

Biodiversity values

INTRODUCTION

- Biodiversity is very crucial to the existence of man.
- Plants are central to the well-being of humans as a key component of our food, medicine, cultures and traditions.
- Along with plants, many animals, birds, mushrooms and several microorganisms also play a vital role in the existence of human beings.
- Without those organism, i.e., biodiversity, life would be very unbearable.
- The biodiversity values are broadly categorised into two types;
 1. Intrinsic values; and
 2. Anthropocentric values

1. INTRINSIC VALUES

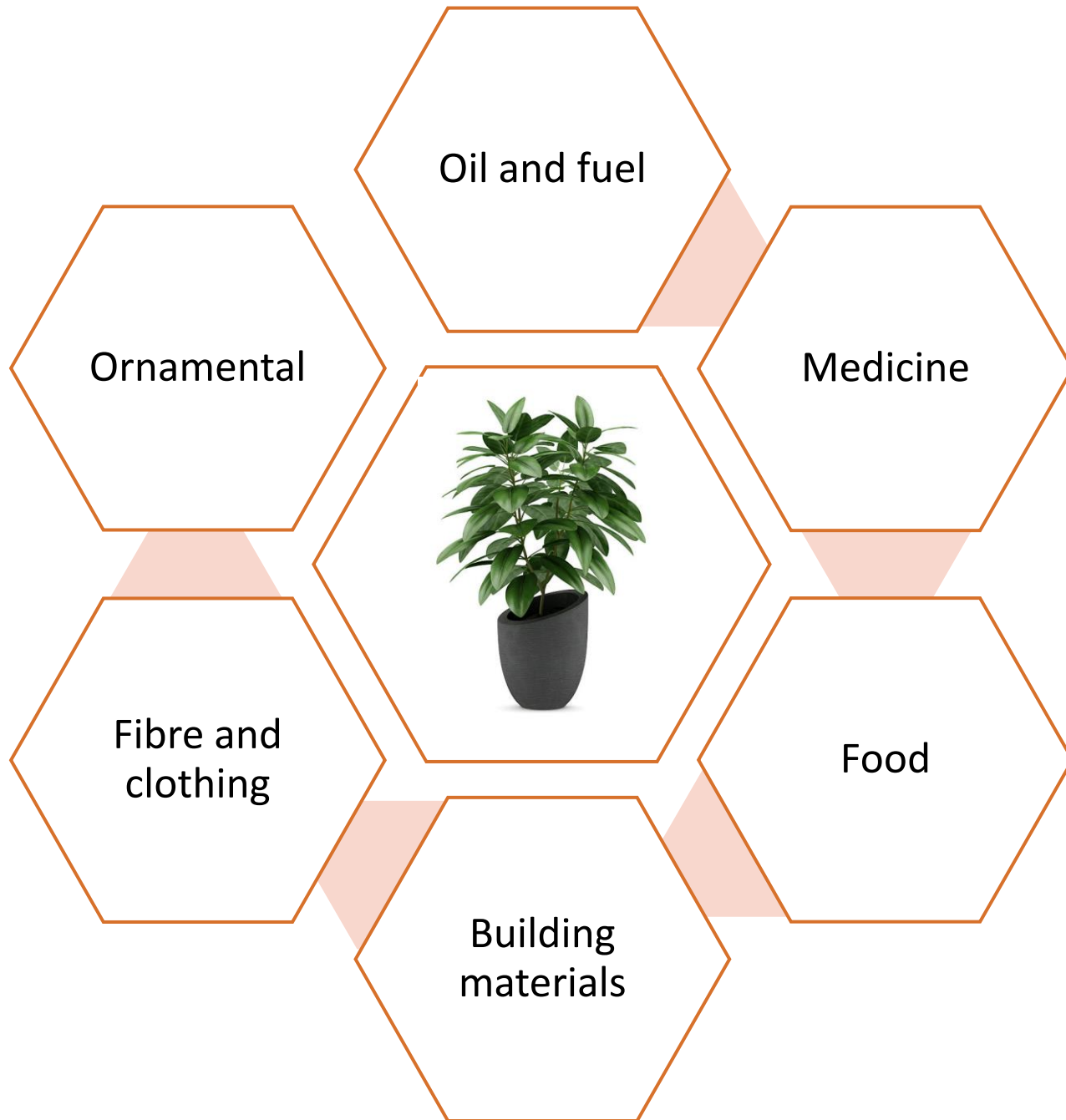
- The intrinsic value of biodiversity lies in its complexity, long history and living with a balance and co-existence.
- that the existence and presence of nature's biodiversity in the long history of life evolution are enough reasons for their conservation.
- It is the duty of humans to leave it to future generations in their original form as was handed down to the current generation by their forebears.
- This world that we inhabit is more wonderful than it is convenient; more beautiful than it is useful; it is more to be admired and enjoyed than it is to be used.

2. ANTHROPOCENTRIC VALUES

- The anthropogenic value of biodiversity refers to the economic and other value humans obtain from bio-resources.
- The Anthropocentric activities can be majorly divided into two types;
 1. Economic value; and
 2. Aesthetic value

2. 1 ECONOMIC VALUES

- The direct economic benefits humans derive from biodiversity include
 1. Food
 2. Water
 3. Agriculture
 4. Clothing
 5. Shelter
 6. Fuel
 7. Medicine
 8. Raw materials for industries
 9. Biotechnology
 10. Building materials



Economic uses of plants

2. 2 AESTHETIC VALUES

- Aesthetic value is the value that an object, event, or anything that possesses in virtue of its capacity to elicit pleasure (positive value) or displeasure (negative value) when appreciated or experienced aesthetically.
- Biodiversity is a key part of providing aesthetic values for mankind throughout history.
- The aesthetic values include spirituality, peacefulness, inspiration, religion, traditions, culture, art, folklore, language and behaviour.
- Ornamental plants, gardens and parks are all examples for aesthetic things.

- Biodiversity has contributed to the great variations in the folk art, folk dances, myths as well as maxims which contribute to the richness of the world's art and literature, which were creatively propounded as a result of their interaction and experience with nature's biodiversity.
- The emotional satisfaction that humans enjoy from the aesthetic value of nature.
- Biodiversity has rejuvenating powers, i.e., psychologically, nature assists man to overcome the stress and strains of life.
- The mass interest in ecotourism today, such as travelling to a reserve or any interesting site with bio-resources with the aim of viewing, sustaining and supporting ecosystems and local culture.

Medicinal plants



MEDICINAL PLANTS

- Plants also serve as major sources of healthcare systems worldwide and are called medicinal plants.
- There are 50,000 to 80,000 species of medicinal plants worldwide, as per the estimation of the International Union for Conservation of Nature and World Wildlife Fund.
- About 70-80% of the world's population, majorly from developing countries, depends chiefly on these medicinal plants for their primary healthcare.
- In India, the traditional medicine system exists in various forms, such as Ayurveda, Siddha, Unani, Yoga, Naturopathy and Homeopathy.

Anti-cancer plants



1. *Podophyllum*

Eng - Himalayan May
Apple; San – ವನ್ಯಕರ್ಕಟ,
ಲಘುಪತ್ರಿ



Parts used: Whole plant

Chemical: Podophyllotoxin
(ಪೊಡೋಫಿಲ್ಲೋಟಾಕ್ಸಿನ್)



2. *Taxus*

Eng - Himalayan Yew; San -
ಮಂದುಪರ್ಣಿ

Chemical: Paclitaxel (ಪ್ಯಾಕ್ಲಿಟ್ಯಾಕ್ಸೆಲ್)

Parts used: Leaves and fruits





3. *Vinca rosea*

Eng – Periwinkle; Kan -
ಸದಾಪುಷ್ಪ, ನಿತ್ಯಪುಷ್ಪ

Chemical:
Vincristine (ವಿನ್‌ಕ್ರಿಸ್ಟಿನ್),
Vinblastine (ವಿನ್‌ಬ್ಲಾಸ್ಟಿನ್)

Parts used: Root, stem and
leaves





4. *Psoralea*

Eng - Scurfy Pea; San – ಬಾಬಚಿ, ಬಕುಚಿ;
Kan: ಸೋರಿ ಕಾಯಿ

Chemical: Psoralen (ಸೋರಾಲೆನ್)

Parts used – Fruits

Used in psoriasis, skin diseases and
leprosy





5. *Nardostachys*

Eng - Indian Nard; San – ಜಟಾಮಾಂಸೀ;

Kan - ಗನಿಗಲಮುಷ್ಟಿ, ಜಟಾಮಾಂಸೀ

Chemical: Jatamansone (ಜಟಾಮಾನ್ಯೋನ್)

Parts used: Root.

The root-is an excellent substitute for *Valerian*, and is used in many medicinal treatments, while the oil obtained from the root is used in many medicinal preparations and is well known as a hair tonic.





6. Piper

Eng – Black pepper; Kan – ಕರಿಮೆಣಸು, ಕಾಳುಮೆಣಸು

Chemical: Piperine (ಪೈಪರಿನ್)

Part used – Seed



ಇದನ್ನು ಪ್ರಮುಖವಾಗಿ ಸಾಂಬಾರು ಪದಾರ್ಥವಾಗಿ ಬಳಸುತ್ತಾರೆ. ಮೊದಲಿನಿಂದಲೂ ಭಾರತದಲ್ಲಿ ಇದರ ಬಳಕೆ ಹೆಚ್ಚು. ಈಗಿನ ಮೆಣಸಿನಕಾಯಿ ಬಂದ ಮೇಲೆ ಇದರ ಬಳಕೆ ಸ್ವಲ್ಪ ಕಡಿಮೆಯಾಗಿದೆ. ಇದು ಪ್ರಮುಖ ಔಷಧಿಯಾಗಿಯೂ ಬಳಕೆಯಲ್ಲಿದೆ.



7. *Nothapodytes*

Eng – Ghanera; Kan: ದುರ್ಘಾತದ ಮರ,
ದುರ್ಘಾಸನೆ ಮರ

Chemical: Camptothecin
(ಕ್ಯಾಂಪೋತೀಸಿನ್)

ಪಶ್ಚಿಮಘಟ್ಟಗಳಲ್ಲಿ ಹೆಚ್ಚಾಗಿ ಕಂಡುಬರುತ್ತದೆ. ಇದು
ಅಪಾಯದ ಅಂಚಿನಲ್ಲಿರುವ ಪ್ರಭೇದ.



Anti-malarial plants



1. *Artemisia*

Eng - Indian Wormwood; Kan - ದವನ

Chemical – Artemisinin (ಆರ್ಡಿಮಿಸಿನಿನ್)

Part used - Leaves



2. *Spilanthes*

Eng - Toothache Plant; Kan -
ಹೆಮ್ಮುಗಲು

Chemical – Spilanthol
(ಸ್ವಿಲಾಂಠಾಲ್)

Parts used – Flowers, leaves



3. *Holarrhena*

Eng – Indrajaio; **Kan** - ಕೊಡಸಿಗೆ ಗಿಡ, ಕೊಡಸಲು ಗಿಡ, ಕೊರ್ಟಿ ಗಿಡ

Chemical – Lupeol (ಲ್ಯೂಪಿಯಾಲ್), conessine (ಕೊನೆಸ್ಸಿನ್)

ಅತಿಸಾರಕ್ಕೆ ಇದು ಅತ್ಯುತ್ತಮ ಔಷಧಿಗಳಲ್ಲಿ ಒಂದಾಗಿದೆ. ಆಯುರ್ವೇದದ ಪ್ರಕಾರ, ತೊಗಟೆಯು ಪೈಲ್ಸ, ಚರ್ಮ ರೋಗಗಳು ಮತ್ತು ಪಿತ್ತರಸದ ಚಿಕಿತ್ಸೆಯಲ್ಲಿ ಉಪಯುಕ್ತವಾಗಿದೆ. ಚರ್ಮದ ಸಮಸ್ಯೆಗಳ ಸಂದರ್ಭದಲ್ಲಿ ತೊಗಟೆಯನ್ನು ಬಳಸಲಾಗುತ್ತದೆ.



4. Cinchona

Eng – Quinine tree; Kan - ದಾಲ್ಚಿನ್ನಿ, ಚಕ್ಕೆ

Chemical – Quinine (ಕ್ವಿನೈನ್)

Parts used – Stem bark.

ಕ್ವಿನೈನ್ ಬಳಕೆಯು ಜ್ವರ ಮತ್ತು ಮಲೇರಿಯಾ ಚಿಕಿತ್ಸೆಯಲ್ಲಿ ದೀರ್ಘ ಇತಿಹಾಸವನ್ನು ಹೊಂದಿದೆ. ಆಧುನಿಕ ಸಂಶೋಧನೆಯು ಜ್ವರಗಳಿಗೆ ಇದು ಅತ್ಯಂತ ಪರಿಣಾಮಕಾರಿ ಚಿಕಿತ್ಸೆಯಾಗಿದೆ ಎಂದು ತೋರಿಸಿದೆ, ವಿಶೇಷವಾಗಿ ಮಲೇರಿಯಾದ ಚಿಕಿತ್ಸೆ ಮತ್ತು ತಡೆಗಟ್ಟುವಿಕೆಯಲ್ಲಿ.

Anti-diabetic plants



1. *Gymnema*

Eng – Anti_sugar plant; Kan - ಮಧುನಾಶಿನಿ

Chemical – Gymnemic acid (ಜಿಮ್ಮಿಮಿಕ್ ಆಮ್ಲ)

Parts used – ಎಲೆ





2. *Momordica charantia*

Eng – Bitter gourd bitter melon; Kan -
ಹಾಗಲಕಾಯಿ

Chemical – Momordicin (ಮೋಮೋರ್ದಿಸಿನ್)

Parts used – ಕಾಯಿ, ಎಲೆ.



3. *Momordica cymbalaria*

Eng – Wild little gourd; Kan - ಕಾರ್ಚಿಕಾಯಿ

Chemical – Momordicin (ಮೋಮೋರ್ದಿಸಿನ್)

Parts used – ಕಾಯಿ, ಎಲೆ.



4. *Azadirachta*

Eng – Neem; Kan - ಬೇವು

Chemical – Azadirachtin (ಅಜಾದಿರಾಕ್ಟಿನ್)

Parts used – ಕಾಯಿ, ಬೀಜ ಎಲೆ.



5. *Coccinea*

Eng – Ivy gourd and Scarlet gourd;
Kan: ತೊಂದೇಹಣ್ಣು

Parts used – ಕಾಯಿ, ಎಲೆ.



6. *Hibiscus*

Eng – Hibiscus ; Kan: ದಾಸವಾಳ

Parts used – ಕೂವು





6. *Trigonella*

Eng – Fenugreek ; Kan: ಮೆಂತೆ

Parts used – ಎಲೆ, ಬೀಜ





6. *Tinospora*

Eng – Heart-leaved moonseed; Kan:
ಅಮೃತಬಳ್ಳಿ

Parts used – ಎಲೆ, ಬೀಜ



Other important medicinal plants



Withania somnifera

Kan - Ashwagandha

Chemical – Withanolides

Parts used – Roots



Andrographis paniculata

Kan – Nelabevu; Eng – King of bitter

Chemical – Andrographolides

Parts used – Stem and leaves



Emblica officinalis

Kan - Nellikayi

Chemical – Tannins

Parts used – Fruits



Atropa belladonna

Eng – Deadly nightshade

Chemical – Atropine

Parts used – Fruits



Rauwolfia serpentina

Kan – Sarpagandhi

Chemical – Reserpine

Parts used – Root

Non-Timber Forest Products

INTRODUCTION

- Non-wood forest products consist of goods of biological origin other than wood, derived from forests, other wooded land and trees outside forests.

OR

Non-timber forest products (NTFPs) or Non-wood forest products (NWFPs) are any product or service other than timber that is produced in forests.

- Several million households world-wide depend heavily on NWFP for subsistence and/or income.
- Some 80 percent of the population of the developing world use NWFP for health and nutritional needs.

- Women from poor households are generally those who rely more on NWFP for household use and income.
- At a local level, NWFP also provide raw materials for large scale industrial processing.
- FAO estimates that globally, NWFPs generated US\$88 billion (₹7.2 Lakh crore) in 2011.
- 76 million tonnes of food from the forest were consumed on average in 2011.
- 1 billion people are thought to depend on wild foods.
- 80 percent of the population of developing countries rely on traditional medicines, mostly plant drugs, for primary health care.

- At present, at least 150 NWFP are significant in terms of international trade, including;
 1. Natural gums and resins, gums-resins and oleoresins
 2. Natural cork
 3. Wild edible products
 4. Parts of plants, without flowers or flower buds, and grasses, mosses and lichens, suitable for ornamental purposes.
- The NTFPs in particular includes;
- include fruits and nuts, vegetables, fish and game, medicinal plants, resins, essences and a range of barks and fibres such as bamboo, rattans, and a host of other palms and grasses.

➤ The NTFPs in particular, includes;

1. Fruits and nuts
2. Vegetables
3. Fish
4. Game
5. Medicinal plants
6. Resins
7. Barks
8. Fibres such as bamboo and rattans
9. Palms and grasses