



BOTANIC GARDEN OF INDIAN REPUBLIC, Noida

BOTANICAL SURVEY OF INDIA

(Dr Sandeep K Chauhan)

Annual Scientific Work Contents 2020-21

1. Plant collection from various parts of India and their introduction and conservation in BGIR
2. Plantation of endemic plants in Forest arboretum as per forest types being developed in BGIR .
3. Studies on phenological aspects of endemic trees of BGIR.
4. Studies on seed germination of endemic trees & difficult to root sps.,
5. Threatened plants collection and conservation in BGIR as per the RET sps., being conserved in Botanic Gardens funded under ABG Scheme
6. Garden maintenance and development .
7. NMHS project .
8. Preparation of Database for endemic trees and medicinal Plants of BGIR .

Plant Collection and Conservation

Summary of the Plants Collected during 2020-21

During the period 12 tree species of about 1809 plants and 20 species of about 980 plants were collected from BSI-ARC, Jodhpur, Rajasthan and BSI, NRC, Dehradun respectively. Besides above, about 15000 plants of 60 species of trees, shrubs, herbs as well ornamental plants were collected from local Forest Nurseries of NCR, U.P. About 25 species (8 species of grasses) from wild and 40 species (including 5 bamboo species of grasses) from various forest nurseries of Uttarakhand were procured during field visit in Uttarakhand.

- Total Plant spp. collected from BSI Regional Centers: Sps (35) Plants (2700)
- Total Plant spp. collected from Local Forest Dept Nurseries: Sps (50) Plants (1505)
- Total Plant spp. collected from Seed Bank Nursery of BGIR: Sps (33) Plants (8,961)

Plantation in Forest Arboretum as per Forest Types

Plantation done so far at BGIR 2020-21

S.no.	Zone 2 (Taxa planted)	Family	common name	No. of planted saplings in the respective zone
1.	<i>Butea monosperma</i>	Fabaceae	Dhak ढाक	20
2.	<i>Manilkara hexandra</i>	Sapotaceae	खिरनी khirmi	40
3.	<i>Mimusops elengi</i>	Sapotaceae	Maulsari मौलसरी	45
4.	<i>Neolamarkia cadamba</i>	Rubiaceae	कदम्ब Kadamb	5
5.	<i>Pongamia pinnata</i>	Fabaceae	Karanj करंज	25
6.	<i>Pterocarpus santalinus</i>	Fabaceae	Lal Chandan	10
7.	<i>Terminalia arjuna</i>	Combretaceae	अर्जुन Arjun	30
8.	<i>Terminalia bellirica</i>	Combretaceae	बहेड़ा Bahera	24
28/07/20				00
9.	<i>Azadirachta indica</i>	Meliaceae	Neem	19
10.	<i>Thevetia peruviana</i>	apocynaceae	Peeli kaneer	9
11.	<i>Elaeocarpus sphaericus</i>	Elaeocarpaceae	Rudraksha	6
12.	<i>Diospyros malabarica</i>	Ebenaceae	Malabar ebony	32
13.	<i>Agathis robusta</i>	Aurocariaceae	Queensland kauri	3
14.	<i>Trachycarpus takil</i>	Arecaceae	Kumaon palm	4
15.	<i>Washingtonia robusta</i>	Arecaceae	Mexican fan palm	4
16.	<i>Ficus virens</i>	Moraceae	White fig	3
17.	<i>Murraya koenigii</i>	Rutaceae	Curry tree	17
18.	<i>Syzygium cumini</i>	Myrtaceae	Jamun	10
19.	<i>Dalbergia sisso</i>	Fabaceae	seshum	11
20.	<i>Podocarpus sp.</i>	podocarpaceae		06
21.	<i>Areca catechu</i>	Arecaceae	betel palm	15
22.	<i>Salvadora persica</i>	Salvadoraceae	Miswach	24
23.	<i>Cassia fistula</i>	Fabaceae	Amaltash	7
			TOTAL	369

S.no.	Zone 3 (Taxa planted)	Family	Common name	No. of planted saplings in the respective zone
24.	<i>Azadirachta indica</i>	Meliaceae	Neem	30
25.	<i>Cassia glauca</i>	Fabaceae	Pila Amaltas	11
26.	<i>Holoptelea integrifolia</i>	Ulmaceae	पपड़ी papri	18
27.	<i>Manilkara hexandra</i>	Sapotaceae	खिरनी khirmi	30
28.	<i>Mimusops elengi</i>	Sapotaceae	Maulsari मौलसरी	40
29.	<i>Syzygium cumini</i>	Myrtaceae	Jamun	11
30.	<i>Thespesia populnea</i>	Malvaceae	Paras pipa पारस पीपल	30
25/07/20				00
31.	<i>Albizia lebbek</i>	Fabaceae	Siris	7
32.	<i>Anona reticulata</i>	Annonaceae		3
33.	<i>Dalbergia latifolia</i>	Fabaceae	काला शीशम Kala-shisham	22
34.	<i>Holoptelea integrifolia</i>	Ulmaceae	चिलचिल chilbil	10
35.	<i>Madhuca longifolia</i>	Sapotaceae	महुवा Mahua	32
36.	<i>Mangifera indica</i>	Anacardiaceae	mango	10
37.	<i>Manilkara hexandra</i>	Sapotaceae	खिरनी khirmi	35
38.	<i>Moringa olifera</i>	Moringaceae	Munga, drumsticks	30
39.	<i>Syzygium cumini</i>	Myrtaceae	Jamun	30
40.	<i>Terminalia arjuna</i>	Combretaceae	अर्जुन Arjun	31
41.	<i>Terminalia chibula</i>	Combretaceae	बहेड़ा Bahera	2
27/07/2020				00
42.	<i>Albizia lebbek</i>	Fabaceae	Siris	5
43.	<i>Kigelia africana</i>	Bignoniaceae	Balam khira	10
44.	<i>Pseudium guajava</i>	rosaceae	Amrood	10
45.	<i>Pterocarpus santalinus</i>	Fabaceae	Lal Chandan, Red Sandalwood	8
46.	<i>Terminalia bellirica</i>	Combretaceae	बहेड़ा Bahera	2
47.	<i>Alstonia scholaris</i>	apocynaceae	devils' tree	50
48.	<i>Hyophorbe lagenicaulis</i>	Aeraceae	bottle palm	4
49.	<i>Garcinia indica</i>	Clausiaceae	Kokum	4
50.	<i>Lagerstroemia speciosa</i>	Lytharaceae	Queen Crape Myrtle	24
51.	<i>Syzygium cumini</i>	Myrtaceae	Jamun	10
52.	<i>Neolamarkia</i>	Rubiaceae	Kadam	4

	cadamba			
53.	<i>Polyalthia longifolia</i>	Anonaceae	False Ashoka	37
54.	<i>Salix alba</i>	Salicaceae	White willow	3
55.	<i>Pithecellobium dulce</i>	Fabaceae	Jungle jalebi	10
56.	<i>Anacardosus latifolia</i>	combretaceae	Dhau	2
57.	<i>Putranivva roxburghii</i>	Putranivaceae		30
			TOTAL	595

Plantation done so far at BGIR 2020-21

S.no.	Medicinal Section (Taxa planted)	Family	common names	No. of planted saplings in the respective zone
58.	<i>Bredelia sinensis</i>	Phyllanthaceae	Asoi	50
59.	<i>Chlorophytum bori</i>	Asperagaceae	Musli	22
60.	<i>Cinnamomum camphora</i>	Lauraceae	kapur	5
61.	<i>Mentha spicata</i>	Lamiaceae	mint	10
62.	<i>Piper longum</i>	Piperaceae	long pepper	17
63.	<i>Pterocarpus santalinus</i>	Fabaceae	LalChandan	near net house
				104

S.no.	Fruit Section (Taxa planted)	Family	common name	No. of planted saplings in the respective zone
64.	<i>Aegle marmelos</i>	Rutaceae	wood apple	6
65.	<i>Anona reticulata</i>	Annonaceae	wild sweetsop	5
66.	<i>Carrisa carandus</i>	carricaceae	Karond	30
67.	<i>Citrus limon</i>	Rutaceae	lemon	11
68.	<i>Phyllanthus emblica</i>	Phyllanthaceae	आँवला Aonla	3
69.	<i>Punica granatum</i>	Lythraceae	Anar	5
70.	<i>Syzygium cumini</i>	Myrtaceae	Jamun	19
71.	<i>Tamirandus indica</i>	Fabaceae	imli	5
				84

Plantation date: 14.08.2020

serial no.	plantation along metro parking (Zone 7)	family	common name	No. of planted saplings in the respective zone
72	<i>Moringa olifera</i>	Moringaceae	drumsticks	25
73	<i>Acasia sp.</i>	Fabaceae		50
74	<i>Thespesia populina</i>	Malvaceae		15
75	<i>Bauhinia variegata</i>	Fabaceae	Kachnar	25
76	<i>Ceba pentandra</i>	Malvaceae		9
77	<i>Cassia glauca</i>	Fabaceae		2
78	<i>Cassia fistula</i>	Fabaceae		15
79	<i>Jatropha</i>	Euphorbiaceae		25
80	<i>Tecoma undulata</i>	Apocynaceae	Tecoma	10
81	<i>Callistemon viminalis</i>	Myrtaceae	Bottlebrush	20
82	<i>Grevillea robusta</i>	Proteaceae	Silver oak	44
83	<i>Thevetia peruviana</i>	Apocynaceae	Peeli kaner	1
84	<i>Syzygium cumini</i>	Myrtaceae	Jamun	10
85	<i>Haplophragma adenophylla</i>	Bignoniaceae	katsagon	10
86	<i>Schleichera oleosa</i>	Sapindaceae	Kusum	10
87	<i>Taberna montana</i>	Rutaceae	Chandni	3
88	<i>Hebiscus rosa-sinensis</i>	Malvaceae	Jurhal	1
			Total	275

serial no.	plantation along metro parking	family	common name	No. of planted saplings in the respective zone
89	<i>Jacaranda sp.</i>	Begoniaceae		4
90	<i>Cassia fistula</i>	Fabaceae	Amaltash	5
91	<i>Grevillea robusta</i>	Proteaceae	Silver oak	5
92	<i>Calliandra viminalis</i>	Myrtaceae	Bottle brush	4
93	<i>Thevetia peruviana</i>	Apocynaceae	Peeli Kaneer	1
			Total	19

Plantation done so far at BGIR 2020-21

Trees planted in zone 6 on 18/08/2020

S.no	Botanical name	Family	Common name	Saplings planted
94	<i>Holoptelia integrifolia</i>	Ulmaceae	चिलबिल chilbil,	14
95	<i>Schleichera oleosa</i>	Sapindaceae	Kusum	10
96	<i>Sterculia urens</i>	Malvaceae	kateera gum	46
97	<i>Acacia nilotica</i>	Fabaceae	Babool	32
98	<i>Terminalia arjuna</i>	Combretaceae	Arjun	50
99	<i>Delbergia sp.</i>	Fabaceae		1
100	<i>Phoenix sylvestris</i>	Aeraceae	China palm	18
101	<i>Terminalia bellirica</i>	Combretaceae	Bhenda,	37
			Total	208

Trees planted in Zone 6 on 18/08/2020

S.no.	Botanical name	Family	Common name	saplings plant
102	<i>Aegle marmelos</i>	Rutaceae	Wood apple	3
103	<i>Bauhinia variegata</i>	Fabaceae	Kachnar	10
103	<i>Ceiba pentandra</i>	Malvaceae	Kapok	60
104	<i>Haldinia cordifolia</i>	Rubiaceae	Kadambi	9
105	<i>Mitragyna parvifolia</i>	Rubiaceae	Kadam	5
106	<i>Grewia robusta</i>	Malvaceae		20
107	<i>Terminalia bellirica</i>	Combretaceae	Baheda	40
108	<i>Terminalia arjuna</i>	Combretaceae	Arjun	115
			Total	262

s.no.	Botanical name	Family	Common name	saplings plant
109	<i>Vilcamaeria inermis</i> (Hedge)		innerme	2800
110	<i>Duranta sp</i> (Hedge)		Duranta	100
111	<i>Terminalia arjuna</i>	Combretaceae	Arjun	08
112	<i>Cassia fistula</i>	Fabaceae	Amaltash	04
113	<i>Cassia glauca</i>	Fabaceae	Pila Amaltas	07
114	<i>Diospyros malabarica</i>	Ebenaceae	Malabar ebony	12
			Total	2931

s.no.	Botanical name	Family	Common name	saplings plant
115	<i>Terminalia arjuna</i>	Combretaceae	Arjun	18
116	<i>Cassia fistula</i>	Fabaceae	Amaltash	14
117	<i>Cassia glauca</i>	Fabaceae	Pila Amaltas	07
118	<i>Diospyros malabarica</i>	Ebenaceae	Malabar ebony	12
119	<i>Mimusops elengi</i>	Sapotaceae	Maulsari मौलसरी	05
120	<i>Spondias pinnata</i>	Anacardiaceae	Ambara	10
115	<i>Madhuka indica</i>	Sapotaceae	Mahua	10
116	<i>Terminalia chebula</i>	Combretaceae	Harad	08
117	<i>Citrus limon</i>	Rutaceae	lemon	03
118	<i>Cinnamomum camphora</i>	Lauraceae	dalchini	05
			Total	92

Total plants planted

updated on 5th October 2020

Total: 4,469.00

*Studies on Phenological
Aspects of Endemic Trees*

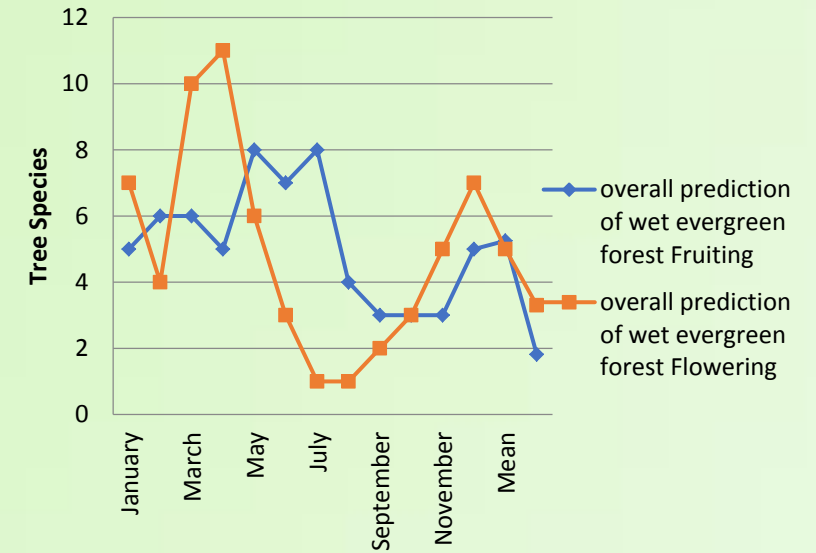
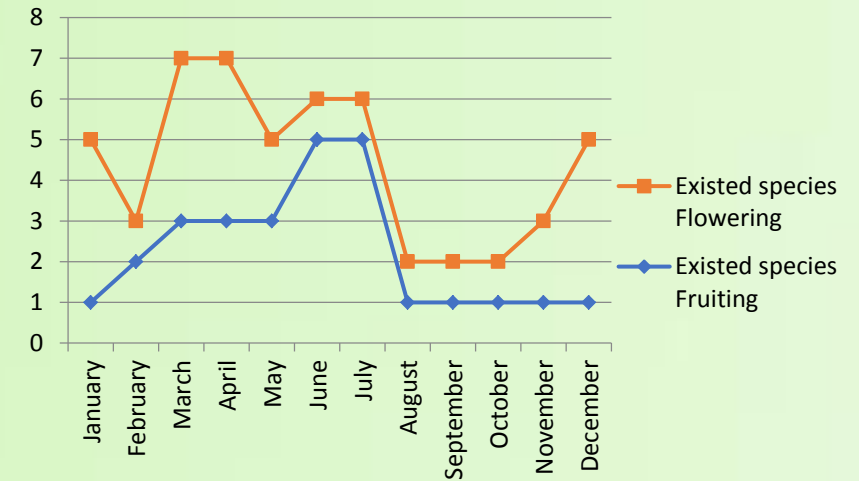
#Phenological aspects like flowering , fruiting and seed germination of Endemic Trees of various zones and sections were carried out:

Summary

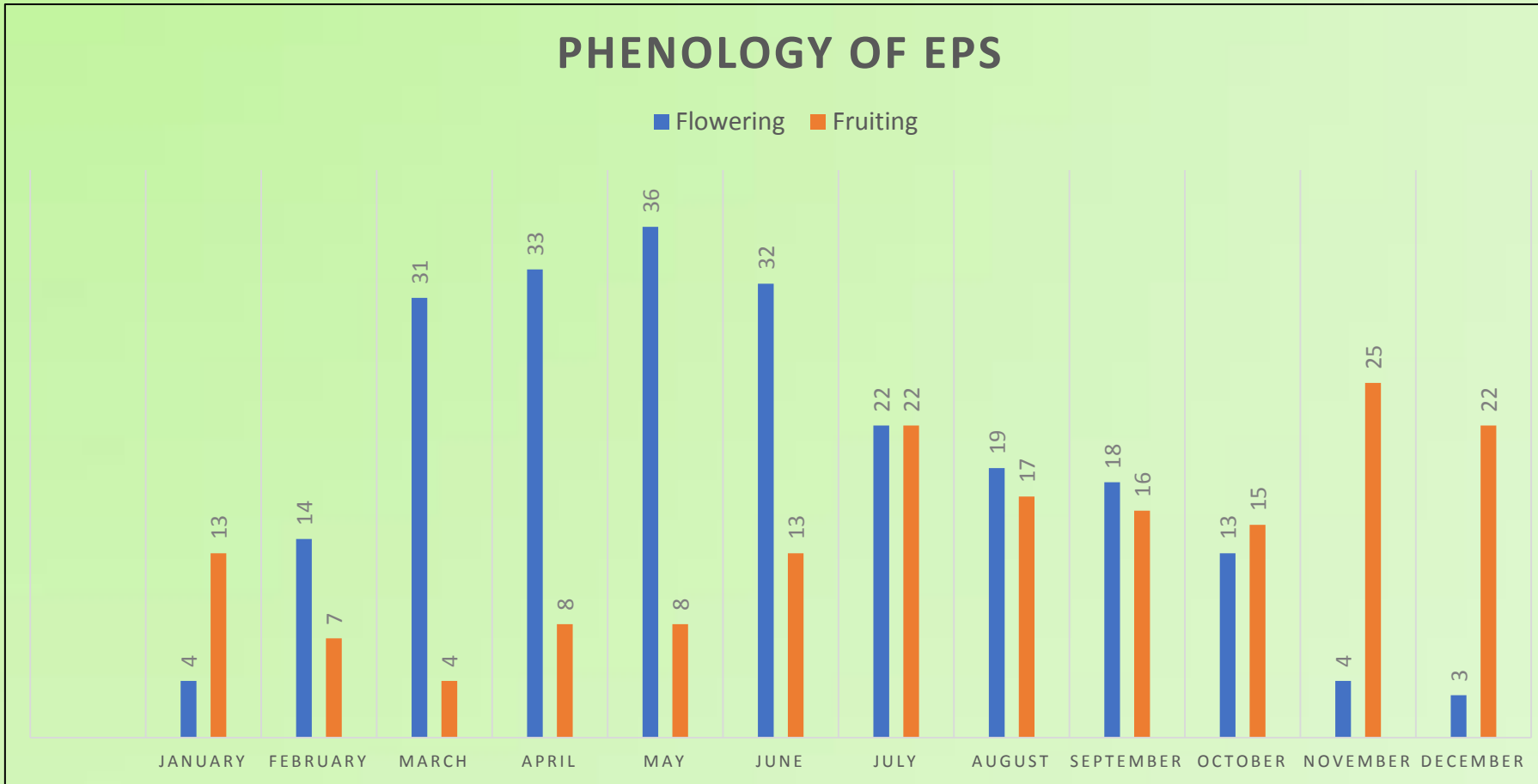
1. 115 species were studied for the flowering and fruiting phenology.
2. Approximately 106 species were subjected to study on seed germination study

Flowering and Fruiting of Targeted Species

	Species	Post-Monsoon		Summer			Monsoon					Winter	
		February	March	April	May	June	July	August	September	October	November	December	January
Existed	<i>Lannea coromandelica</i>		Flowering	Flowering		Fruiting	Fruiting						
	<i>Manilkara hexandra</i>		Fruiting	Fruiting								Flowering	Flowering
	<i>Terminalia arjuna</i>			Flowering	Flowering					Fruiting	Fruiting		
	<i>Wrightia tinctoria</i>				Flowering	Flowering	Flowering	Flowering	Flowering			Fruiting	Fruiting
	<i>Syzygium cumini</i>		Flowering	Flowering	Fruiting	Fruiting	Fruiting						
	<i>Ficus racemosa</i>	Flowering	Flowering	Fruiting			Fruiting						
	<i>Mangifera indica</i>		Flowering	Flowering			Fruiting						
	<i>Schleichera oleosa</i>		Fruiting	Fruiting								Flowering	Flowering
	<i>Sterculia urens</i>			Fruiting	Fruiting	Fruiting				Flowering	Flowering	Flowering	Flowering
	<i>Artocarpus hirsutus</i>						Fruiting	Fruiting	Fruiting		Flowering	Flowering	Flowering
Introduced	<i>Palaquium ellipticum</i>	Flowering	Fruiting	Fruiting									Flowering
	<i>Actinodaphne angustifolia</i>		Flowering	Flowering	Flowering	Flowering	Fruiting	Fruiting	Fruiting	Fruiting			
	<i>Drypetes venusta</i>	Fruiting		Flowering	Flowering							Fruiting	Fruiting
	<i>Glochidion ellipticum</i>	Fruiting	Fruiting					Flowering	Flowering	Flowering	Flowering	Flowering	Flowering
	<i>Holigarna grahamii</i>	Fruiting	Fruiting	Fruiting	Fruiting							Flowering	Flowering
	<i>Maytenus rothiana</i>	Fruiting	Flowering	Flowering	Flowering					Fruiting	Fruiting	Fruiting	Fruiting
	<i>Meiogyne pannosa</i>									Flowering	Flowering		Fruiting
	<i>Myristica malabarica</i>	Flowering	Flowering	Flowering	Flowering	Flowering	Fruiting	Fruiting					
	<i>Psychotria truncata</i>	Flowering	Flowering		Fruiting	Fruiting							
	<i>Nothopegia castaneifolia</i>		Flowering	Flowering	Fruiting								
	<i>Cullenia exarillata</i>										Flowering	Flowering	Fruiting
	<i>Mesua nagassarium</i>		Flowering	Flowering	Fruiting	Fruiting							



Phenology of Economic Plant Section



	Flowering	Fruiting
January	4	13
February	14	7
March	31	4
April	33	8
May	36	8
June	32	13
July	22	22
August	19	17
September	18	16
October	13	15
November	4	25
December	3	22

Economic plant section consists of approximately 68 plant species which are useful for several purposes such as timber, fuel, fodder, charcoal, gum, resins, rubber, pulp for paper etc.

PHENOLOGY OF BGIR PLANTS

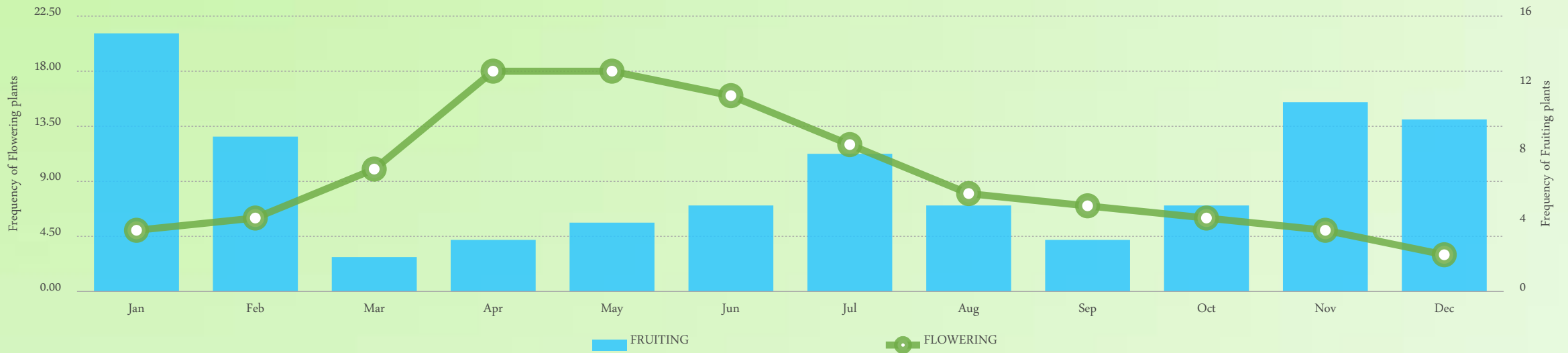
	FLOWERING	FRUITING
Jan	5.00	15
Feb	6.00	9
Mar	10.00	2
Apr	18.00	3
May	18.00	4
Jun	16.00	5
Jul	12.00	8
Aug	8.00	5
Sep	7.00	3
Oct	6.00	5
Nov	5.00	11
Dec	3.00	10

Standard Deviation

S.No	FLOWERING	FRUITING
1	5.30008576	3.93892771

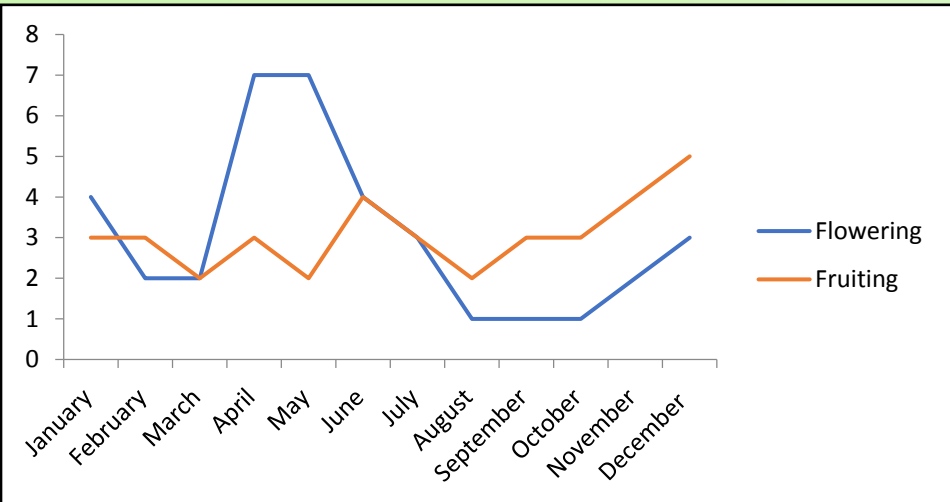
t- test value =0.129 (Observed Value)

2-Axis Chart



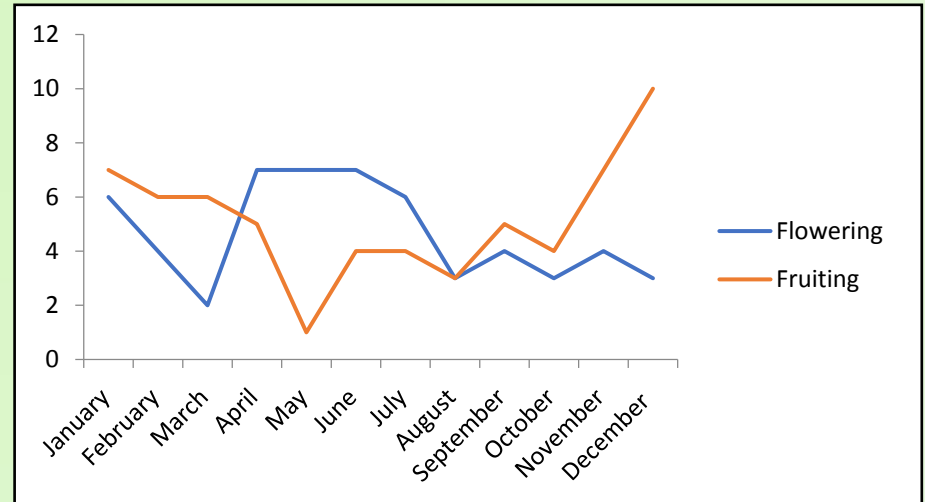
BEFORE INTRODUCTION

Month	Flowering	Fruiting
January	4	3
February	2	3
March	2	2
April	7	3
May	7	2
June	4	4
July	3	3
August	1	2
September	1	3
October	1	3
November	2	4
December	3	5



AFTER INTRODUCTION

Month	Flowering	Fruiting
January	6	7
February	4	6
March	2	6
April	7	5
May	7	1
June	7	4
July	6	4
August	3	3
September	4	5
October	3	4
November	4	7
December	3	10



*Studies on
Seed Germination of
Endemic Trees*

Plant Seed Collection and Germination Status

Taxa for which seeds germinated	Taxa for which seeds germinated this season	
<i>Cassia fistula</i> (121)	<i>Hardiwikia binata</i> (102)	<i>Catharethus roseus</i> (150)
<i>Limonia acidissima</i> (72)	<i>Caesalpina bundoc</i> (141)	<i>Putranjiva roxburghii</i> (250)
<i>Bauhinia verigata</i> (21)	<i>Sterculia urens</i> (211)	<i>Terminalia arjuna</i> (100)
<i>Bauhinia acuminata</i> (44)	<i>Cassia tora</i> (121)	<i>Mimosa pudica</i> (50)
<i>Helicteres isora</i> (34)	<i>Melia arborea</i> (310)	<i>Albizia lebac</i> (50)
<i>Tectona grandis</i> (128)	<i>Mitragyna parvifolia</i> (232)	<i>Abrus pricatorious</i> (70)
<i>Grewia nervosa</i> (12)	<i>Bredelia retusa</i> (172)	<i>Asparagus racemosa</i> (60)
<i>Dalbergia lanceolate</i> (19)	<i>Eliaocarpus sphericus</i> (132)	<i>Murrya paniculata</i> (150)
<i>Albezia lebic</i> (110)		
<i>Mitragyna parvifolia</i> (54)		
<i>Mimosops eleingi</i> (43)	Total No of Plants sps under germinations- 35	
<i>Schlichera oleosa</i> (21)	Total No of Plants under Germination= 3120	
<i>Acasia nilotica</i> (11)		
<i>Acasia catechu</i> (19)		
<i>Vitex negundo</i> (33)		
<i>Nictynthes arbor-tristis</i> (21)		
<i>Ocimum spp</i> (118)		
<i>Datura metale</i> (23)		

Threatened Plants Collection and Conservation

Total plant sps collected from Lead Botanic Gardens viz., GBPHIED, NBRI, Shivaji University Kolhapur, DrYSPUHF, Patiala, Palampur, KFRI = 33

Live/seed of Threatened (IUCN Categorized) Species Introduced/Procure in BGIR during (2020-21)

Plant collected from wild

- *Gentiana kurroo*

List of RET species collected from BGs

- *Andrographis beddomei*
- *Andrographis nallamalyana*
- *Boswellia serrata*
- *Butea monosperma*
- *Capparis spiralis*
- *Ceropegia bulbosa*
- *Croton scabiosus*
- *Cycas sphaerica*
- *Cyacus beddomei*
- *Dalbergia latifolia*
- *Dechaschistia cuddapahensis*
- *Eriolena lushingtonii*
- *Hildegardia populifolia*
- *Hymeodictyon populifolia*
- *Madhuca indica*
- *Phyllanthus narayanaswami*

- *Kingiodendron pinnatum*
- *Arenga wightii*
- *Cynometra bourdilonii*
- *Syzygium stocksii*
- *Kingiodendron pinnatum*
- *Trachycarpus martianus*
- *Olea dioica*
- *Livistona jenkinsiana*
- *Caryota mitis*
- *Garcinia indica*
- *Diospyros peregrina*
- *Heritiera littoralis*
- *Kerriodoxa elegans*
- *Pachira insignis*
- *Licuala grandis*
- *Bentinckia nicobarica*
- *Hyphaene thebaica*

Tree species growing at BGIR

1. Asoka tree [*Saraca asoca* (Roxb.) Willd.]
2. Kadamba [*Neolamarckia cadamba* (Roxb.) Bosser],
3. Arjuna [*Terminalia arjuna* (Roxb.) Wight & Arn.],
4. Dhak [*Butea monosperma* (Lam.) Taub.],
5. Parijatham (***Nyctanthes arbor-tristis*** L.),
6. Kachnar [***Bauhinia variegata*** (L.) Benth.]
7. Maulsari (***Mimusops elengi*** L.),
8. Shirish [***Albizia lebeck*** (L.) Benth.] and
9. Kewrah, Screwpine .



Species 1 – 9 from Top to Bottom

Garden Maintenance and Development

1. Cleaning, clearing of weeds, training, pruning of hedges/shrubs/lawn, manuring, fertigation
2. Plant labeling, tagging in forest arboretum , net houses and sections
3. Seed germination and plantation of winter and summer annuals/flowers
4. Hedges plantation along the roads, various sections
5. Composting and Manuring
6. Nurseries maintenance

NMHS Project Outcomes

1. Revisionary study for the following groups (genera) under progress: *Allium*, *Caragana*, *Ephedra*, *Fagopyrum*, *Gentiana*, *Daphne*, *Saussurea*, (Molecular systematic and morphotaxonomy approach).
2. Population study of *Ephedra gerardiana*, *E. intermedia*, *E. regliana*, *Allium carolinianum* and *Saussurea costus*.
3. GIS and ENM mapping for 4 *Allium* spp, *Pittosporum*, 3 *Ephedra* spp finished
4. Publication in form of research articles are in consideration in *KEW bulletin*, *Journal of Remote sensing*, *Biologia*, *Journal of Applied Research on Medicinal and Aromatic Plants*.

Scientific Works to be taken on Top Priority in 2021-22

1. Bar coding of all endemic plants planted in BGIR
2. Selective Plant collections for upcoming 21 thematic sections as per the new landscape
3. Selective plant collections for upcoming 8 Phytodiversity region as per new landscape plan
4. Demarcation and lay out plan for establishment of Taxonomic Botanic Garden and plant collection thereof.
5. Herbarium and seed bank laboratory expansion and strengthening.

Technical Works to be taken up at Priority in 2021-22

1. Interlinking of three underground dry water bodies from centrally located STP tank.
2. Laying of drip irrigation system for periphery region of forest types and Economic plant section.
3. Setting up of ultra modern Hi-Tech Glass house conservatory for plant conservation and acclimatization.
4. Renovation of entrance gate and Solar lights installations .
5. Cactus and succulents conservatory of size approx. 25 x 12 x 4

Internal Scientific work plan to be taken up at Priority in 2021-22

Dr Sheo Kumar-Scientist-E

Dr Manish Kr Kandwal , Scientist-D

Dr Sandeep Kr Chauhan, Scientist –E

Sr No	Name of Scientific Work	Action /Deliverable	Monitorable
1	Establishment and enrichment of existing Forest Types and Proposed Phyto-biodiversity region (4) of India at BGIR Noida (Zones 1-4) by introduction of plant sps., based on respective forest types and phyto-diversity region .	All periphery region of BGIR along the Boundary wall and Near Water Body primarily as per the Master Landscape Plan. BGIR is developing only 8 forest types and 8 Phyto-biodiversity region.	Quarterly and Monthly Reports
2	Establishment of Taxonomic Botanic Garden at BGIR Noida	As per the Master Landscape plan	-do-
3	Preparation of Database of endemic trees, medicinal , fruit and endemic plants planted in BGIR Noida	The desired data may be filled in the datasheets at Annexure -I	-do-
4	Germination and Multiplication of existing endemic trees as well as threatened plants, aquatic plants in BGIR Noida to enhance the germplasm collection in BGIR for reintroduction	For self sufficiency and Re introduction in natural habitat as well mass scale Campaign <i>Clean India and Green India</i>	-do-
5	Plant sps., collections from different parts of the BSI Regional Circles , Botanic Gardens, Forest Dept to BGIR Noida .	The plants may collected as per existing forest types enrichment, Phyto- diversity region, Taxonomic Gardens to be developed	-do-
6	Re -Strengthening of Herbarium facilities in BGIR , with a emphasis of Plant specimen collections, processing and digitalization .	Herbarium Unit BGIR Noida with a aim to set up the herbarium with largest plant specimen collection in NCR India.	-do-
7	Plant labelling in forest arboretum (EPS and Medicinal Plant sections)	Although labelling has been done in entire woodland section , but EPS, MPS , , may be focused	-do-
8	Identification, Selection and collection of Trees for Month wise Bloom for entire areas of BGIR Noida	In order to reflect a bloom through out the year in BGIR , a plants may selected for avenue and periphery plantation for Blooming .	-do-

Sr No	Name of Scientific Work	Action /Deliverable	Monitorable
1	Establishment and enrichment of existing Forest Types and Proposed Phyto-diversity region (4 No) of India at BGIR Noida (zone 5,6,7,8) by introduction of plant sps., based on respective forest types and phyto-diversity region	All periphery region of BGIR along the Boundary wall and Near Water Body or as per the Master Landscape Plan. BGIR is developing only 8 forest types and 8 Phyto-biodiversity region.	Quarterly and Monthly Reports
2	Establishment of 21 Thematic Botanic Garden sections in BGIR Noida.	Near the Kund Areas as per the Basic Master Landscape Plan	-
3	Precision Phenological Studies and preparation of Database of endemic trees, medicinal , fruit and endemic plants planted in BGIR Noida	The desired data may be filled in the datasheets at Annexure -I	-do-
4	Mass scale germination and Multiplication of cactus and succulents in BGIR Noida	For self sufficiency and Re introduction in natural habitat as well mass scale Campaign <i>Clean India and Green India</i>	-do-
5	Plant sps., collections from different parts of the BSI Regional Circles , Botanic Gardens, Forest Dept., to BGIR Noida	The plants may collected as per existing forest types enrichment, Proposed Phyto- diversity region, Proposed Taxonomic Gardens to be developed , Proposed 21 thematic section to be developed.	-do-
6	Plant specimen collections Herbarium for strengthening at BGIR	Herbarium facilities	-do-
7	Plant labelling in forest arboretum (Forest types 1 to 8) cactus and Succulent section	Although labelling has been done in entire woodland section , but entire woodland , may be focused for routine updation wherever necessary	

Sr No	Name of Scientific Work	Action /Deliverable	Monitorable
1	Mass germination and multiplication of Horticultural and ornamental plants/ season flowers in BGIR	All periphery region of BGIR along the Boundary wall and Near Water Body or as per the Master Landscape Plan. BGIR is developing only 8 forest types and 8 Phyto-biodiversity region.	Quarterly and Monthly Reports
2	Establishment of about 300 medicinal plants germplasm centre in BGIR	Areas as per the Basic Master Landscape Plan	-
3	Bar -coding for endemic plants in different plant sections of BGIR .	The desired data may be filled in the datasheets at Annexure -I	-do-
4	Overall maintenance and development of different Horticulture landscape sections of BGIR	. The basic landscape plan approved by the Competent authority in consultation with Steering Committee is also enclosed for your kind record and pursual .	-do-
5	Threatened Plant sps., collections from different parts of the BSI Regional Circles , Botanic Gardens, Forest Dept., to BGIR Noida	The plants will be collected from Botanic Garden funded under ABG Scheme and a EET plants Block will be established	-do-
6	Integrated Insect pest and disease management of endemic plants , herbs/shrubs and fruit plants	The plants may collected as per existing forest types enrichment, Proposed Phyto- diversity region, Proposed Taxonomic Gardens to be developed , Proposed 21 thematic section to be developed.	-do-
7	Setting up Seed bank Laboratory and Tissue Culture laboratory in BGIR	Renovation and Upgradation of seed bank laboratory and Tissue culture laboratory	-do-
8	Setting of Plant Conservatories and management	Net House (5 No) will be revamped with all Hi-Tech Horticulture practices and facilities.	-do-

**Key achievements of
Botanic Garden of Indian Republic , Noida**

Administrative Achievements :

1. Noida Authority granted permanent *No Objection Certificate* to BGIR for its development and setting up of Botanic Garden in an area of 165 acre.
2. Botanic Garden was inaugurated and foundation stone laid by Hon'ble Minister of EF&CC and Hon'ble Minister of State EF&CC on 12th May 2018 for its redevelopment and re-establishment .
3. Ministry of EF&CC granted administrative approval to appoint a landscape consultant through Global tender system and entire work was given to CPWD, Govt of India.
4. CPWD in entire course of time in 2019-20 appointed a Landscape consultant to prepare a landscape master plan for BGIR Noida.
5. M/o EFCC constituted a Steering committee of expert to oversee the development of BGIR Noida.
6. Master landscape plan BGIR got approval by Hon'ble Minister of EF&CC
7. Preliminary estimates of 490 crore submitted by CPWD to MoEF&CC for the development of BGIR in phase wise manner.
8. Presently DIB/SFC of BGIR of about 490 crore is under examination of IFD of MoEF&CC.
9. Concept Note for granting approval of Rs 490 Cr with a tune of Rs 100 Cr /year for 2022-23 to 2026-27 submitted to DoE, MoF, Gol.

Physical and scientific Achievements :

1. NOIDA Authority granted NOC to supply a STP water @ 20 Lakh Liter/day to BGIR.
2. 2 Lakh Liter underground RCC water storage Tank constructed by CCU in BGIR Noida.
3. Boundary wall , Rain Shelter, benches, cafeteria and souvenir shop constructed along the road sides of BGIR.
4. General toilets (1) and Bio-toilets (2No) constructed in BGIR for general public Utility.
5. Five Net houses with over head sprinkler established for plant conservation .
6. About 28,648 endemic plants saplings were distributed during VAN Mahotasav of 2018-19 , 2019-20 and 2020-21 to the local schools, colleges , RWA of Noida and Greater Noida.
7. Under plant collection program of BGIR, 4216 plants of 71 plant species were collected from BSI Regional centers and Botanic Gardens.
8. Bilingual Plant labeling of all plants completed in entire forest arboretum/woodland.
9. Seed laboratory made operational and presently contributing to rapid seed germination and multiplication.
10. Internal scientific projects on Phenology, seed germination protocol, medicinal and endemic plant databases started

Scientific Projects/Program/Meetings :

1. 4 Months Green skill development program on Small Botanic Garden Management and nursery production completed in 2018-19 .
2. A project on National Mission on Himalayan Studies ; Conservation of threatened plants in Indian Himalayan Region ; recovery and capacity Building- Ongoing from year 2018.
3. 7 Steering committee meetings of BGIR,4 AICOPTAX Program , 3 Assistance to Botanic Garden Program , 1BSI Regional Heads Meeting, 1Flora of India , 11 CPWD Meetings, 14 CCU Meetings and 2 Meetings with Noida Authority , 1 meetings with Ground water Board of India undertaken .

Publications 2020-21

1. Molecular phylogeny and systematic evaluation of the *Caragana opulens* species complex (Fabaceae, Papilionoideae) based on the molecular and morphological data **Phytotaxa** 478 (2), 179-2002021.
2. Reassessment of threat status of *Allium carolinianum* Redouté (Amaryllidaceae) **Pleione** 14 (2), 331 – 3592020
3. Molecular systematics of flowering plants in india: an overview **Journal of Indian Botanical Society** 100 (A), 59-762020
4. Molecular systematics of the genus *Musa* L.(Zingiberales: Musaceae) in Andaman and Nicobar Islands **Biologia** 75 (11), 1825-18432020
5. Systematic position and habitat distribution modelling for reintroduction of critically endangered medicinal plant *Pittosporum eriocarpum* Royle (Pittosporaceae), **Pleione** 2020.
6. An updated circumscription of *Saussurea* (Cardueae, Asteraceae) and allied genera based on morphological and molecular data **Phytotaxa** 450 (2), 173-18712020.
7. Evolution of leaf forms in the genus *Indigofera* L. (Leguminosae, Papilionoideae) based on morphological and molecular sequence data **New Vistas in Indian Flora** 1, 37-53Bottom of Form

GSDP



Awareness cum Public interaction programme



Stalls at Delhi Hatt and India expo



Thank you