

Chapter - 15

Natural Vegetation and Soils of India

(Special Reference to Rajasthan)

Natural vegetation and wild life are the basis of the prosperity of any nation. It is an important part of India's natural environment. Natural vegetation and wildlife are available in abundance in India from a long time but now due to the irrational exploitation their destruction is increasing. For the sake of human civilization the preservation of natural vegetation and wild organism is absolutely necessary.

According to the national forest policy 33% of forest cover on the land is necessary. Our nation has a variation in the types and distribution of forests according to the state and regions too and it occurs due to the difference in the natural environment of those places. India is a large country therefore the diversity in the form of temperature, rain, soil, land quality, winds and the sunlight is found. So presence of different kind of vegetation is natural.

Types and Distribution of Forest :

1. Evergreen Forests :

These forests are found in those parts of the country where the average rainfall received is above 200 cms and the average temperature remains around 24°C. It has three major regions.

1. Western slopes of western Ghats.
2. Andaman and Nicobar group of Islands
3. Bengal, Assam, Meghalaya and lowland areas of north east India. In such type of forests a variety of trees like Rubber, Mahogan, Aboni, Innwood, wild mango palm and Bamboo and creepers found. These trees have a height between

30 to 45 meters. Density of trees is so high that the sun light cannot reach the ground.

Exploitation of these trees is found scarce because their wood is hard. Different types of trees are found at a place. Trees, creepers and smaller plants grow densely, therefore cutting of trees is inconvenient and also there is a lack in means of transport so these woods are not much used from economic point of view.

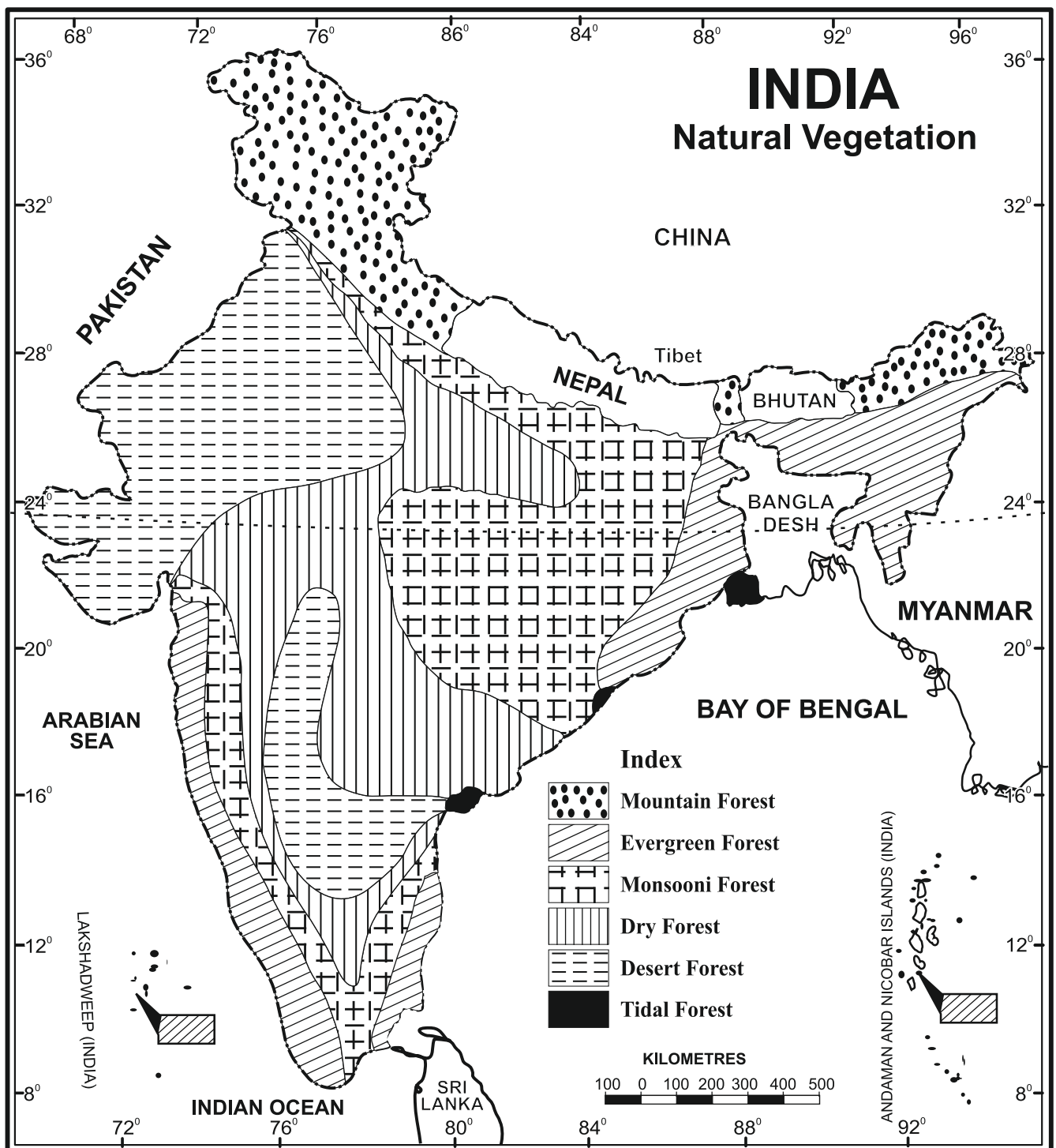
2. Deciduous or Monsoon forests :

These forests are found in areas receiving annual rainfall between 100 to 200 cms. These forests are found in the lower parts of Northern U.P. Vindhya and Satpura mountains, the hills of Chota Nagpur and Assam, Southern parts of eastern Ghats and in the eastern region of the western Ghats.

These forests are not dense and also the trees inside them are not very high. The main trees inside them are sal, teak, Neem, Sandal wood, Rose wood, amla, Mulberry, Banyan mango and Bamboo etc. The wood of these trees are not very hard and can be cut easily. Their wood is used in making vessels and furniture etc. After the development of the means of transport in these areas the forests are shrinking day by day due to growing demand and needless exploitation.

3. Arid Forest :

These forests are found in areas where the average rainfall remains 50 to 100 cms. The trees which can survive in lack of water are found in abundance in these areas. These trees have long thick roots. This type of forests are found mostly in



Map 15.1 : Natural Vegetation in India

south west Punjab, Haryana, eastern Rajasthan & in south west UP. The major trees are Acacia, Neem, Mahua, Kareel, Khejari (*Prosopis cineraria*) etc. Here the trees have lesser height due to the lack of rain. The height of the trees is measures between 6

to 9 meters. These trees have local significance.

4. Thorn forests : These forests are found in the parts of low rainfall up to 50 cms. The leaves of these trees are small, thorny and less in number,

Acacia trees grow in abundance there. Hawthorn Agave khejri, Kher and Palm etc trees are among the vegetations dominant here. This vegetation is found in the states like south west Punjab, Western Rajasthan, Gujrat and M.P. etc.

(5) Tidal Forests : These are also called swamp forests. These forest are found at the mouth of peninsular rivers like Mahanadi, Godavari, Krishna, Kaveri etc. and also exist in the parts of deltas of Ganga and Brahmaputra. At the time of tide the sea water irrigates the roots of trees Mud and swamps are present in such regions. Sundari trees are found particularly into the delta of Ganges and Brahmaputra. Palm coconut, Haritoria, Rizophora and Sonerashia are the other trees. The wood of these trees is soft.

(6) Montane forests : This type of forests are found at the high altitudes upto 800 meters in Mahabaleshwar of Maharastra in south India and in Pachmadhi of MP. Here the trees are as high as 15 to 18 meters. Trees. Bear thick trunks having dense bushess under them. The leaves are thick and everygreen and the branches are found bearing vines. Eujenia, Mitchelia and Rodendraus etc are the trees found at high altitudes. Diverse vegetation is found at different altitudes of Himalayan ranges in North India. Oak and Chestnut trees with broad leaves are found at the height of 1000 to 1500 meters, Coniferous trees like cedar, spruce, pine etc grow at 3000 meters, alpine flora like silver fur, Birch Junifur etc are found at the height of more than 3000 meters.

Wild life in India :

Different types of animals are found in India in large numbers. Almost 75000 species of animals are found here. Amongst them 350 species of mamals 1,313 avian 480 reptiles 197 amphibians 2,546 fish, 50,000 insects 4000 molusks are found and the rest of the species of invertibrates. They constitute 13% of the world's total. Among mamals the elephant is the most mejestic. These creatures are found in Assam, Karnataka, and in the hot and humid forests of Kerala. The single horned rhinos live in the

swamps of west Bangal and Assam. Wild asses and camels live in the rann of Kacch and Thar desert respectively. Indian buffalo, cow, ox, Neelgay, Horse, Chousinga small deer, gazel, dogs and the deer of various species and the several other animals are found in India. Many species of monkeys are also found here.

India is the only country where both lion and tigers are found. The Gir forest of Gujarat is the natrual habitat of Indian lions. The tigers are found in the forests of MP and Jharkhand, Sundervan of west Bengal and in the Himalayan regions too. The leopard is also a member of cat family. They are important among the animals of prey.

The animals of Himalayan regions are adopted to the harsh climate which can survive in extreme cold. Yaks are found in the snowy heights of Laddakh, its a bull like creature with tufted horns. Its weight is about 1 ton. Tibeton stag, blue sheep, wild sheep and Kiyang (Tibetan wild ass) too are found here. Red pandas are found occasionally in some parts. Turtles, crocodiles and aligators are found in rivers. lakes and marine areas. The aligator is a representative of crocodile species found only in India.

Many colourful birds are found in India. peacock, duck, myna, cranes, eagles, owls, crows, & doves are some of the species inhabit in the forests and wetlands of the nation.

Natural Vegetation of Rajasthan :

In an area of about 34,610 km there is a variety of vegetation found in Rajasthan. It accounts for 10.22% of the total area of state. In Rajasthan the densly forested cover area is just 3.83 percent. The per capita forest area is just 0.03 hectares in Rajasthan which is far less than the 0.13 hectares per capita forest of whole India. In Rajasthan a vast difference is found in the geographical distribution of forests. The vegetation in the state is influenced by the climate, soil, land position, and the geological history. Three types of natural vegetation forest, grass and desert flora is found here. Following is the classification and distribution of forests in the state-

Types of forests :

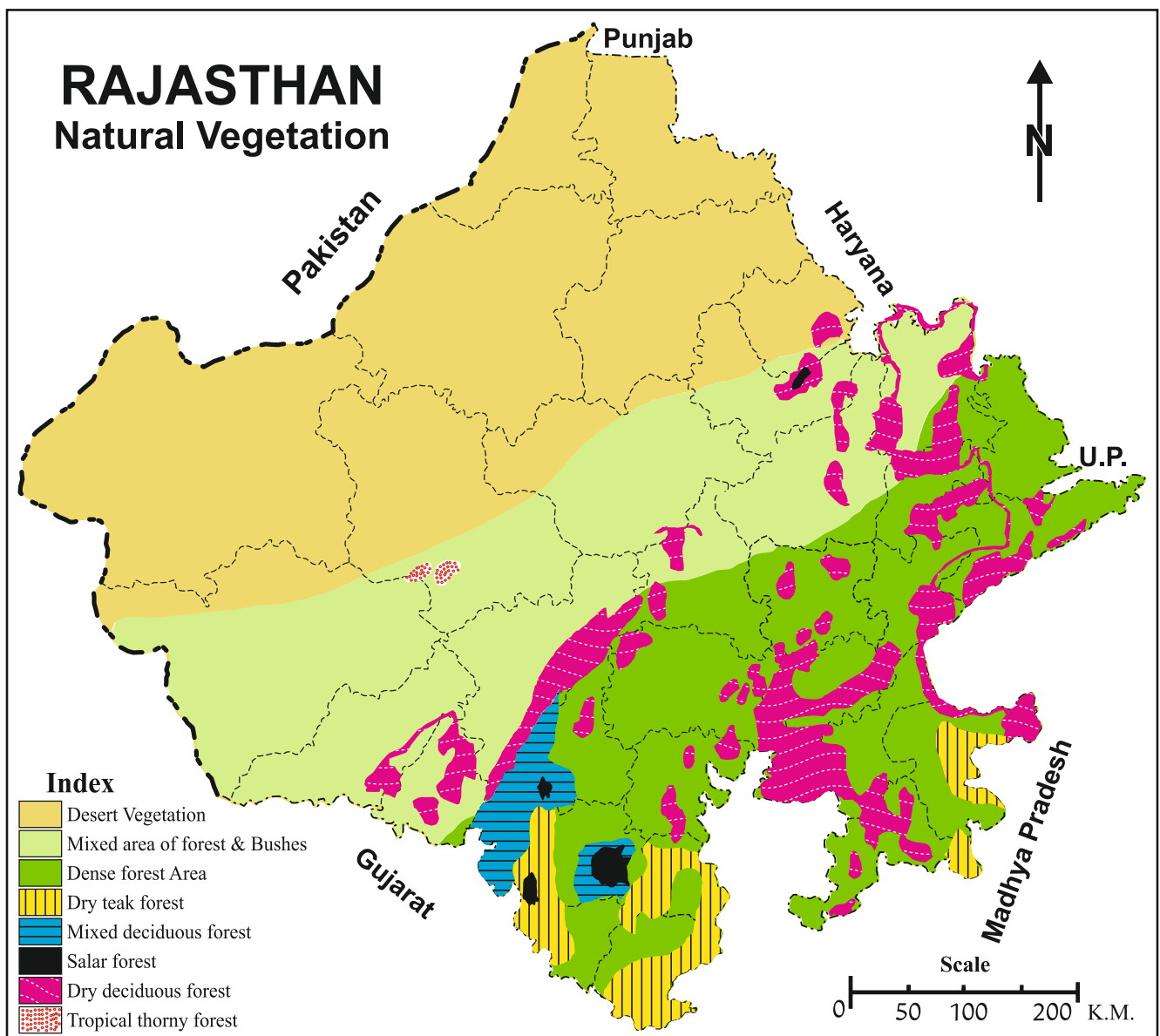
Due to the land pattern, climate and variation of soil following types of forest are found in Rajasthan.

1. Tropical Thorn Forests.
2. Tropical Dry Deciduous Forest and
3. Sub Tropical Montane forests.

(1) Tropical Thorn Forests : This type of forests are found in dry and semi-arid regions. This type of vegetation is found in Jaisalmer, Barmer,

Pali, Bikaner, Churu, Nagaur, Sikar, Jhunjhunu districts etc. Trees of these forests are very small in size. Plethora of bushes are also found there. Forests of dry climate like this, the trees of khejri, Rohira, Bair, Kair, Thor etc and bushes grow. The roots of these trees and bushes are deep and the leaves are barbed. Due to the high utility of “khejri” tree in the desert it is called as the ‘Kalpvraksha’ of desert.

Several types of bushes are found in these forests. Fog, Akada, Kair, Lana, Arna and Jharber are the chief bushes of this region. Apart from that



Map 15.2 : Natural Vegetation in Rajasthan

several types of grass is also found in this area. The Sevan and Dhaman grasses are very well known among them. Dhaman grass is very useful for dairy animals while the Sevan grass is also very nutritious for animals.

(2) Tropical/dry Deciduous Forests : These forests have a large extension in Rajasthan. They are found into 50 to 100 cms rainfall areas.

These forests are found abundantly in the central, southern and south eastern parts of Rajasthan. Due to the variety of trees these forests have several sub-types as -

(i) Dry teak forests : These forest are found at the height of 250 to 450 meters. These forest are named after teak trees due to the abundance of them. Udaipur, Dungarpur, Jhalawar, Chittorgarh and Baran districts are enclosed with this kind of forests. About 50 to 75% of teak is obtained from these forests. In addition the trees like tendu, Dhavada Gurjan, Gondal, Siris, Haldi, Khair, semal, Reetha, Baheda and Imali are also found here.

The teak can't bear extreme cold and frost, so these types of trees are mostly found in southern parts of Rajasthan. The Sagwan wood is very useful for timber work and making tools of agriculture.

(ii) Salar forests : These forests are found in hilly areas with the altitude of 450 meters. In Rajasthan these forests are extended in the districts of Udaipur, Rajsamand, Chittorgarh, Sirohi, Pali, Ajmer, Jaipur, Alwar and Sikar. Salar, Dhok Kathira and Dhawad are the chief trees of these forests. Its wood is used for making packing boxes. These forest are named Salar forests due to the exuberance of Salar trees.

(iii) Bamboo forests : Due to plethora of Bamboo trees these woods are named as bamboo forests. These woods have their extension in the lavish rainy areas of Rajasthan. In Rajasthan these forests are extended in the district of Banswara, Chittorgarh, Udaipur, Baran, Kota and Sirohi. The district Banswara is named only after the abundance of "Baans" (Bamboo) trees. Along with bamboo trees these forest also have Dhakada, Sagwan and

Dhokada trees.

(iv) Dhokra forests : Dhokra forests are found in a vast area of Rajasthan. Apart from desert areas the geographical environment of all regions in Rajasthan is favourable to these forests. That's why the expansion of these forests is predominant in Rajasthan. These forest are found mostly at the altitudes ranging 240 to 760 meters in Rajasthan. They are extended in Kota, Bundi, Sawai Madhopur, Jaipur, Alwar, Ajmer, Udaipur, Rajsamand and Chittorgarh districts. In Rajasthan Dhokra is known as "Dhok" also. These forests are included in the forest chief resources of the Rajasthan. Along with 'Dhok' the trees like arunj, Khair, Khirani, Salar, Gondal are also found in these forests. Palash (*Butea frondosa*) is also found with Dhok abundantly in foot hill areas. Jhadber and Adoosa are also found some where. The timber of Dhok is very durable. Coal is made by burning it.

(v) Palash Forests : These forests are spread in those areas where the surface is stony and hard. They are found abundantly amongst hills where plateau land is available. These forests are also found in the plains which are pebbled having less amount of soil relatively. They are stretched in Alwar, Ajmer, Sirohi, Udaipur, Pali, Rajsamand and Chittorgarh districts.

(vi) Forests of Khair : Expansion of these forests lies in the southern highlands of Rajasthan. It covers the regions of Jhalawar, Kota, Baran, Chittorgarh and Sawai madhopur districts. Along with Khair the trees like Ber, Dhokada and Aroonj are also found in these forests.

(vii) Babool forests : These forests are found in Ganganagar, Bikaner, Nagaur, Jalore, Alwar and Bharatpur district. Regions having less moisture in the soil contains less numbers of these trees. Their density increases in the regions having higher moisture. The trees like Neem, Hingota, Arunj, Kair and Jhadber are also found with Babool in these woods.

(viii) Mixed Autumn forest : These forests are found in the southern hilly regions of Rajasthan.

Sirohi, Udaipur, Rajsamand, Chittorgarh, Kota and Baran district hold the large expansion of these forests. These forests do not have a primacy of any single kind of tree. All kind of trees are found there. Aamla, Shisham (Rose wood) Salar, Tendu, Amaltash, (Cassia fistula) Rehan, Karunj, Gooler, Jamun, Arjuna etc. are the most common trees found in these forests.

3. Sub-tropical Mountane forests : This type of forests are found only in Mount Abu region. Evergreen and semi evergreen vegetation is found in these forests. Here the trees are found profusely dense, so greenery is available permanently. Mango. Bamboo, Neem Sagwan etc. trees are found in these forests. Less than half percent part of the total forest area of Rajasthan has this type of forests.

Forest Policy and Conservation :

Forest is the base of life Many adverse effects like soil erosion, expansion of deserts, floods, increasing in wasteland abnormal climate, draught, plunging level of ground water scarcity of wild animals, environmental pollution etc. can be seen on the climate and topography of our country due to indiscriminate cutting of forests. Forests are being cut in the name of development, settlement, the needs of ever increasing population, growing industrilization and agricultrue. To fullfil these increasing needs and to refrain from the environmental disasters the protection of forests is much needed.

The first forest policy in India (Bharat) was persued in 1884. According to the new forest policy declared after independence on 31 May 1954, the 33 percent of total land mass should be covered by forests. New forest policy in our country was declared in 1988. Envriornmental stability , safety of natruel heritages like flora and fauna and fulfillment of the basic needs of common people were the three goals stated in it. Several plans and programmes are being conducted the direction of forest conservation by the government. Social forestry plan, establishment of national parks and sanctuaries etc. are the important efforts being made

in this direction.

Efforts are being made by forests research center Dehradoon and Central Arid zone research Insstitue (CAZRI) Jodhpur to expand forest areas and also to control the expansion of desert land. Conservation of forests can not be done only by government efforts. The awareness and active participation of common people too is needed.

Looking at the importance and development of forests, various forestry awards are given by the government of Rajasthan for the developement of forests under social forestry, Arawali plantation and on various forest conservation programmes. They are- Vaniki Pandit Award, Vriskha Mitra Award etc.

Protection of wild life :

Due to the mass cutting of forests wild animals are dwindling and those which have been survived are facing acute problem of food and habitat. Their conservation is necessary. Affection towards wild animals has an integral part of Indian culture. A description is found about the conservation of wild animals and a ban on hunting in an inscription of Indian emperor Ashoka the great.

Following measures should be taken for the protection of wild animals.

1. Complete ban on hunting.
2. Availability of natural habitat.
3. Forming laws on wild life protection and their strict implementation.
4. Establishment of National parks and wild life sancturies with their proper management.
5. Spreading public awarness and ensuring public participation.

Biosphere Reserved Areas :

15 biosphere reserve areas have been established in our country. They are Nanda Devi, Sundervan, Manas, Nokrek Mannar bay, Nilgiri, Simlipal, Namdafa, Thar desrert, Uttarkahand, Small Runn of Kuchh, Kanha, Northern Andaman Greater Nicobar and Kaziranga.

National Parks and Sanctuaries :

For the protection of wild life in India, 565 wild life sanctuaries and 89 National parks have been established so far. Two national parks of the country have been declared world heritages for the first time. They are Kaziranga (Assam) and Keoladev (Rajasthan). Prominent national parks of the country are- Jim Corbett (Uttarakhand) Kanha (MP), Kaziranga (Assam), Bandipur (Karnataka) Palamou (Bihar) Dachigam (J&K) Sunderbans (W.B) Shant Ghati (Kerala) Nandan Kanan (Orissa) Keoladev (Rajasthan) Kaibul Lajong (Manipur) Annamalai (Tamilnadu). Special projects are being run for various endangered species like Tiger, elephant, Gir lion, Crocodile, Rhinoceros Muskdeer etc.

Wild life and Sanctuaries of Rajasthan :

Animals living in natural habitat are called wild animals. Wild animals like Tiger, Panther, Cheeta Sambar, Chinkara, Black buck are found in our state. Chinkara is the state animal. There are 22 wild life sanctuaries in the state. Ranthambore national park, Sawai Madhopur and Keoladev national park in Bharatpur are the national parks situated in Rajasthan.

National desert park Jaisalmer, Sariska sanctuary Alwar and Mukundra Hills sanctuary Kota are Proposed as national parks. Ranthambore national park and Sariska sanctuary are made for Tiger conservation. Keoladev national park is included in the list of world heritage. It has been famous for Siberian Crane. Their appearance has been dwindling now a days. Along with wild animals national desert park Jaisalmer is famous for conservation of fossils. Huge fossils of Aakal Region are the center of attraction here for the tourists.

Kurjan (Domicile crane) is a popular migratory bird of folk literature. Its main center is at Khichan (Jodhpur) There are 33 non hunting prohibited areas declared in the state. The biological park of the state is situated in Nahargarh (Jaipur). Godawan is the state bird of Rajasthan which is rarely found now a days in its original natural

habitat in western Rajasthan. For the conservation of crocodile the Chambal national crocodile sanctuary is made. Major sanctuaries of the state are Talchhapper (churu) Ramgadh Vishdhari (Bundi), Kumbhalgarh and Sajjan Garh (Udaipur), Mount Abu (Sirohi) Keoladev (Karauli), Sitamata and Bhensrodgarh (Chittor), Bandh Baretha (Bharatpur) Todgarh- Rawali (Ajmer) Jamawa Ramgarh (Jaipur), Ramsagar (Dholpur) etc.

Khejarli Sacrifice :

The Khejarli sacrifice of Rajasthan is a symbol of awareness towards environment. 'Khejarli tree is the 'Kalpvriksha' of Thar'. On 28th August 1730 Maharaja of Jodhpur ordered to cut down the Khajadi trees in Khejarli village but the residents strongly opposed it. This agitation was led by Smt. Amrita Devi. She challenged the tree cutters with the slogan "Jo Sir sante Roonkh rahe to bhi sasto Jaan." (It would be inexpensive if a tree is saved at the cost of our head)

Saying this she stuck to the tree and sacrificed her life for the sake of trees. A total of 363 (294 men and 69 women) sacrificed their lives in Khejarli. Therefore 21st September is observed as Environment Day in India. A memorial is built at Khejarli in the memory of those immortal people, where a tree Martyr fair is organized every year. To keep their memory intact, Amrita Devi Krishna Mriga Sanctuary has been developed in Jodhpur. In the field of environmental conservation and awareness Amrita Devi memorial award is given by the state government every year.

Conservation of Bio-diversity :

The multiple diversity of domestic and wild flora and fauna found in a certain region is called Bio-diversity. Our country is very rich in biodiversity. About 40% part of the total 15 lakh biodiversities of the world is found in India. In India about 81000 animals and 45000 plant species have been identified so far. Animals and plants are very useful from economic point of view.

Bio-diversity plays an important role in the

formation and Maintenance of the Nature. The destruction of any sort of plant or animal might be dangerous for the nature and the environment. Biodiversity has been much destroyed largely due to the formation of big dams industrialization, intensive farming and due to the need of food and shelter for the increasing population. Animals and Plants make an environmental equilibrium. The environmental problems like destruction of biodiversity cracking of the ozone layer, rise in the temperature of atmosphere due to green house effect etc are getting increased. For this, International union for the conservation of nature (IUCN) was made. Its headquarter is in Switzerland. Work is also being done by the world wide fund (WWF) for nature in this direction.

The biodiversity of our country must be saved in view of the sustainable development. Conserving them is the need of the hour. For the conservation of biodiversity various National parks, wild life sanctuaries, biosphere reserves are established and many tiger projects are being run. Some research institutes for this purpose are also working. Indian Forest Research Institute Dehradun, Indian Botanical Garden Kolkata, Ecological Research Institute Bangalore, National environmental Engineering Institute Nagpur etc are among them.

Environmental Awareness :

In India since the Vaidik period an awareness regarding the environment is existed. Showing respect and giving importance to various environmental factors is also explained in different mythological books with the talks of conserving them Indian sages has considered the whole natural powers as deities. The sun, water vegetations, air and the space are considered as the base elements of our body. The 'Bhumisukt' in Atharvaveda is the first written document about environmental awareness. The Purity of water is described in Rigveda and to honour all the natural elements as deities is described in Yajurveda. Peace and nobility in all space earth, water, vegetation and universe is described in the 'Shanait Path' (Recitation for peace)

of Vaidik Prayer. Planting a single tree is considered as equal to rearing of 100 sons in Vedas. The earth is considered adorable like a mother in our national song Vandemataram.

Our culture is also called the Aranya Sanskriti. The meaning behind this particular notion is attached to the prosperous environment with green trees and dense forests. Deep gratitude towards the trees has been shown in Mahabharat and Ramayana too. Cutting of trees is termed as crime in Vishnu Dharmasutra, Skand Purana and in Yagyvalkyas mriti and there is also a provision of punishment for tree cutters.

We follow a Vaidik tradition for environment, that a human being is born into environment, lives and dies in the same environment. Awareness towards environment is extremely essential at present time, because the problem of global warming has been emerged due to the pollution of environment.

At present awareness regarding environment and environment education is necessary.

The Khejadli agitation, Chipko movement, Appiko movement, Shant ghati, movement and Save Narmada movement all are the indications of awareness towards environment in our country. 29 points of Bishnoi Society found in Rajasthan are important rules for the conservation of environment.

Soils of India

Soil has a very important role in the economic life of every nation. It has more importance in the agrarian nation like India, because about 60% people are earning their livelihood from agriculture. Soil is a layer of earth which is formed by the disintegration and fragmentation of rocks and also by the decomposition of bio wastes. It keeps the capacity to grow plants and trees. Its formation and quality depend upon the parent rocks, climate, vegetation, relief and time. According to the formation process the soil is found in two kinds spatial and displaced. When the rocks do not move from their root place due to seasonal effects or move

a little then the soil made by this process is called spatial soil. This soil is found in South Indian plateau. This type of soil contains the properties of those rocks, at local level, from which they are made. This is the reason that at some places why the soil made by granular converted rocks of that place is pebbled, large, granular, red coloured and non fertile. The place where the soil is formed by the disintegration of lava or slag is always black and fertile.

When the soil made by disintegration of rocks due to the effects of river, glacier wind etc. leaves its original place and migrates far off places, it is called the displaced soil. The soils found at northern, central and coastal plains of India are of such type. These soils are very fertile.

India is a vast country having varied physical structure, so it is natural that different kinds of soils are found here. From the economic point of view its chief utility is in growing crops. Unit of tillage, irrigation of land, selection of proper crops and farming system are considered a lot in growing the crops, which depend upon the quality of the soil. According to the composition and merits Indian soils are classified into 8 categories. Out of these description 6 main type is as following-

1. Alluvial Soil :

The huge plains of India with coastal plains are formed by alluvial soil. This alluvial soil is brought and deposited by rivers. This soil is spread over about 45.6% of the total area of India. According to the geographical circumstances it can be divided into 3 parts.

(a) Older alluvial soil : It is found in the upper parts of flood affected regions where the flood water can not reach. These regions are known as "Bangar" Two crops are grown by intensive farming in this soil every year It needs more irrigation.

(b) Newer Alluvial soil : This new alluvial soil is found at the places where flood water can reach. It is called new alluvial because a new layer of alluvial is deposited every year. This new alluvial area is

called "Khadar" The soil of khadar is very fertile and need no irrigation.

(c) Newest Alluvial Soil : It is found in the delta region of Ganga and Brahmaputra. It contains zinc magnesium, Potash, Phosphorous and fossils. It is very useful for farming. This soil is also found in coastal plains.

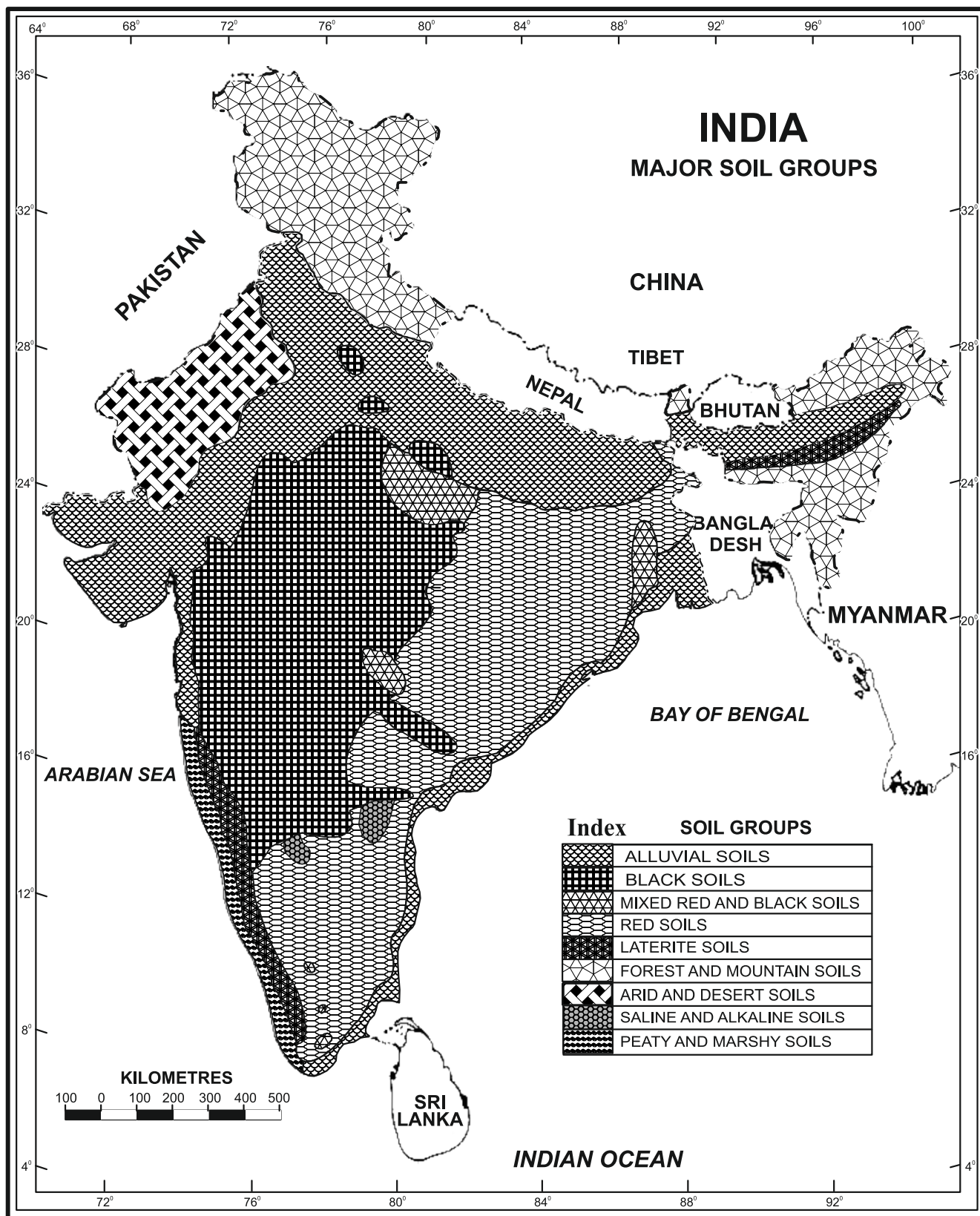
The regions having this kind of soil are generally plains where making of canals, digging wells and farming are very easy. It holds more moisture for a long time. It is a brownish clay made of fine granules where growing of crops and feeding of plants are easy. It contains more humus (vegetative elements) because many articles get mixed in the soil after decomposing in the water. It is renewed every year by the fresh layer of silt brought by the rivers. So there is less need to get it manured. It is good to use small amount of nitrogenous fertilizers to maintain nitrogen level in the soil. These soils are fertile because these are transported soil.

2. Black or Lava Soil :

This soil is found in the Lava region (Maharashtra, Southern of part Madhya Pradesh, western part of Andhra Pradesh and Northern part of Karnataka, Gujrat and South eastern Rajasthan) of south India. This soil is spread over about 16.6% of the total area of India. It has the capacity to hold humidity in it. Due to their Lava origin it keeps more amount of mineral iron and Aluminium. It holds enough potash and lime but less Phosphorus and Nitrogen. It has much fertility and it is much appropriate for cotton farming. So it is named as black soil of cotton. This soil is also called as Regar. It needs little irrigation and less manure. It becomes hard after drying and cracks develop in it. In Tapi, Godawari and Krishna river valleys, its layers are as deep as seven meters, now groundnut and sugarcane are being cultivated in it and the production has increased due to irrigation facilities.

3. Red Soil :

This soil is found in high land areas and it has pores in it. It has limited capacity to hold enough



Map 15.3 : Major Soil Groups in India

humidity. So it needs irrigation. It is not fertile soil. But in plain areas these soils are of thick layer, dark colour and moderately fertile and its productivity can be increased by using manure. It is brown and red in colour, because of the iron part in it, Pebbles are also found in it. This soil lacks in Nitrogen, Phosphorus and also in lime. It is found more deep in river valleys. This soil needs irrigation frequently. It is mostly found in Chota Nagpur, Orissa, Andhra Pradesh, Tamil Nadu and Karnataka.

4. Laterite Soil :

This soil is red in colour like baked bricks. It has too much pebbles.

It is made of fission of the old rocks. It contains much iron and aluminium but lacks in phosphorus, nitrogen and potash. It is found in the heavy rainfall receiving areas with high temperatures. Silica, chemical salt and fine fertile particles drain away due to heavy rain. The fields of this soil are barren. It becomes hard like stones after drying up. This soil is found chiefly in the western Ghat area. A narrow strip of this soil is found from the edge of eastern Ghat to Rajmahal hills and from west Bengal to Assam. Tea farming is done a lot in this soil. Trees also grow somewhere in this soil from which the timber is obtained.

5. Sandy Soil :

This soil is found in western Rajasthan, Saurashtra and in the desert land of Kachha. It contains elements of salt very much and lacks nitrogen and humus. Due to being dry and porous it is easily displaced by winds at regular intervals. It proves fertile if provided irrigation facility. The prosperity of agriculture in Hanumangarh, Ganganagar and Bikaner ratifies this fact. Getting inspired by the fact, the work on Indira Gandhi canal project is on top gear now. This canal has reached Mohangarh near Jaisalmer.

6. Montane Soil :

This soil is found in the Himalayan region. Due to undeveloped state, it contains large particles with pebbles and stones. That is why it is called unripe

soil. It lacks potash, phosphorus and lime but has enough humus contents. This soil is acidic in nature. It is found in thick layers at some places and tea and potatoes are grown there. In the soil with fine particles paddy farming is done at terrace farms. Grasslands are found somewhere on the slopes with fertile soil.

Soils of Rajasthan :

Soil is the most valuable gift bestowed upon us by the nature. It is a most valuable property of farmer. Total agriculture production depends upon it. Rajasthan is an agriculture state and along with this animal husbandry is a complementary profession. So the importance of soils is much more.

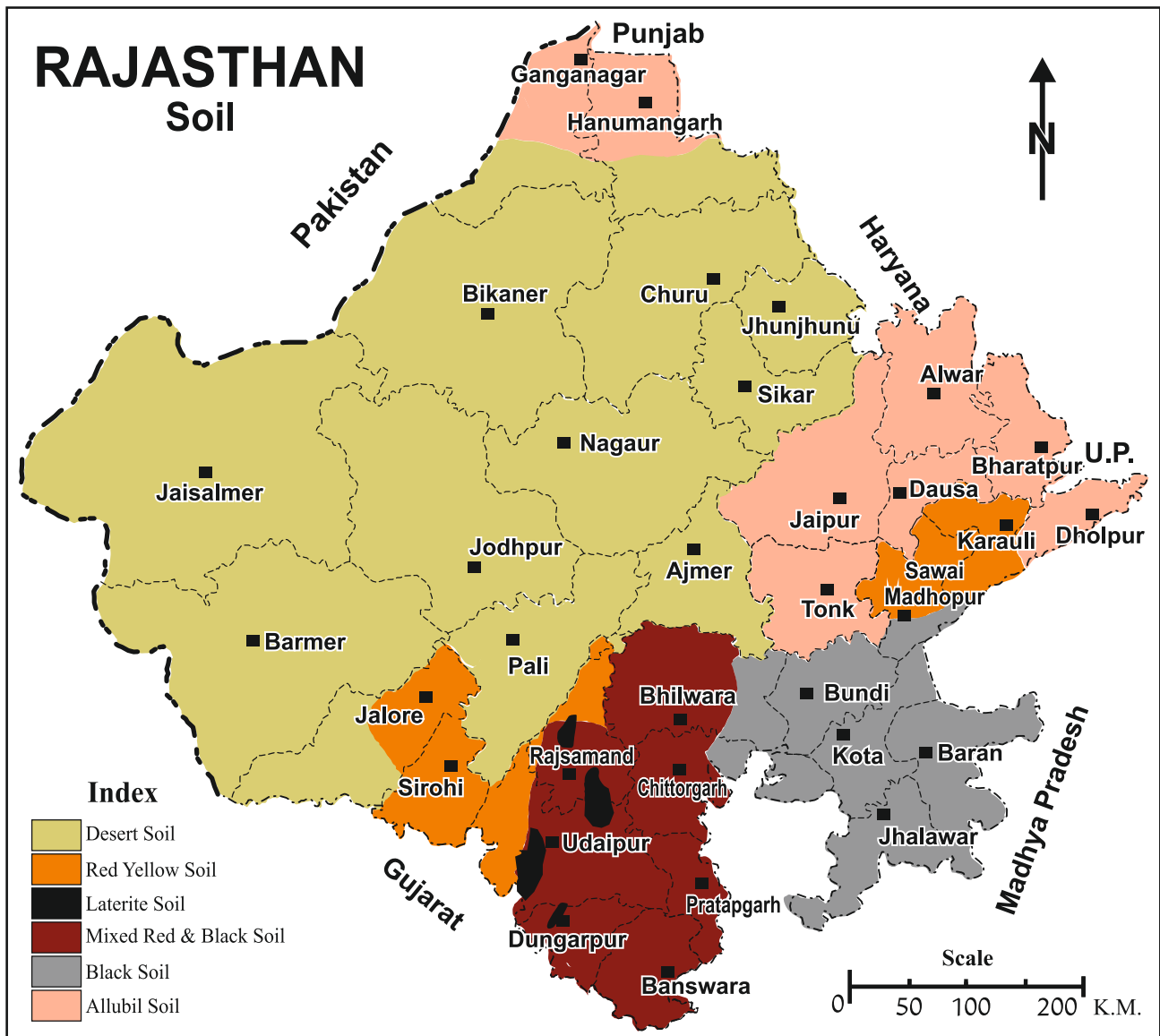
Different types of soils are born out due to the diversity in natural environment. Factors like parent matter, climate, natural vegetation and time affect the formation of soil. Parental matter, water, air and humus are the four chief ingredients of soil. The soil is a mixture of solid, liquid and gaseous matter which is formed due to decay of rocks, climatic effects, plants and interworking of countless bacterium.

Types of the Soil :

1. Desert Soil : This soil is found in western Rajasthan. It is found in almost all areas of Jalore, Barmer, Jaisalmer, Jodhpur, Bikaner, Churu, Jhunjhunu, Nagaur etc. This soil is less fertile. Volatility in temperatures and natural decay are the chief constructive elements of it.

This soil is displaced by winds. It lacks in fertility and keeps more salinity. It can not absorb and hold the water much.

2. Red Yellow Soil : This type of soil is found in Sawai Madhopur, Sirohi, Rajsamand, Udaipur and Bhilwara district. This soil lacks in fertile elements. This soil is formed by the fission of granite schist and igneous rocks. It lacks in lime and Nitrogen. In colour it is red and yellow due to the presence of iron particles. It is suitable for the farming of groundnut and cotton.



Map 15.4 : Major Soil Groups in Rajasthan

3. Laterite Soil : This soil is found in Dungarpur, central and southern parts of Udaipur and in Rajsamand districts.

It is formed by the crystalline and meta morphic rocks. It lacks in nitrogen and phosphorus. It looks red due to the presence of iron. Crops like maize, rice and sugarcane are grown in it.

4. Mixed Red and Black Soil : This soil is found in the district of Banswara, eastern Udaipur, Dungarpur, Chittorgarh and Bhilwara. It lacks in lime, nitrogen, and phosphorus but holds enough quantity of Potash. This soil is full of Cheeka. It is

fertile. The farming of cotton, sugarcane, maize is performed in it.

5. Black Soil : This soil is found in the south eastern district of Kota, Bundi, Baran and Jhalawar. It is a Cheeka dominated soil. It contains enough quantity of calcuim and Potash but lacks in Nitrogen. This is a fertile soil on which commercial crops like Sugarcane, Coriander, Rice and Soyabean provide good yields.

6. Alluvial Soil : This Soil is found in the North and eastern districts of our state like Hanumangarh, Ganga nagar Alwar, Bharatpur, Dholpur, Karauli,

Sawaimadhopur, Dausa, Jaipur and in Tonk. It holds light brown red colour and contains a sandy loam texture. It is a fertile soil. This soil contains enough quantity of lime, phosphorous, Potash and Iron but lacks in Nitrogen. This soil is very useful for the production of wheat, Mustard, cotton and Tabacco.

Important Points

1. The Natural vegetation of India can be divided into three parts forest, grass and bushes.
2. Indian forests are divided into evergreen forest, monsoon forest, dry thorn forest, desert, tidal and montane forests.
3. The abundance of the diversity of wild life and vegetation found in a state is called bio-diveristy.
4. Soil is formed due to fission and disintigration of rocks along with the mixing of rotten biological remains of organisms.
5. Black soil (Regar soil) is useful for cultivation of cotton, groundnut and sugar cane.
6. Keoladev National Park is included into the world heritage list.
7. Chinkara and Godavan (The great Indian Bustard) are declared as the state animal and state bird respectively.
8. 'Khejari' (Prosopis cineraria) is called as the 'Kalp vriksha' of Rajashthan.

Objective Type Questions :

1. According to the national forest policy, what percentage of geogrphical area in the country should be covered by the forest ?
(a) 22% (b) 33%
(c) 10% (d) 20%
2. In which areas of annual rainfall, the evergreen forests are found ?
(a) 100 cm. (b) 50 cm
(c) 200 cm (d) 100 to 150 cm

3. Indian institute of forest Research is situated in-
(a) Jaipur (b) Masoori
(c) Nagpur (d) Dehradun
4. Who led the Khejarli movement ?
(a) Amrita Devi (b) Ramo Ji
(c) Khejali Devi (d) All are correct
5. Which soil is most suitable for cotton cultivation in India ?
(a) Hilly (b) Black
(c) Red (d) Letarite
6. The black soil in India is -
(a) Displaced (b) Swampy
(c) Lava created (d) Created by landslide

Very Short Answer Type Questions :

1. Name two regions of tidal forests.
2. How many series of forests have been described according to the constitution of India?
3. Where are evergreen forests found in Rajasthan?
4. What is Biodiversity?

Short Answer Type Questions :

1. What are the reasons for destruction of bio-diversity?
2. Write various measures of wild life conservation.
3. Explain the points mentioned for enivormental awareness.
4. Write briefly about the major national parks and sancturies of Rajasthan .

Eassy Type Questions :

1. Describe the various types of forests and their conservation in India.

2. Describe various types of forests and wild life in Rajasthan.
3. Briefly discuss the soils of Rajasthan.

Mark in the map :

1. Show regions of evergreen and tidal forests in the map of India.

Answers to the objective type Questions:

1. (b) 2. (c) 3. (d)
4. (a) 5. (b) 6. (c)