

RESEARCH CIRCLE
Forest Directorate
Government of West Bengal

➤ **INTRODUCTION**

- **TREE IMPROVEMENT PROGRAMME**
- **IMPROVED NURSERY TECHNIQUES & TRIALS**
- **SUPPLY OF QUALITY PLANTING MATERIAL & CERTIFIED SEEDS**
- **INSITU & EXSITU CONSERVATION OF FOREST TREES**
- **INSITU & EXSITU CONSERVATION OF MEDICINAL PLANTS**
- **SOIL TESTING**

➤ **ADMINISTRATIVE STRUCTURE & CONTACT NUMBERS**

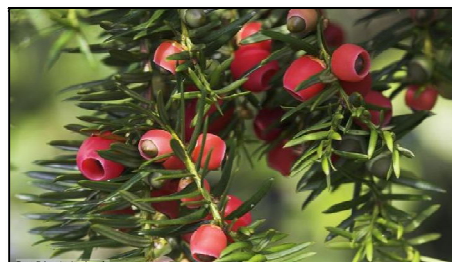
➤ **RESEARCH CALENDER FOR 2016-17**

Introduction

Forestry Research in the state is organized by Research Circle through its three divisions, namely, Silviculture (Hills) Division with its headquarter at Darjeeling, Silviculture (North) Division, headquarter at Siliguri and Silviculture (South) Division with its headquarter at Midnapore.

Major mandate of the Research Circle is as follows:

1. Tree Improvement Programme
2. Trials on Modern Nursery Practices
3. Supply of Quality Planting Materials & Certified Seeds
4. In-situ & ex-situ conservation of Trees
5. In-situ & Ex-situ conservation of Medicinal Plants
6. Soil Testing



1. TREE IMPROVEMENT PROGRAMME

a. Maintenance of Seed Stand & Plantations: For the procurement of superior seeds, Seed Production Areas / Seed Stand are maintained annually. Seeds collected from Seed Stand / Plus Trees were supplied to user Divisions. During 2015-16 4453.50 Kgs of certified seeds were supplied to user Divisions. Seeds collected from these stands / Plus trees were used to raise QPMS and for undertaking various nursery trials.

	Division Wise Seed Stand / Plus Trees (in Nos.)		
	Silviculture Hills	Silviculture North	Silviculture South
Seed Stand	170.76 Ha.	220.60 Ha.	37.17 Ha.
Plus Trees	504 Nos.	479 Nos.	110 Nos.

b. Plantations : For assured supply of genetically improved seeds the Divisions under this circle undertake plantations of RET (Rare, Endangered & Threatened) as well as maintenance of Seedling Seed Orchard both in North & South Bengal.

b. Clonal / Progeny Orchards & Provenance Trials

c. Setting up of Block Plantations along with regular plantations for long term testing of improved seeds / clones.

2. IMPROVED NURSERY TECHNIQUES & TRIALS

1. Various **Pre-treatments** for the seeds to be propagated are done in order to break dormancy and achieving high germination rate.
2. Trials are done for **Watering frequency & Misting regime**
3. **Rooting Media Standardization** :- Various rooting media trials with Good Earth & Sand and other components like compost, vermiculite, Rhizobium, Azotobacter, Frankia, Mycorizae etc.
4. Trial using various **sizes of Container** (Hykopot)
5. Organic mode of **Pest & Disease control**
6. Protocol for rooting hormones such as IBA, NNA, IAA, etc.
7. Trial using different girth cuttings.

3. SUPPLY OF QUALITY PLANTING MATERIALS & CERTIFIED SEEDS

a. To develop techniques for raising of **Tall Seedlings**

b. Supply of Quality Planting Materials of RET Species such as *Acer osmastonii*, *Acer Hookerii*, *Taxus baccata*, *Cinnamomum cecidodaphne*, *Persea glaucasceans*, *Cinnamomum bejolghata*, *Buchanania lanzan*, *Anogeissus latifolia* etc.

c. Supply of selected improved strain of Tree species from Clonal Multiplication Garden

Certified superior quality seeds are supplied to Divisions containing information on the locality, seed stand, Plus Tree or seed tree number from where the seed is procured along with the date of collection, germination % and viability etc. During 2015-16 4453.50 Kgs of certified seeds were supplied to user Divisions.

4. IN SITU & EX SITU CONSERVATION OF FOREST TREES

In-Situ Conservation

a. Maintenance of **Preservation Plots** : These plots are ecological models of existing forest type and are important for studies of ecological succession, recording diversity in plant population with time. A periodic study would be able to monitor record and throw light on such change.

Division Wise Area (Ha.)		
Silviculture Hills	Silviculture North	Silviculture South
237.37	84.40	38.676

b. Maintenance of **Linear Sample Plots** : Laid out in high forests only to identify species, study their rates of growth (5 yearly measurement of all the trees above 90cm b.h.g.) and mortality in natural succession to study the ecology of forest type occurring in that line.

Division Wise Target		
Silviculture Hills	Silviculture North	Silviculture South
4 ha	4 ha	00

Ex-Situ Conservation

a. Maintenance of **Sample Plots** : These plots are generally laid out in both plantation and high forests to find out the rate of growth and the volume increment of crop thinned at five year interval and to compare the effects of different grades of thinning to prepare the yield table and N / D curves.

Division Wise Area (Ha.)		
Silviculture Hills	Silviculture North	Silviculture South
17.197	2.0	4.25

b. Lloyd Botanical Garden (LBG):

Established in 1878, the Garden is located at an elevation of 6,000 ft and covers an area of about 40 acres. It has 133 trees species, including two living fossil species (*Ginkgo biloba* and *Metasequoia glyptostroboides*), 40 species of climbers and 92 species of orchids. This beautiful garden attracts a lot of tourists including foreign tourists. The garden has a herbarium with about 14,000 sheets representing 175 families, 1,145 genera and 3,584 species. Digitization of the herbarium sheets has been undertaken to make this unique resource available to a wider audience.

6. *IN SITU & EX SITU* CONSERVATION OF MEDICINAL PLANTS

In-situ Conservation

Creation of Seven (7) new MPCAs in West Bengal. [Project No. CONS/WB-01/2014]

Our forest is a repository of various species of medicinal trees, shrubs, herbs etc. Conservation is affected through setting up of Medicinal Plant Conservation Areas (MPCA). Seven new MPCAs were established during 2014-15. Location-wise details of the same are as follows :

New MPCA	Old MPCA
Rachela under Gorumara WL Division.	Bonnie Camp (24 Pargana {South} Division)
Phalut under Darjeeling WL Division.	Garpanchakot (Kangsaboti North Division)
Panchanoi under Darjeeling WL Division	North Rajabhatkhawa (Buxa Tiger Reserve {East})
Beechabhanga under Jalpaiguri Forest Division.	North Sevoke (Darjeeling WL Division)
N.Rajabhatkhawa under Buxa Tiger Reserve (West)	Sursuti (Jalpaiguri Division)
Kankrajhore under Jhargram Forest Division	Dhotrey (Darjeeling Forest Division)
Shusunia under Bankura Division	Tonglu (Darjeeling Forest Division)

Ex-situ Conservation

Maintenance of Herbal Garden at Amlachati which has an assemblage of 854 species collected from the different parts of the state. For hill area another one being established at Sonada and for North Bengal Plains one being established at Sukna.

JFMC : Peoples participations in Medicinal plant Conservation : One NMPB funded project is implemented in South Bengal where medicinal Plants are raised as intercrop with regular plants as well as raising medicinal tree plantation. Since major issue is the post harvest marketing of medicinal plants, arrangements is being done with manufacturers of Ayurvedic drugs to obtain directly from the JFMC thereby ensuring high returns for JFM members.

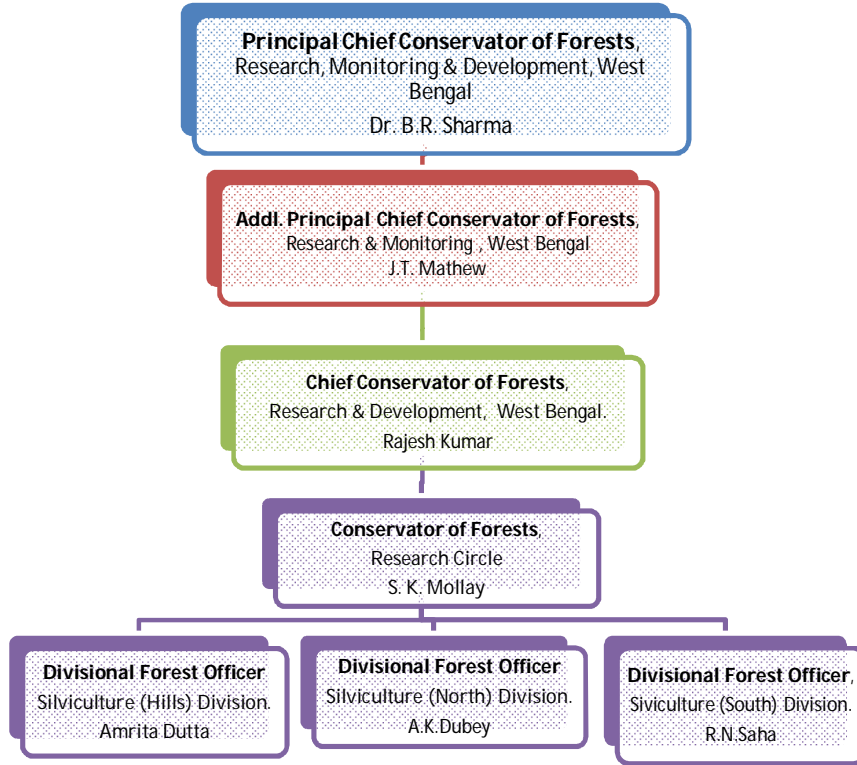
7. SOIL TESTING

There are two soil testing laboratories under the Research Circle, one in Salugarah and another in Midnapore. The laboratories carry out soil analysis to determine pH value, organic carbon, available N₂, total N₂, available P₂O₅, available K₂O and C/N ratio of different plantation sites & provide recommendation on any soil amelioration.

Research Advisory Committee : Research topics are finalized after coming meeting of RAC either half yearly or annually.



ADMINISTRATIVE STRUCTURE & CONTACT NUMBERS



Sl. No.	Office	Phone	Extn.	Fax	e-mail	Address
1.	PCCF RM&D	03322250053	208	03322341865	pccfrmdwb@gmail.com pccfres-wb@nic.in	Office of the principal Chief Conservator of Forests Research Monitoring & Development, New KIT Building, 3 rd Floor, P-16 India Exchange Place Extn. Kolkata 73
		03322250053				
2.	APCCF R&M	03322250053	209	03322341854	pccfrmdwb@gmail.com appcfm-wb@nic.in	Office of the principal Chief Conservator of Forests Research Monitoring & Development, New KIT Building, 3 rd Floor, P-16 India Exchange Place Extn. Kolkata 73
3.	CCF R&D	03322250053	203	03322341865	ccfres.fd_wb@gov.in ccfres-wb@nic.in	Office of the principal Chief Conservator of Forests Research Monitoring & Development, New KIT Building, 3 rd Floor, P-16 India Exchange Place Extn. Kolkata 73
4.	CF Research	03322341855		03322341865	cfresearch023@gmail.com cfrc-wb@nic.in	Office of the principal Chief Conservator of Forests Research Monitoring & Development, New KIT Building, 3 rd Floor, P-16 India Exchange Place Extn. Kolkata 73
5.	DFO Silviculture Hills	03542252372		03542252372	dfosiln-wb@nic.in	Office of the Divisional Forest Officer Silviculture Hills Division Shankar Villa, Ladenla Road, Post & District Darjeeling 734101
6.	DFO Silviculture North	03532432565		03532432565	dfosil-wb@nic.in	Office of the Divisional Forest Officer Silviculture (North) Division 45, Ashutosh Mukherjee Road, College Para P.O. Siliguri 734001 District Darjeeling
7.	DFO Silviculture South	03222275468		03222266249	dfosilvis@gmail.com dfosils-wb@nic.in	Office of the Divisional Forest Officer Silviculture (South) Division MichealMadhusudan Nagar, Midnapore

Research Calender of 2016-17 under Research Circle

Sl. No.	Activities	Division/ Location	Apr, 2016	May, 2016	June, 2016	July, 2016	Aug, 2016	Sept, 2016	Oct, 2016	Nov, 2016	Dec, 2016	Jan, 2017	Feb, 2017	Mar, 2017
1.	Collection of Seeds		⊙	⊙							⊙	⊙	⊙	⊙
2.	Nursery Trials/ raising Seedling/ trials for protocol development									⊙	⊙	⊙	⊙	⊙
3.	Maintenance / Sorting Shifting													
4.	Maintenance of Seed Stand & recording data etc.										⊙	⊙	⊙	⊙
5.	Maintenance of Plus Trees & recording data etc.										⊙	⊙	⊙	⊙
6.	Maintenance of Seed Trees & recording data etc										⊙	⊙	⊙	⊙
7.	Maintenance of Preservation Plots & recording data etc										⊙	⊙	⊙	⊙
8.	Maintenance of Sample Plots & recording data etc										⊙	⊙	⊙	⊙
9.	Maintenance of Linear Sample Plots & recording data etc										⊙	⊙	⊙	⊙
10.	Maintenance of Arboratum& recording data etc										⊙	⊙	⊙	⊙
11.	Advance Soil Work for Plantation		⊙	⊙										⊙
12.	Experimental Plantations			⊙	⊙	⊙								
13.	Maintenance of Older Plantations & recording data etc.				⊙	⊙	⊙	⊙						
14.	Maintenance / replacement of CMG				⊙	⊙								
15.	Collection of Soil for Testing									⊙	⊙	⊙		
16.	Soil Testing		⊙	⊙						⊙	⊙	⊙	⊙	⊙
17.	Analysis of data collected from nursery, plantation, seed stand etc											⊙	⊙	⊙
18.	Updation of Plantation Journals					⊙			⊙					⊙
19.	Supply of certified seeds to user Divisions									⊙	⊙	⊙	⊙	⊙
20.	Supply of QPMs to user Divisions			⊙	⊙	⊙								
MPCA														
01.	Floral Inventory			⊙			⊙			⊙			⊙	
02.	Herbarium Preparation				⊙			⊙			⊙			⊙
03.	Ex-situ activities			⊙	⊙	⊙	⊙							
04.	Entry Point Activities									⊙	⊙	⊙	⊙	⊙
05.	Data Compilation & Analysis				⊙			⊙			⊙			⊙