

FORESTRY



MPPSC

Madhya Pradesh



STATE FOREST SERVICE

2026

Detailed
Syllabus Based
study material

+

Linkage of
Concepts with
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+

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Maps

Module - 2



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GENERAL FORESTRY, FOREST MENSURATION & FOREST UTILIZATION

MODULE – 2



EDITION : 2026

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SYLLABUS

Unit	Syllabus
2	Forest Measurements (tree height, volume, biomass) Forest Utilization : Definitions, terminology, wood product, wood seasoning, wood preservation, plywood, particle wood, pulp and paper, saw milling, logging. <i>Non-wood forest products</i> . fibres, flosses, grasses, tannin, gums, dye, resin, oleoresin, essential oils, tree borne oil seeds Medicinal Plants
1	General Forestry : History and background of forest. Forest cover of India and M.P., classification of forest, Trees Outside Forest (TOF), state wise forest distribution and growing stock.

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वैधानिक चेतावनी


यह पुस्तक व सामग्री आपके व्यक्तिगत उपयोग के लिये प्रदान की गई है और इसे आपके व्यक्तिगत Contact No. से Watermark किया गया है। इस पुस्तक को किसी अन्य व्यक्ति / संस्था / समूह के साथ साझा करना, फोटो कॉपी करना आदि पूर्णतः वर्जित है, यदि आप इस प्रकार की किसी भी गतिविधि में सम्मिलित पाये जाते हैं, तो ऐसी स्थिति में आपका Registration समाप्त कर दिया जायेगा और आपके विरुद्ध उचित दण्डात्मक कार्यवाही की जायेगी।



Module ~ 2

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PREVIOUS YEAR QUESTIONS

MPPSC FOREST SERVICE (MAIN) EXAM 2011

General Forestry

1. First **Inspector General Of Forests** (IGF) of India was
 - (a) K.F.S. King
 - (b) H.G. Champion
 - (c) R.S. Troup
 - (d) Dietrich Brandis
2. The first established **National Park** of India is
 - (a) Kanha National Park
 - (b) Kaziranga Park
 - (c) Jim Corbett National Park
 - (d) Bandhavgarh
3. The **National Forest Policy** of Independent India was formulated during the year
 - (a) 1948
 - (b) 1952
 - (c) 1964
 - (d) 1950
4. The forest area required to maintain ecological balance is
 - (a) 33 %
 - (b) 40 %
 - (c) 21 %
 - (d) 50 %

5. **Wildlife Protection Act** was formulated in the year
 - (a) 1982
 - (b) 1972
 - (c) 1970
 - (d) 1975
6. When was the **Project Tiger** launched
 - (a) 1970
 - (b) 1982
 - (c) 1973
 - (d) 1965
7. The **World Environment Day** is
 - (a) 5th July
 - (b) 15th July
 - (c) 5th June
 - (d) 5th March
8. **World Forestry Day** is celebrated on
 - (a) 5th June
 - (b) 23rd April
 - (c) 16th September
 - (d) 21st March
9. The **tallest tree** is
 - (a) Eucalyptus grandis
 - (b) Cedrus deodara
 - (c) Tectona grandis

(d) Sequoia semipervirens

State Special

10. **State Forest Research Institute**, Madhya Pradesh is situated at
 - (a) Bhopal
 - (b) Jabalpur
 - (c) Gwalior
 - (d) Indore
11. **Tropical Forest Research Institute** is located at
 - (a) Jaipur
 - (b) Jodhpur
 - (c) Jabalpur
 - (d) Agra
12. **Plant Fossils National Park** is situated in
 - (a) Sidhi
 - (b) Umaria
 - (c) Seoni
 - (d) Mandla
13. **Kanha National Park** belongs to
 - (a) UP
 - (b) Bihar
 - (c) Chattishgarh
 - (d) MP

MPPSC FOREST SERVICE (MAIN) EXAM 2014-15

General Forestry

14. First **Indian Forest Act** was enacted in
 - (a) 1875
 - (b) 1865
 - (c) 1927
 - (d) 1928

15. **Van Mahotsav** was started in the year
 - (a) 1952
 - (b) 1950
 - (c) 1951
 - (d) 1954
16. **Elephants Project** was launched in the year
 - (a) 1991

- (b) 1992
- (c) 1993
- (d) 1995
17. **Notional Board For Wildlife** come in effect from
 - (a) 22 September 2003
 - (b) 21 September 2003
 - (c) 23 September 2003
 - (d) 24 September 2004

MPPSC FOREST SERVICE (MAIN) EXAM 2018
General Forestry

18. The **Chipko Movement** was initiated from which place? [MPPSC Forest Service (Main) 2018, GS]
 (a) Jammu
 (b) Garhwal Himalaya
 (c) Patna
 (d) Trishur
19. To safeguard our water resources, the government of India has passed the Water (Prevention and Control of Pollution) Act [MPPSC Forest Service (Main) 2018, GS]
 (a) 1984
 (b) 1972
 (c) 1987
 (d) 1974
20. MAB stands for [MPPSC Forest Service (Main) 2018, Science & Tech]

- (a) Man, Antibiotics and Bacterium
 (b) Man and Biosphere
 (c) Mayer, Anderson, Bishop
 (d) Man and Biotic community

21. Rio+20 Earth summit was held on [MPPSC Forest Service (Main) 2018, Science & Tech]
 (a) 02-11 May 2011
 (b) 20 – 22 June 2014
 (c) 02-11 May 2010
 (d) 20 – 22 June 2012

22. Who is known as the **Indian Father of Ecology**? [MPPSC Forest Service (Main) 2018, Science & Tech]
 (a) Ramdev baba
 (b) H.G. Khurana
 (c) C.N. Rao
 (d) Ramdev Misra

State Special

23. M.P State small forest produce co-operative society was established in [MPPSC Forest Service (Main) 2018, GS]
 (a) 1988
 (b) 1990
 (c) 1980
 (d) 1984
24. Which is the total **Forest Cover** area of Madhya Pradesh (year 2013)? [MPPSC Forest Service (Main) 2018, GS]
 (a) 75,722 sq. km
 (b) 57,275 sq. km
 (c) 77,522 sq. km
 (d) 57,722 sq. km

MPPSC FOREST SERVICE (MAIN) EXAM 2019 (+Re-exam)
General Forestry

25. "**Chipko movement**" concerned from which state? [MPPSC Forest Service (Main) 2019, GS]
 (a) Himachal Pradesh
 (b) Uttarakhand
 (c) Chhattishgarh
 (d) Nagaland
26. In India, the Air (Prevention and Control of Pollution) Act came into force in [MPPSC Forest Service (Main) 2019, GS Re-exam]
 (a) 1984
 (b) 1972
 (c) 1978
 (d) 1981
27. **Biodiversity Act** of India was passed in the year [MPPSC Forest Service (Main) 2019, Science & Tech]
 (a) 1986
 (b) 1996
 (c) 2002
 (d) 2010

28. **Biological Diversity Act** was implemented in which year in India? [MPPSC Forest Service (Main) 2019, Science & Tech, Re-exam]
 (a) 2000
 (b) 2002
 (c) 1998
 (d) 2001

29. International **Biological Diversity Day** is [MPPSC Forest Service (Main) 2019, Science & Tech]
 (a) 22 December
 (b) 22 May
 (c) 21 June
 (d) None of the above

30. International **Ozone Day** is celebrated every year on [MPPSC Forest Service (Main) 2019, Science & Tech; Re-Exam]
 (a) 16th October
 (b) 21st January
 (c) 16th September
 (d) 26th October

31. **National Action Plan for Climate Change** (NAPCC) launched missions are [MPPSC Forest Service (Main) 2019, Science & Tech, Re-exam]
 (a) National Mission for Sustaining Himalayan Ecosystem (NMSHE)
 (b) National Mission on Strategic Knowledge for Climate Change (NMSKCC)
 (c) Neither (A) nor (B)
 (d) Both (A) and (B)

32. International **Man and Biosphere Program** was initiated by [MPPSC Forest Service (Main) 2019, Science & Tech, Re-exam]
 (a) UNEP
 (b) ICSU
 (c) UNESCO
 (d) IUCN

33. Which of the following country has the richest biodiversity? [MPPSC Forest Service (Main) 2019, GS Re-exam]
 (a) Russia

WOOD SCIENCE & TECHNOLOGY

INTRODUCTION

Forest utilization refers to the process of **harvesting, conversion, transportation, and disposal of forest produce**. It also includes the marketing and manufacturing of various commodities derived from forests***

The systematic utilization of wood is central to forestry, as it ensures that forest resources are converted into usable forms while minimizing wastage and environmental damage.

Historically, the utilization of timber has evolved in response to changing demands, technological advances, and conservation policies.

1.2 HISTORICAL BACKGROUND

Upto 1860s

During this period, forest clearing was common, and timber extraction was largely unorganized. Merchants paid only a nominal fee for cutting, and extraction was confined to valuable species such as Teak (*Tectona grandis*), Sal (*Shorea robusta*), Sandalwood (*Santalum album*), and Rosewood (*Dalbergia latifolia*).

- Tools : Simple axes were the primary implements, leading to **high timber wastage**.
- Purpose : Timber was mainly used for **fuel and construction**.

From 1860s to 2nd World War

With the **establishment of forest departments** in various princely states and provinces, forest management gradually became systematic. During this period, the **demand for timber increased significantly, particularly due to the rapid expansion of the railways where large quantities of sleepers were required, as well as for domestic construction purposes**. At the same time, technological advancements in forest engineering made it possible to carry out logging operations in areas that had earlier remained inaccessible.

The **introduction of modern tools and improved methods enhanced efficiency in timber extraction**. This trend was further accelerated during the two World Wars, when the demand and price of timber rose sharply. As timber became more expensive, industries and policymakers began exploring the use of **alternative raw materials to reduce production costs** and ensure a steady supply for industrial applications.



TIMBER TRANSPORTATION & STORAGE

2.1 TIMBER TRANSPORTATION

► TYPES

Based on the Distance of transportation

- *Minor* or *Off-road* transport : for a short distance
- *Major* transportation : for long-distance

Medium of transportation

- *Land* transport, *i.e.*, by road
- *Water* transport, *i.e.*, by river, canals or coastal routes
- *Overhead* transportation, *i.e.*, By ropeway, chopper

► CHOICE OF METHODS OF TRANSPORTATION

- Cost of transportation and labour requirements
- Damages or losses to the products during this
- Volume of timber available in Local area + Size of Market & Sawmill
- Topography + Available transportation facilities, *i.e.*, Land, Water, Air

TRANSPORTATION by LAND

- Human-powered transport is generally used in hilly or difficult terrain for small to medium-sized timber over short distances. Although this method is costlier due to high labour input, it causes the least damage to the wood as well as to the forest floor.
- Animal-assisted : Mules, Elephants, Camels, etc.
- Bullock carts
- Dragging
- Rolling
- Sliding
- Motorized methods : Trucks and Trackers



TRANSPORTATION by WATER

The oldest and cheapest mode of transportation, particularly in the *Forest* area. Widely practiced in the Himalayan region, Peninsular India, Eastern & Western Ghats.

Types : (1) Floating, (2) Rafting and Boom, and (3) Wet slide

TIMBER DEFECTS

Defects in timber can occur naturally or as a result of various environmental and processing factors. These defects can affect the strength, appearance, and overall quality of the wood.

DEFECTS DUE TO INSECT ATTACKS

- **Borer Holes** : Caused by wood-boring insects, marine borer, Birds, etc.

DEFECTS DUE TO FUNGAL ATTACKS

- **Rot or decay** : when fungi feed both soft and heartwood, *i.e.*, White rot, Brown rot, red rot, etc.

The fungi group that digests/Attacks on	Type of rot
Cellulose, but not lignin	Brown rot
Both Cellulose and lignin (All components of cell wall)	White rot
Cellulose in the secondary cell wall makes it brittle	Soft rot

Note : **Dry rot** – Decomposition of felled timber caused by the action of various fungi (Lack of proper ventilation). **Wet rot** – Decay of timber caused by *alternate wetting and drying* [RPSC AE 2013; Nagaland PSC CTSE 2017].

- **Stain** : When fungi attack and feed sapwood portion only, where food material is stored, it causes stains (markings). This activity only affects the sapwood, leaving the heartwood unaffected. As a result, the strength of the wood remains unchanged; however, the colour will be changed.



Soft – rot



Wood Stain

DEFECTS DUE TO NATURAL DEFECTS (GENETIC)

- **Fluted stem** : Common example – *Teak*^{***}
- **Tapering** :
- **Pith**^{***} : The presence of a large or eccentric pith is considered a defect in timber, as it weakens the structure and reduces strength.

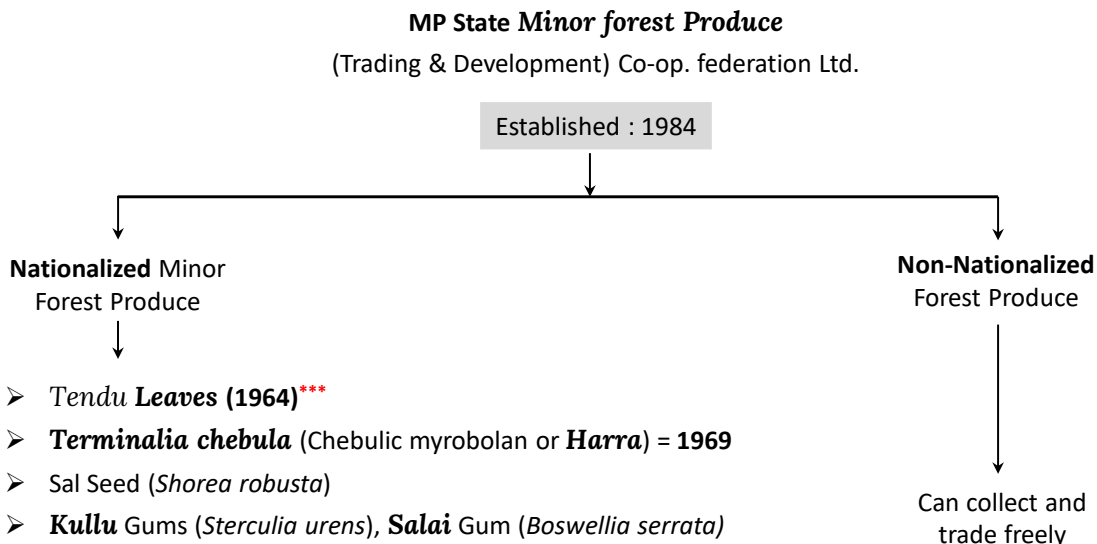
NON-TIMBER FOREST PRODUCTS (NTFP)

► **TIMBER** : Major timber species are Teak, Sal, *Albizia lebbbeck*, *Adina cordifolia*, *Cedrus deodara*, *Dalbergia latifolia*, *Dalbergia sissoo*, *Gmelina arborea*, *Hardwickia binata*.....and many more.

► **INDUSTRIAL WOOD**

- Pulp and paper : Bamboos, Eucalyptus, Casuarina
- Plywood : Teak, Rosewood, Terminalia
- Packing cases : Dinus spp., Silver oak, Fir,
- Matchwood : Ailanthus, Simaruba, Bombax
- Toys : Adina, Redsanders, rose wood

Non-Timber Forest Product (NTFP)^{***} covers all forest products “*other than Major Forest Products*” which consist of timber, small wood, and fuelwood. It specifically includes grass, fruit, leaves, bark, animal, and mineral products found in the forest and collected therefrom.



The minor forest products of commercial importance may be divided into the following classes.

- Fibers and Flosses
- Grasses, Bamboos, and Canes
- Distillation and Extraction Products, including Grass Oils.
- Oil Seeds
- Tans and Dyes

ETHNOBOTANY

ETHNOBOTANY

ETHNO	BOTANY
Means - people, culture, beliefs, aesthetic knowledge as well as practices.	Study of plants

Ethnobotany is the "*study of how people of a particular culture or region utilized indigenous (native) plants knowledge through the ages*"



- ✎ **Ethnobotany** is the study of plants used by aboriginal and primitive people
- ✎ Ethnobotany term given by **John W. Harshberger** (1895)
- ✎ Father of ethnobotany in India : Dr. S.K. Jain.
- ✎ "Soma" rush = Ephedra

IMPORTANT MEDICINAL PLANTS

Medicinal plants constitute a vital component of India's **Non-Timber Forest Products (NTFPs)**. They not only support traditional healthcare systems but also contribute significantly to tribal livelihoods and the herbal pharmaceutical industry. Their importance lies in:

- Providing a **major share of NTFP-based income** in states like Madhya Pradesh and Chhattisgarh.
- Serving as the backbone of **indigenous knowledge systems and tribal healthcare**.
- Acting as raw material for **Ayurvedic, Siddha, Sowa Rigpa** and **modern allopathic medicines**.

Abelmoschus moschatus (Musk dana)

- Area : Tropical regions, plant resembles ladyfinger (*Bhindi*).
- Part used : Seeds.
- Uses : Taken with milk; cures itching and snake bite.

Abrus precatorius (Ratti, Gunja)

- Area : Chambal ravines, climbing shrub.
- Parts used : Leaves, roots (decoction).
- Uses : Cough, cold, colic pain, induces abortion.

Achyranthes aspera (Apamarg)

- Parts used : Green stem & root collar.
- Uses : Used as toothbrush; prevents tooth decay, cures pyorrhoea.

Annona squamosa (Sharifa, Sitaphal / Custard apple)

- Parts used : Seeds, fruits, leaves.
- Uses : Insecticidal, fish poison, removes lice

Stevia rebaudiana (Stevia)

- Parts used : Leaves.
- Uses : Natural sugar substitute, safe for diabetics.

DIAMETER & GIRTH MEASUREMENT

2.1 OBJECTIVES BEHIND DIAMETER/GIRTH MEASUREMENT

- To estimate the quantity of timber, firewood, and other forest produce, *i.e.*, Cubic feet of wood in a teak tree.
- Measure the rate of tapering, its form, and the shape of logs that will help in determining timber quality (Volume of logs).
- To know the basal area of trees/crop
- It helps in making an inventory of growing stock as well as correlating height – Volume – Age –increment of a tree or crop.

2.2 CONCEPT OF DBH AND GBH

- **BREAST HEIGHT (BH)** is a universally accepted standard height above ground level for measurement of Girth, Diameter, and basal area of standing trees. If we take the diameter at that height, we call it *diameter at breast height* (DBH), and if we take the girth, it calls *girth at breast height* (GBH).

In India^{***}, Burma, S. Africa,
USA & other British colonies

In UK, Europe & FAO^{***}

BH = 1.37 m (4 feet 6 Inches)

BH = 1.30 m (4 feet 3 Inch)^{***}

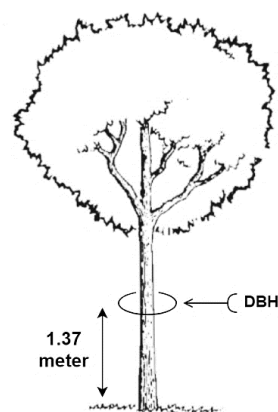
It is important to note that the place of measurement of diameter/girth may vary depending on the conditions –

- **THE BREAST HEIGHT HAS BEEN ACCEPTED AS THE STANDARD FOR DIAMETER & GIRTH MEASUREMENT BECAUSE OF THE FOLLOWING REASONS**

- The bases of the trees are generally covered with grasses, shrubs, and thorns, so the measurement of

Chapter Outline

- 2.1** Objectives behind DBH/GBH Measurements
- 2.2** Concept of DBH/GBH
- 2.3** Instruments used in DBH, GBH, Upper stem Diameter



HEIGHT MEASUREMENT

3.1 BASIC TERMINOLOGY

- ▶ **TREE HEIGHT** : the straight line distance from the ground level to the tip of the leading shoot.
- ▶ **CROWN POINT** : Crown Point is the position of the first crown forming living or dead branch.
- ▶ **BOLE HEIGHT** : The distance between ground level and Crown Point.
 - Commercial bole height : the height of bole up to which it is usually fit for timber utilization.
 - Standard Timber Bole Height : The height of the bole from the ground level to the point where diameter over bark is 20cm (in case of Timber) or 10 cm (for pulpwood).
- ▶ **CROWN LENGTH** : The vertical measurement of the crown of the tree from the tip to the point halfway between the lower green branches forming green crown all round and the lowest green branch on the bole.

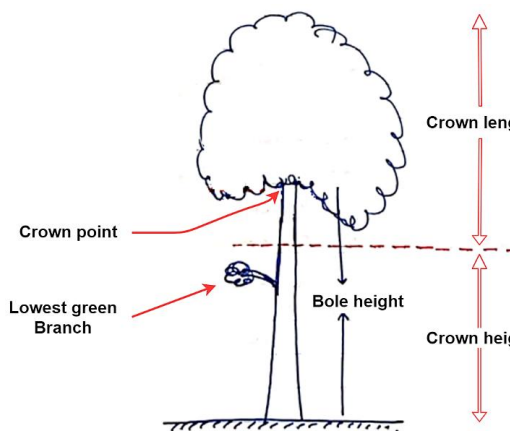


Figure 3.1 : Various terminology

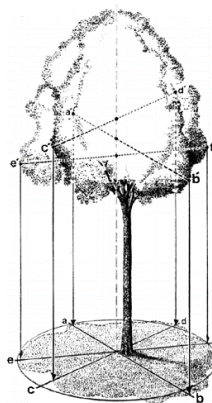


Figure 3.2:
Horizontal crown
projection

Chapter Outline

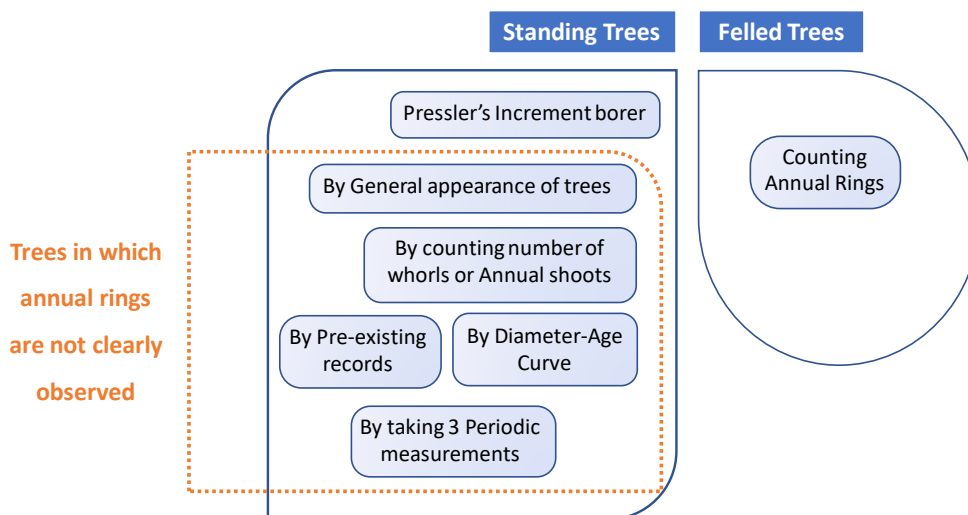
- 3.1 Basic Terminology
- 3.2 Height measurement methods
 - => Ocular
 - => Non-Instrumental
 - => Instrumental
- 3.3 Case studies
- 3.4 Source of errors in height measurement

AGE CALCULATION

► WHY DID WE REQUIRE TO ESTIMATE AGE ?

- To estimate the rate of forest wood capital formation.
- To determine the time required for particular volume formation

► METHODS



7.2 CALCULATING AGE OF STANDING TREE

- **From existing records** : in the case of trees raised by plantation, the records of the year of such operations are very helpful in finding the age of trees.
- **From general appearance** : the age of a standing tree can also be found by ocular estimation, but it requires the skill of a high level.
 - Size and shape of the crown – in some species size and shape of the crown changed with increasing age, i.e., *Pinus roxburghii* has a conical crown in the early stage, and it became rounded as the tree grows older.
 - Younger has a high tapering rate while older have low tapering + Size of the stem.

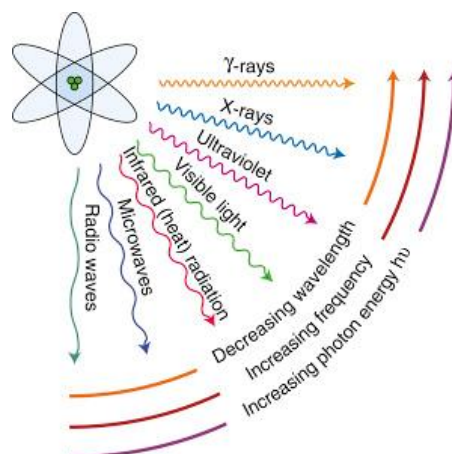


Figure : A record board of plantation work. Which give us information about the species sown or planted, year and time of planting, method of planting and various given treatments.

AERIAL PHOTOGRAPHY

► SPECTRUM BANDS

SPECTRUM	WAVELENGTH
Cosmic rays	$<10^{-7} \mu\text{m}$
Gamma	$10^{-7} - 10^{-4} \mu\text{m}$
X-rays	$10^{-4} - 10^{-2} \mu\text{m}$
UV Rays	$10^{-2} - 0.4 \mu\text{m}$
Visible	$0.4 - 0.76 \mu\text{m}$
Infrared	$0.76 - 10^2 \mu\text{m}$ [Nagaland PSC CTSE 2021]
Microwave	$10^2 - 10^6 \mu\text{m}$
Radio Wave	$> 10^6 \mu\text{m}$



Solar radiation travels through the atmosphere to reach the Earth's surface. However, the gas particles, dust, and clouds in the atmosphere can reflect, absorb, or scatter certain wavelengths of radiation. The portion of electromagnetic radiation that is minimally affected by the atmosphere or not affected at all is known as the '*Atmospheric Window*'. Example : $0.3 - 0.75 \mu\text{m}$, $1.2 - 1.34 \mu\text{m}$ and $3.5 - 4.16 \mu\text{m}$. These spectra are very useful in remote sensing.

► ATMOSPHERIC EFFECTS ON RADIATION : Scattering, Absorption, Transmission & Reflection.

► AERIAL PHOTOGRAPHS : Classification

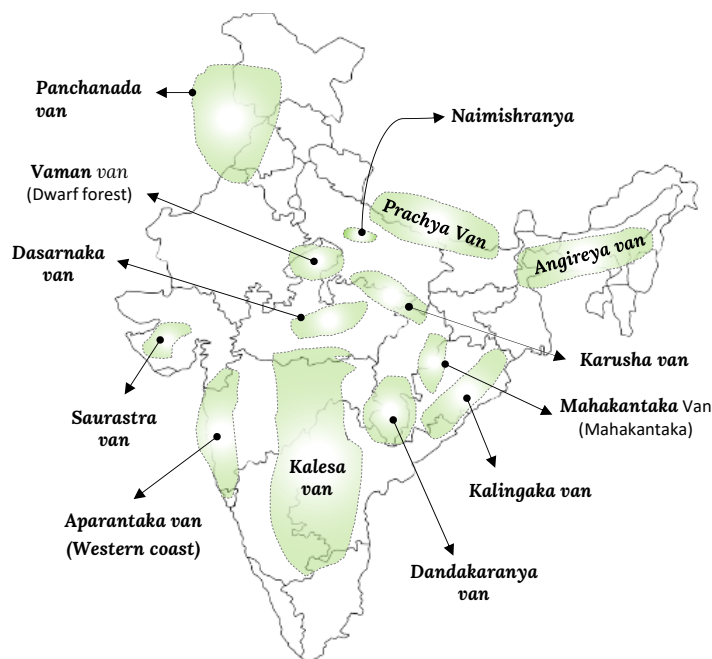
- Based on the film, they used : *Black and white* photography, *Infrared* photography, *Coloured* photography, etc.
- Based on the device they used : *Single-lens* photography, *Double-lens* photography, *Multiple lens* photography, etc.
- On the basis of Scale they used : *Large scale* (1: 5000 to 1:20,000), *Medium scale* (1:20,000 to 1: 40,000), *Small scale* (1:40,000 to 1: 70,000).
- Based on the Optical axis of camera : *Vertical photography* and *Oblique photography*.

Vertical or Overhead aerial photography : Technique where shots are taken directly above the subject. The lens axis is perpendicular to the surface of the earth.

Oblique photography : (a) *Low oblique* aerial photography – Camera lens axis inclined up to 30° from the vertical axis (Usually at 30°). The ground area covered is a Trapezoidal in shape. (b) *High oblique* aerial photography – Taken where the camera axis is inclined more than 30° from the vertical axis (Usually at 60°). Horizon is visible.

GENERAL FORESTRY

Our religious texts—such as the **Vedas**, **Aranyakas** (**Aranya** meaning "forest" in Sanskrit), **Upanishads**, and **Smritis**—contain numerous references to the use and management of forests, emphasizing sustainability as an underlying theme. According to Vedic traditions, a village was considered complete only when certain categories of forest vegetation or **sacred groves**—namely **Mahavan**, **Shrivana**, and **Tapovan**—were preserved in and around its territory.



In the **Vishnu Purana**—one of the **18 Mahapuranas**—there is a description of **13 types of forests** found in different regions of ancient India. Some of these include – ♦ **Angireya** Vana (Bengal and Assam), ♦ **Prachya** Vana (Bihar, Uttar Pradesh, Nepal), ♦ **Naimisharanya** (Central Uttar Pradesh), ♦ **Panchanada** Vana (Punjab and Jammu & Kashmir), ♦ **Aparantaka** Vana (Wester coast), ♦ **Dandakaranya** Vana, ♦ **Kalinga** Vana, ♦ **Saurashtra** Vana, ♦ **Kalesha** Vana (south of the Narmada River), ♦ **Vaman** Vana (near Gwalior), ♦ **Dasarnaka** Vana (around Bhopal, Sagar, Damoh), ♦ **Mahakantaka** Vana (Kalahandi, Koraput, and Bastar districts in

Chapter Outline

- 1.1 Historical background
- 1.2 Forestry & Wildlife after independence
- 1.3 MoEFCC & Its Sub-ordinated bodies
- 1.4 Forestry Education system
- 1.5 Forest Survey of India
- 1.6 FAO & Its State of the world forest report
- 1.7 Forest types in India
- 1.8 Forest & wildlife related acts, policies & missions
- 1.9 Wildlife projects
- 1.10 National & International days & years
- 1.11 International Organizations
- 1.12 Superlatives in Forestry
- 1.13 Remarks

Time Frame for Satellite Data Acquisition

- **October to December** : For most Indian states
- **January to April** : For the **Northeastern region, coastal areas,** and the **Andaman & Nicobar Islands**

Purpose of Seasonal Variation : To ensure **cloud-free satellite imagery** and to capture **fully developed foliage**, which improves the accuracy and clarity of forest cover mapping.

FOREST AREA

All such lands which have been notified as forest under any Government Act or Rules or recorded as 'forest' in the Government records. The recorded forest area may or may not have forest cover.

- Total = **77.5 m hectares***** (23.59 %*** of Geographical area)
- **Reserves forest** > **Protected forest** > **Unclassed Forest**.
- Lakshadweep : “0” Reserve forest area

Forest area : Area-wise

MP > MH > Orissa > CG >>>> Punjab > Haryana > Goa

Highest

Lowest

Forest area : Percentage-wise

A&N > Sikkim > Manipur > UK >>>> Punjab > Puducherry > Lakshadweep
(87%) (82%) (78%) (71%) (6%) (2.6%) (0%)



Madhya Pradesh

- Recorded forest area = **94,689 sq. km***** [**9.4 million hectares**]*** which is **30.72 %***** of state geographical area.
- of which, **Reserve forest** (61,900 km² = 65%) > **Protected forest** (33 %) > **Unclassed forest** (2 %).
- The state has the **highest / largest area** under forest = MP***

FOREST COVER

All lands, more than one hectare with a tree canopy density of more than or equal to 10% irrespective of ownership, legal status and land use. Such lands may not necessarily be a recorded forest area. It also includes orchards, bamboo and palm.

- Total = **71.5 m hectares***** (21.76 %*** of GA)
- Compare to last report = 156 km² Increase.
- Forest cover in Hill districts = 40% of GA
- Forest cover classification based on canopy density –

As per **Kyoto protocol** : the definition of a forest can varies from one country to another, depending on the country's capacities and capabilities. Basic criteria

- **Crown cover percentage** : Minimum tree crown cover falling within the range of 10% to 30%. India adopted a 10% threshold
- **Minimum Area of Stand** : Forested areas should have a minimum area between 0.05 and 1 ha. India adopted 1 ha minimum
- **Minimum Height of Trees** : Trees in these areas should have the potential to reach a minimum height of 2 to 5m at maturity in their natural habitat.

9.	[5/DS ₂] Dry Savannah Forest	0.00 (in very small)
10.	[5/DS ₄] Dry Grass Land (<i>Grassland forest</i>)	0.01
11.	[5/E ₁] <i>Anogeissus pendula</i> Forest	3.38
12.	[5/E ₂] Boswellia Forest	0.48
13.	[5/E ₅] Butea Forest	0.23
14.	[5/E ₉] Dry Bamboo Brake	0.93
15.	[5A/C _{1a}] Very Dry <i>Teak</i> Forest	0.85
16.	[5A/C _{1b}] Dry <i>Teak</i> Forest ***	27.06***
17.	[5A/C ₃] Southern Dry Mixed Deciduous Forest	24.40
18.	[5B/C _{1c}] Dry Peninsular <i>Sal</i> Forest	5.24
19.	[5B/C ₂] Northern Dry Mixed Deciduous Forest	18.81
20.	[6B/C ₂] Ravine Thorn Forest	0.92
21.	[8A/C ₃] Central Indian Subtropical Hill Forest	0.00 (in very small)
22.	Plantation/TOF	1.78
Total		100.00

- The most dominant forest types in MP = **[Group 5]** Tropical dry deciduous forest (90.7 %)
- Sal forest = 8.4 % of the total forest cover of the state
- Teak forest = 28.7 % of total***

2.4 PROTECTED AREAS IN MP + INDIA (As of December 2022)

► NATIONAL PARKS

	India	MP
Total	107***	11***
Oldest NP	Corbet NP, UK (1936)	Kanha NP (1955)
Latest NP	Sikhna Jwhwlao , Assam (106 th), Simlipal , Odisha (107 th) both in 2025.	Kuno (2018)
Biggest	Hemis NP (3350 km ²) 2 nd largest – Desert NP (3162 km ²)	Kanha (941 km ²)
Smallest	Fossil National Park, MP (0.27 km ²)	Fossil National Park, MP (0.27 km ²)

Source : National Wildlife Database Centre, Wildlife Institute of India

National Parks of Madhya Pradesh

	Name	year	Area (in km ²)	District
1	Kanha	1955	941.793	
2	Madhav	1959	375.23	
3	Bandhavgarh	1968	448.842	
4	Pench	1975	292.857	
5	Van Vihar	1979	4.452	
6	Panna	1981	542.66	
7	Sanjay	1981	464.643	
8	Satpura	1981	528.729	

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