

## **Lec.1 ROLE OF FORESTS**

**Forests serve two roles viz., a) Productive role and B) Protective role**

a) Productive role

- 1. Food**
- 2. Fuel**
- 3. Shelter**
- 4. Clothing**
- 5. Timber**
- 6. Industrial wood**
- 7. NTFP**

b) Protective role

- 1. Climate amelioration**
- 2. Soil and water Conservation**
- 3. Wildlife habitats**

a) Productive role

**It is estimated that the forest products contribute about 1% of world gross domestic product (GDP). The annual turnover of timber and other wood products from forests is valued at more than US\$200 billion. The demand for commercial timber and other products is ever increasing, and expected to rise by 50% by 2010. Apart from that, non-timber products like rubber, cotton, medicinal products, food and so on represent significant economic value.**

1. Food

**a) Rhizome : *Amarphous campanulatum, Cyprus rotandus***

**b) Root and aerial : *Dioscorea , Moringa oleifera Caryota urens, Bauhinia  
variegata***

c) Buds : *Dillenia pentagyna, Phoenix sp*

d) Sap, and latex, : *Borassus flabellifer, Cissus rapanda*

#### Bark

e) Stems : *Cycas pectinata, Dendrocalamus strictus*

f) Leaves : *Tamarindus indica, Moringa oleifera*

g) Flowers : *Ficus glomerata, Madhuca indica, Bambax ceiba, Tamarindus indica*

h) Fruits : *Aegle marmelos, Anacardium occidentale, Anona squamosa.*

*Artocarpus heterophyllus, Borassus flabellifer, Capparis*

*decidua, Diospyros melanoxylon, Emblica officinalis, Ferronia*

*elephantum, Morus alba, Zizyphus spp*

i) Seeds : *Anacardium occidentale , Juglans regia, Prunus amygdalus,*

*Tamarindus indica, Dendrocalamus strictus*

## 2. Fuel

Wood is used as fuel for thousands of years, until the advent of coal, oil, gas, electricity, etc. Wood constitutes as chief source of fuel. Even today more than half of the total world consumption of wood is for fuel-wood. Wood remains the major source of domestic fuel in India. Approximately 175 mm<sup>3</sup> of wood is used as fuel in the country. It is estimated that by 2010, most of the 3 billion people who depend on it for their daily living will find it hard to obtain. Already, rural families spend precious hours in collecting firewood instead of other productive work, something that causes losses to the tune of US\$ 50 billion to the world economy.

*Eg., Acacia spp, Casuarina equisetifolia, Prosopis, Neem, Leucaena leucocephala, etc.,*

### **3. Shelter**

Wood is used for construction of buildings.

Eg., Palmyra, Teak, Jack, etc.,

### **4. Clothing**

Rayon cloth eg., Eucalyptus spp

### **5. Timber**

Timber is a major forest produce and is used extensively for various purposes. In India most of the wood produced is used for construction of houses, agricultural implements, bridges, sleepers etc., In India 12 mm<sup>3</sup> of timber is produced from our forests. More than 1500 species of trees are commercially exploited for timber in different parts of India. It is used in timber-based industries such as plywood, saw milling, paper and pulp, and particle boards.

Many species like teak, sal, deodar, babul, sissoo, chirpine, adina, axlewood, rosewood, dipterocarpus, and etc. yield valuable timber.

### **6. Industrial wood**

1) Forest provide raw material to large number of industries eg: paper and pulp, plywood and other boards, packing cases, matches, toys etc.,

Paper and pulp : Bamboos, Eucalyptus, casuarina

Plywood : Teak, Rose wood, Terminalia etc.,

Packing cases : Pinus sp, Silver oak, Fir,

Matchwood : Ailanthus, Simaruba, Bombax

Toys : Adina, Redsanders, rose wood

## **7.NTFP**

### **i) Fibre and flosses**

Fibres are obtained from bast tissue of certain woody plants, which are used for making ropes. Flosses are obtained from *Ceiba pentandra* and fibres are obtained from *Agave sisalana*, *Sterculia urens*

### **ii) Grasses and bamboos**

A large variety of grasses are found in the forests. About 30% of the 416 million livestock population graze in the forests. Among valuable grasses eg: Sabai (*Eulaliopsis binata*) is harvested annually 6.5 million tones and 80,000 tonnes of bamboo are harvested from forest every year.

### **iii) Essential oil**

India produced about 1500 tonnes of essential oils during 1980, which was utilized in making soaps, detergents and chemicals eg. Eucalyptus, Bursera, Cymbopogan, *Santalum album* etc.,

### **iv) Oil seeds**

Many tree species of *Madhuca indica*, *Pongamia pinnata*, *Shorea robusta*, *Azadirachta indica*, *Schleichera oleosa*, *Vateria indica* etc., produce oil-bearing seeds, which are commercially important. Presently these seeds are used in the soap industry. There is a potential production of about 1 million tonnes of oil every year from forests tree seeds.

### **v) Tans and dyes**

Important tannins are extracted from myrobolan nuts, bark of wattles (*A.mearnsii*, *A.decurrrens*, *A.dealbata*) and *Cassia auriculata*, leaves of *Embelica officinalis* and *Anogeissus latifolia*, bark of *Cleistanthus collinus*, fruits of *Zizphus xylophora*, *Cassia fistula*, *Terminalia alata*, *T.arjuna* etc., katha and cutch are obtained from *Acacia catechu*.

### **vi) Gums and resins**

Gums and resins are exuded by trees as a result of injury to the bark or wood. Gums –eg: *Sterculia urens*, *Anogeissus latifolia*, *Lannea coromandalica*, *Acacia nilotica*, *Ptercapus marsupium*, *Butea monosperma* etc.,

Resin is obtained from *Pinus roxburghii*

### **vii) Drugs, Spices and Insecticides**

Important spices yielding drugs are *Rauvolfia serpentina*, *Hemidesmus indicus*, *Dioscorea spp*, *Atropa spp*, *Datura innoxia* etc,

**Spices** : Seeds of *Carum carvi*, barks of *Cinnomomum zeylanicum*, dried capsules of *Elletaria cardomomum*.

**Insecticides** : Pyrethrum and neem

### **viii) Tendu and other leaves**

Tendu leaves (bidi leaves) (*Diopyrus melanoxylon*) and leaves of baubinia spp, *Butea spp*, plates, dona etc.,

### **ix) Lac and other products**

Lac is a resinous secretion of insects which feed on forest trees eg ; *Butea monosperma*. Silkworm is feed on *Morus alba* or *Terminalia alata*. Honey is produced from forests.

### **x) Fodder and grazing**

About 30% of 416 million livestock population depend up on forest grazing and leaf fodder supply. **Eg;** *Luecaena leucocephala*, *Albizia lebbeck*, *Hardwickia binata*

### **xi) Cane**

Canes or rattans are the stems of a climber plant and are used for a large number of household items. It is used to make walking sticks, polo sticks, baskets, picture frames, screens, and mats.

## **b) Protective Role**

### **1. Forests as Earth's air purifiers**

Forests form an effective sink for the carbon dioxide produced as a result of animal respiration, burning of fossil fuels, volcanoes and other natural and human-induced phenomenon. And if that is not all, a by-product of photosynthesis is oxygen. Thus, the Amazon forests are the Earth's air purifiers, given the large amounts of carbon dioxide they absorb from the atmosphere.

Forests play a significant role in maintaining the CO<sub>2</sub> balance in the atmosphere without sufficient forest cover all the CO<sub>2</sub> released in the atmosphere will not be utilised, resulting in a higher per cent of CO<sub>2</sub> in the atmosphere.

According to scientists, this will result in warming of the world temperature; disturbance in the climate etc., The CO<sub>2</sub> percent in the atmosphere has already reached 0.042 per cent against the normal of 0.03%. If this increases continuously higher temperature and other disturbances on the earth may bring unimaginable miseries to mankind.

### **2. Climate amelioration**

Forest increase local precipitation by about 5 to 10% due to their orographic and microclimatic effect and create conditions favourable for the condensation of clouds .Forest reduce temperature and increase humidity. It also reduces evaporation losses.

### **3. Soil and water conservation**

Forests maintain the productivity of the soil through adding a large quantity of organic matter and recycling of nutrients. The leaves are used as manure.

Tree crowns reduce the violence of rain and check splash erosion. Forests increase the infiltration and water holding capacity of the soil, resulting in much lower surface runoff. This inturn results in checking of soil erosion.

Forest checks floods. Forests intercept 15 to 30% of the caused due to siltation of river channels caused due to erosion. Forests and trees reduce wind velocity considerably. Reduction of wind velocity causes considerable reduction in wind erosion, checks shifting of sand dunes and halts the process of desertification. Forests by reducing erosion check the siltation of irrigation and hydel resources. Rapid siltation of various reservoirs in the country is the result of deforestation in the catchment areas of these reservoirs.

Forest protect us from physical, chemical and noise pollution, dust and other particulates and gaseous pollutants cause serious health problems. Forests protect as from these pollutants. Forest and trees provide shelter and wind break effect which is beneficial to agricultural crops, particularly in arid and semiarid areas and increase agricultural production.

#### **4. Wildlife habitats**

Tees act as a habitat for wildlife.