CHAPTER: 6

VEGETATION
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In India, forests are main resources for the collection of crude / medicinal herbs; about 96% of the herbs are produced from wild. The area covered with forests in Maharashtra state is 63,842 sq km, which is c 20.75 % of its geographical area (The Hindu, Survey of the Environment, 1998). As per CSIR annual report, the total forest cover is up by 6% in the last two years, but it has been seen in many places that the nearby forest area is declining due to different development projects and population pressure.

Pune district is fortunate to have varied but favourable climatic conditions such as climate, rainfall, temperature, humidity, wind and density, etc., which influence the vegetation of a particular area, but is also dependent on structure and composition of soils. Forests cover a major portion of the explored area, which favors suitable vegetation. The total forest recorded for the district is 1,999 sq km, which is only 7.85% of its geographical area. Major regions of forests are in the western part of the district in Deccan Traps as well as Sahyadri ranges of the Western Ghats.

In the early years (1956-1960), several papers were published on ecology and vegetation of Pune district. The vegetation of the study area (low valleys of Sahyadris) differs from that of high altitudes because of climatic and edaphic factors.

The variation in local topography and soils give rise to varied vegetation. On the western side of Sahyadris, marshy conditions prevail only during monsoon. As rain is over, the soil becomes dry because it is lateritic and the water flows away towards the sea. The part close to direct ranges of Sahyadris are called 'Dang' or 'maval', which are just like Konkan in soils being lateritic or gravelly. The soils are better preserved and matured towards Desh side, is terraced according to
altitudes enabling the people to take both kharif as well as rabi crops - cereals, groundnut, pulses, sugarcane, cotton, turmeric, chillies, grapes, tobacco, etc.

The vegetation of the district in general is divided dry deciduous and dry thorn jungle or scrub forests. Some pockets of semi-evergreen vegetation occur in areas close to Sahyadris, moist deciduous forests in high rain fall areas and also some open grasslands occur on poor soils. In many dry gravelly areas succulent and xerophytes occur. Near Daund, *Acacia nilotica* ssp. *indica* grows on riverbanks and forms a thick *Acacia* tract. The main types of vegetation of the area are mentioned below:

**Sub-tropical hill forests:** These forests are scattered in the higher ridges of the Western Ghats at an elevation between 800 and 1500 m where rainfall varies between 3000 and 5000 mm. The maximum rainfall occurs in the months of July and August. The foggy conditions frequently prevail in the area where the rainfall is above 4800 mm. Such forests may descend to lower elevation (900 m) especially in the western belt where moist and sheltered conditions are available. These forests are found in Bhimashankar, Khandala, Lonavia and Sawia, etc. The vegetation is stunted and typical semi-evergreen, but absence of distinct stories is conspicuous. The layer-wise vegetation is given below:

(a) **Emergent layer:** Where height of 15-25 m or more, comprises of tree species such as *Actinodephne angustifolia*, *Careya arborea*, *Diospyros montana*, *Garcinia indica*, *G. talbotii*, *Mangifera indica*, *Syzygium cumini*, *Sageraea laurifolia*, *Olea dioica* and *Xantolis tomentosa*, etc.

(b) **Eco-dominant layer:** In this type of middle layer, the constituents are found in height between 6 and 15 m, mostly shrubby plants found on the fringes of the forests and open areas of the hill tops. Some important shrubs include *Allophyllus serratum*, *Carissa congesta*, *Colebrookea oppositifolia*, *Crotalaria*
retusa, *Leea indica*, *Pogostemon plectranthoids*, *Clematis hedysarifolia*, *Jasminum malabaricum*, *Smilax zilanica* and *Barleria sps.*, etc.

(c) **Ground layer:** In this layer, where light can hardly reach to the ground forms, the dense carpet of herbs is found; this includes species like *Arundinella pumila*, *Desmodium triquetrum*, *Haplantttodes verticillatus* and *Leucas stelligera*, etc.

**Semi-evergreen forests:** This type of semi-evergreen forests occur only in hilly and sloppy areas at elevation between 450 –1100 m on the Western Ghats. The rainfall varies from 2000 – 2500 cm. The heavy rainfall favors dense, tropical forest growth. The entire area is humid and hot but light does not reach the ground due to great density of vegetation. These forests occur in Bhimashankar, Sawla, Ambawane and Kune, etc. Such forests comprise of trees like *Ficus racemosa*, *Garcinia indica*, *Lagerstroemia parviflora*, etc. and shrubs such as *Crotalaria retusa*, *Gnidia glauca*, *Leea indica*, etc. Grasses such as *Apluda mutica*, *Setaria pumila* and *Panicum psilopodium*, etc. are common. *Clematis gouriana* is a common climber of this area. Some of the common herbs include *Abelmoschus manihot*, *Boerhavia diffusa*, *Euphorbia hirta*, *Solanum virginianum*, etc.

**Tropical thorn forests:** Such thorn forests occur in drier areas with low rainfall. The forests are open and restricted to shallow soils. The forests being scattered and surrounded by cultivation on all sides are subjected to heavy grazing, lopping and elicit felling. The common species here are *Acacia chundra*, *A. leucophloea*, *Azadirachta indica*, *Carissa congesta*, *Cassia auriculata*, *Ziziphus mauritiana*, etc.

The common herbs include *Cleome viscosa*, *Chorchorus aespans*, *Crotolaria hebecarpa*, *Indigofera cordifolia*, etc. The common grasses are *Apluda mutica*, *Cynodon dactylon*, *Digitaria ciliaris*, etc.
Tropical dry deciduous forests: These forests are found recorded in moderate rainfall area (500-1500 mm). The trees are stunted and excessive biotic interference results in dry conditions and so xerophytic species such as Aloe vera, Aparagus racemosus, etc. come up predominantly. Degradation of tropical dry deciduous forests leads to Euphorbia scrubs, which is seen on the slopes in many parts of the district.

Weeds of cultivated fields and wasteland: In such type of vegetation, many weeds like Heylandia latebrosa, Partherium and Indigophera species, etc. are found common.

The traditional knowledge about plants and animals also include, certain very effective conservation strategies and practices of sustainable resource use viz. sacred groves. Sacred groves are small forest patches dedicated to Gods and preserved therefore. But, with the advent of civilization and development the pressure on these groves is increasing. It is further noticed that the religions beliefs about the protection of these Dev-rais are fading fast as was evident from illegal felling observed in some of these groves. This is evident from survey of 103 such forest patches in Pune district, which extended from single tree to 100 hectares of land (Upadhye A.S. & et. al.).

It is observed that certain sacred groves are still preserved because such protected forest habitats are directly useful to people residing around them. These sacred groves are final refuge to many important and economically useful plants. It must be realized that many such plants may vanish before their economic potentials are realized. Conservation of sacred groves is vital for good growth and preservation of vegetation.
A semi-evergreen forest at Bhimashankar comprising of *Terminalia* ssp., *Garcinia* ssp., *Actinodaphne angustifolia* and *Mangifera indica*, etc.
PLATE NO. 2

A view of dry deciduous forests with *Terminalia* sps., and *Bridelia retusa*, etc.

A view of deciduous forests near Mulshi dam, including *Terminalia* sps. and *Bridelia retusa*, etc.

A view of sacred grove at Sawla, vegetation is composed of *Terminalia chebula*, *Vitex negundo*, etc.
A view of Mulshi Dam catchment area showing components like Carissa sp., Careya arborea, Flacourtia sp., etc.

A view of moist deciduous Forest at Bhimashankar mainly comprising of Terminalia sps., etc.

Moist deciduous forest at Junnar area comprising of Bamboo, Euphorbia, Bombax, Bridelia and Grewia sps., etc.