structure and regeneration status of <i>Magnolia gustavi</i> King. -A critically endangered tree species of Assam. Duration: 3 years (2021-24)	18.14		
9.	Standardization of Inoculation Technique for Agarwood formation in <i>Aquilaria malaccensis</i> Lamk. in Khasi and Garo Hills of Meghalaya. Duration: 3+1 years (Sept, 2017 to 2021)	18.92		Meghalaya Basin Development Authority, Shillong, Meghalaya
10.	Creation of North-East Indian Zingiberales biodiversity garden (Gene Bank) in RFRI. Duration: 5 years (2017-22)	18.87		National Medicinal Plants Board (NMPB)
11.	Development and optimization of biochar enriched supercompost from forest necromass for enhanced soil carbon sequestration. Duration: 3 years (Dec, 2018 to 2021)	16.49		Ministry of Earth Sciences
12.	Exploration, identification of genetic resources and strategies for sustainable management of <i>Paris polyphylla</i> in Arunachal Pradesh, Manipur, Mizoram and Nagaland in Northeast India Duration: 3 years (2018-21)	26.44		National Medicinal Plants Board (NMPB)

13.	Promoting livelihood by bamboo charcoal making and briquetting to the forest fringe villages of Karbi Anglong District, Assam Duration: 3 years (2019-22)	45.43	National Mission of Himalayan Studies (NMHS)
14.	Strengthening of Tissue Culture Laboratory Duration: 2years (2019-2021)	21.00	National Bamboo Mission (NBM)
15.	Restoration of orchid flora of Makum Coalfield areas of Digboi Forest Division. Duration: 3 years (2019-22)	45.14	Central Mine Planning & Design Institute Limited (CMPDI), Ranchi, Jharkhand.
16.	Genome wide and geospatial approaches for enhancing the adaptive potential of threatened rattan resources of India. Duration: 3 years (2019-22)	25.59	Department of Biotechnology (DBT), Govt. of India
17.	Improving the traditional homestead to a viable agro-forestry system for biodiversity conservation and inclusive growth of Khampti tribe of Namsai District, Arunachal Pradesh. Duration: 3 years (2019-22)	41.20	National Mission of Himalayan Studies (NMHS)
18.	Quantification of ecological and economic services of eco-tourism as livelihood option for sustainability of Rhino Population in Manas Tiger Reserve in Assam. Duration: 2 years (2020-22)	19.62	MoEF&CC, Govt of India.
19.	Assessment of socio-ecological vulnerability to climate change among agroforestry managers along an altitude gradient in the Eastern Himalayas. Duration: 2 years (2020-22)	31.06	Department of Science & Technology (DST), Govt. of India
20.	Promotion of Paura Bamboo (<i>Bambusa polymorpha</i>) through Nursery and Plantation Management. Duration: 2 years (2020-22)	10.00	Tripura Bamboo Mission
21.	Spring Rejuvenation for Water Security in Himalaya. Duration: 3 years (2020-23)	33.81	National Mission of Himalayan Studies (NMHS)
22.	Establishment of micro/medium processing units for bamboo product development and processing. Duration: 1 year(2020-21)	90.00	National Bamboo Mission (NBM)
23.	Identification of genetically superior germplasm of priority bamboo species of Mizoram. Duration: 3 years (2021-24)	25.00	Mizoram Horticulture Department
24.	Evaluation of Contribution of NTFP in Tripura's Economy. Duration: 1 year (2021-22)	11.50	NTFP Centre of Excellence- Tripura
25.	Extension of the existing Tissue Culture Laboratory at RFRI, Jorhat for mass production of bamboo planting stock. Duration: 2 year (2021-23)	176.00	North Eastern Council
26.	AICRP-2: All India Coordinated research project on bamboo. Duration: 5 years (2020-25)	567.77	Under CAMPA scheme
27.	AICRP-7: Assessment and monitoring of Invasive	41.64	"Strengthening

	Alien Plant species in India and formulation of strategies for management of key Invasive Alien Plant Species in different regions of the country. Duration: 6 years (2020-26)		forestry research for ecological sustainability and productivity enhancement":
28.	AICRP-10: Developing seed testing and seed storage protocols of selected forestry species from diverse forest types. Duration: 5 years (2020-25)	68.89	
29.	AICRP-11: All India coordinated research project on <i>Dalbergia sissoo</i> . Duration: 5 years (2020-25)	50.32	
30.	AICRP-12: Assessment of demand and supply of timber, fuel-wood and fodder in India. Duration: 3 years (2020-23)	18.75	
31.	AICRP-13: Valuation of forests for GDP, Green GDP and Payment of eco-system goods and services. Duration: 4 years (2020-24)	25.00	
32.	AICRP-14: Forest fire research and knowledge management. Duration: 5 years (2020-25)	66.82	
33.	AICRP-16: Bio-prospecting for industrial utilization of lesser known forest plants. Duration: 5 years (2020-25)	32.01	
34.	AICRP-17: Enhancement of fodder availability and quality to reduce unsustainable grazing in the forests. Duration: 5 years (2020-25)	53.70	
35.	AICRP-21: Development of superior bio-fertilizer products for enhanced plant productivity. Duration: 5 years (2020-25)	31.58	
36.	AICRP-22: Preparation of forest soil health cards under different forest vegetations in all the forest divisions of India. Duration: 3 years (2020-23)	193.58	
37.	AICRP-25: Domestication, genetic characterization, improvement and diversified utilization of poplars. Duration: 5 years (2020-25)	59.39	
38.	AICRP-27: Conservation and sustainable management of wild edible fruit species. Duration: 5 years (2020-25)	62.92	
39.	AICRP-29: Sustainable management of NTFP through conservation and value addition. Duration: 5 years (2020-25)	63.09	
40.	AICRP-30: Development of package of practices on <i>Gmelina arborea</i> Roxb. in selected regions of India. Duration: 5 years (2020-25)	29.22	
41.	AICRP-31: Study of climate driven effects on Indian forests through long term monitoring. Duration: 5 years (2020-25)	212.73	
42.	National Programme for Conservation and Development of Forest Genetic Resources. Duration: 5 years (2020-25)	499.30	

Annexure referred to in reply to part (e) of the Rajya Sabha Unstarred Question No. 1326 due for reply on 09.12.2021 regarding “Rain Forest Research Institute, Jorhat”.

New Research achievements of RFRI, Jorhat

1. Fungal inoculum for artificial inoculation of agarwood in *Aquilaria malaccensis* has been released for marketing in the brand name of "Sashi Inoculant". The product is available in two forms i.e. Liquid and Paste.
2. Rehabilitation of degraded post coal mined land was carried out successfully by revegetation with native plant species using integrated biological approach. The technology was transferred to Coal India Ltd.
3. Species specific regression models for volume estimation of *Quercus serrata* & *Pinus kesiya* using the non destructive procedures were developed in Manipur.
4. Successfully carried out non detrimental findings on *Aquilaria malaccensis* Lamk. in India. Also developed the Volume tables for *Aquilaria malaccensis*, for Northeast India.
5. By a survey for high yielding and fast-growing genotypes of 15 different commercially important bamboos, in North Eastern States, a total of 493 accessions have been collected. These will be tested at multiple locations and released for use by farmers and forest departments.
6. To study the soil carbon pools under different land uses of Assam, a total 75 soil samples were collected from tea garden and forests and analyzed for texture, pH, bulk density (BD) and labile SOC pools. Once completed the study will provide baseline data on soil carbon under various land uses in Northeast India.
7. A total of 2078 trees of different species were measured with the help of Criterion RD 1000 BAF Scope and Gator Eye Caliper in Assam to develop Allometric Models for important Tree Species outside the Forest (TOF). This will be the first study that will help in assessment of volume in trees outside forests.
8. Surveyed and collected 7 ectomycorrhizal species viz., *Glomus*, *Acaulospora*, *Diversispora*, *Scutellospora*, *Gigaspora*, *Entrophosphora* and *Rhizophagus*, for inoculation in oaks, juniper and chestnut in Sikkim. The problem of lack of natural regeneration in these species has been solved by introducing the mycorrhiza.
9. One seedling seed orchard of *Parkiaroxxburghii* in 2 hectare land at Chinkheiching Reserve Forest, Manipur, was established. This tree species is suffering mortality due to a combination of pests and diseases, across the region. Therefore selection of healthy individuals was done and a seed orchard was established, to overcome the problem.
10. Studies on natural regeneration, diversity and distribution of soil seed banks in watershed of sacred Khecheopalri Lake of Sikkim indicated a total of 210 plant species from the aboveground vegetation.
11. Surveyed protected areas of Assam and Mizoram to explore populations of threatened rattan resources viz. *Calamusacanthospathus* and *C. nambareinsis* in Mawmrang CF and

Kawlhem CF, Champhai district Mizoram. Study on population and regeneration status of *Calamus acanthospathus* and *C. namkareinsis* was carried out.

12. Explored 51 populations of *Paris polyphylla* from Arunachal Pradesh, Mizoram and Nagaland and identified 4 different forms of *P. polyphylla* and conserved the genetic resources at FRCBR, Aizawl. Also, collected ethno-botanical information of *P. polyphylla* used by communities.
13. Documented about 150 important medicinal plants and herbs used by 8 indigenous communities namely; Halam, Kuki, Munda, Reang, Lushai, Orang, Uchoi and Murasing in four districts of Tripura. More than 20 diseases/ailments treated using different crude formulation of medicinal plants and herbs have been identified and documented. Documented the process of formulation and their administration during treatments. Identified existing schemes, trends of utilization and availability of plants and their source of collection.
14. Collected 12 live Zingiberales plant germplasm from Assam for *ex-situ* conservation in RFRI Zingiberales Biodiversity Garden (Gene Bank) of the family Zingiberaceae, Costaceae, Marantaceae and Musaceae.
15. Surveyed in Jorhat, Sivsagar and KarbiAnglong districts of Assam and enumerated 43 accessions of *B. balcooa*, 65 accessions of *B. tulda*, 8 accessions of *B. nutans* and 7 accessions of *B. pallida*. Selected and established one 'Bambusetum' of one-hectare area at Bihmari, Borgang Forest Range under East Sonitpur Forest Division, Biswanath Chariali (Assam).

16. Published Books:

- i. Rajesh Kumar, N. S. Bisht, R. S. C. Jayaraj (2020) "Mushrooms of Meghalaya". Rain Forest Research Institute, Jorhat: 184P. (Published in March, 2020)
- ii. Rajesh Kumar, R. S. C. Jayaraj, Hansraj Sharma and Sanddep Yadav (2021) "Mushrooms of Mizoram". Rain Forest Research Institute, Jorhat: 224P. ISBN No. 9788195442010. (Published in November, 2021)

17. Published RFRI Reports:

- i. RFRI Report-8 titled "*Agaru Prastutkoronor Karikori Kaushal*" in Assamese.
- ii. RFRI Report-11 titled "*Mikania micrantha*- a growing threat to Tropical Forest Ecosystems- a case study from forests of Upper Assam".
- iii. RFRI Report-15 titled "Seed ball technology for restoration of coal mined land".