

12. GARDENING IN ANCIENT AND MEDIEVAL PERIOD – ARBORI HORTICULTURE - ORCHARDS

Man is inseparable from nature. Since prehistoric times, the Indian people have had close relationship with nature, particularly plants and flowers. The cult of tree worship has been a tradition and faith in India through the ages. Trees and flowers have been sanctified in Indian mythology, history, art and socio-religious culture. The pre-historic and proto-historic man in the Indus Valley had great reverence for trees and worshipped them during the chalcolithic period. Tree was worshipped in its natural form and as tree spirit personified as human attributes in Mohenjo-daro and Harappa. The divine character of the trees has been depicted in a number of seals, sealings, potteries, potsherds and some rock paintings as archeological evidences of the Mohenjodaro and Harappa period (2500-1750 BC). A few trees, such as pipal or asvattha (*Ficus religiosa*), neem (*Azadirachta indica*), katha or khadira (*Acacia catechu*) and jhand or sami (*Prosopis cineraria*) were held sacred by the ancient people of the Indus Valley. In the Indus Valley Civilization, the belief was that trees were symbolic of gods and goddesses, which dwelt in them (*vriksha devata* or *vriksha devi*). In ancient India trees were considered to be divine and spiritual as the tree knowledge (*brahma tarn*), the tree of life (*Uivan tarn*) and also as medicinal tree (*rogu tarn*).

Mauryan period

After the rise of the Mauryas in the 4th to 3rd century BC, there has been vast secular literature and texts, both Vedic and post-Vedic, like Vedas, Brahmanas, Aranyakas, Upanishadas, Sutras, Smritis, Mahakavyas, Puranas, Buddhists texts (Jataka) and Jain literature (Sutras). The sages of the Upanishadas have described the Cosmic Tree rooted in the Brahman, the ultimate, whose branches are space, wind, fire, water and earth. The cosmic tree

is the World Mother, the Goddess of nature, which nourishes all Life. Kalpavrksa (wish-fulfilling tree) and kalpalata (wish-fulfilling creeper) are mythological tree and creeper, not mentioned in the Vedic literature, which have been a part of folk cult in Hindu mythology. Kalpavrksa is mentioned in Ramayana, Mahabharata, Jatakas, Divyavadana and the Jain Sutras. In Brahmanical religion, vata (*Ficus benghalensis*) was identified with Shiva, asvattha (*Ficus religiosa*) with Vishnu, lotus with Surya (Sun) and nine leaves of nine trees (navapatrika) with nine different aspects of Durga.

There are vivid descriptions of trees in the Rigveda (3700-2000 BC), the Ramayana (1200-1000 BC), The Mahabharata as well as other literature by Shudraka (100 BC), Kalidasa (c. 57 BC), Ashvaghosha (100 AD), Vatsyayana (300-400 AD) and Sarangdhara (1300 AD). The art of gardening and kinds of gardens were described by Sarangdhara and Vatsyayana, respectively.

In the Ramayana, mention is made of Ashokavana or Panchavati, in which Sita was held captive. Ashoka trees (*Saraca asoca*) were predominant in this garden. In the Panchavati, five trees were planted, asvattha (*Ficus religiosa*) on the east side, bilva (*Aegle marmelos*) on the north, the banyan (*Ficus benghalensis*) on the west, amla (*Emblica officinalis*) on the south and the ashoka (*Saraca asoca*) on the southeast. A description of the layout of gardens and parks and artificial lakes in the city of Indraprastha is given in the Sabha-Parva of the Mahabharata. Several trees, such as *Saraca asoca*, *Terminalia arjuna*, *Mesua ferrea*, *Ficus benghalensis*, *F. religiosa*, *Michelia champaka*, *Butea monosperma* and *Cassia fistula*, have been mentioned in the Ramayana. Almost all of them also have been described in the Mahabharat. It is said that Lord Buddha was born under the pipal tree in a garden. The bodhi tree, under which the Buddha attained nirvana, is sacred to Buddhists. The trees and plants mentioned in Buddhist texts include asvattha (*Ficus religiosa*), banyan (*Ficus benghalensis*), udumbara (*Ficus glomerata*), patali (*Bignonia suaveolens*), sala (*Shorea robusta*) and sirisa (*Acacia sarisa*). The

planting of roadside avenue trees (margeshuvriksha) was an important contribution of the king Ashoka (233 BC).

Vedic times

The trees and the plants mentioned in the Vedic times were, soma (*Sarcostemma acidum*), pipal/asvanha (*Ficus religiosa*), sami (*Prosopis ceneraria*), banyan (*Ficus benghalensis*), udumbara (*Ficus glome rata*), bilva (*Agele marmelos*); khadira (*Acacia catechu*), neem (*Azadirachta indica*), palasa/plpksa (*Butea monosperma*), tulsi (*Ocimum sanctum*) and lotus (*Nelumbo nucifera*). The other trees and plants of the Vedic and post-Vedic period include salmali/silk cotton tree (*Bombax ceiba*), coconut (*Cocos nucifera*), rudraksha (*Elacocarpus sphaericus*), snuhi (*Euphorbia neriifolia*), madhavi lata (*Hiptage madablota*), amalka (*Embllica officinalis*; syn. *Phyllanthus emblica*), mango, amra (*Mangifera indica*), banana, plantain / kadali or rambha (*Musa paradisiacal*), ber / vadari (*Zizyphus mauritina*), sala/shal (*Shorea robusta*), asoka (*Saraca asoca*), kadamba (*Anthocephalus cadamba*), bahira (*Terminalia belli rica*), arjuna (*Terminalia arjuna*), nagavalli, tambula or paan (*Piper betle*), nalaka (*Arundo donax*), jivaka (*Putranjiva roxburghii*), mandara (*Erythrina variegata*), tili/tila (*Sesamum indicum*), amarphal (*Monstera deliciosa*), *Ficus krishnae*, gaduchi (*Cocculus cordifolius*), ketaki (*Pandanus odoratissimus*), imli/tintrini (*Tamarindus indica*), parijata (*Nycanthes arbortristis*) and tinduku (*Diospyros peregrina*).

Tree worship and trees and environment

Tree motifs have been found in the art of Indus Valley, Mauryan ring stones, and gateways and railings of stupas at Bharhut, Bodhgaya, Sanchi, Amaravati and Nagajunakonda, Mauryan relief sculptures, particularly on the Ashokan Pillar Capitals and Rampura Bull Capital of Ashoka. Old sculptures and architecture of Mathura (Kanishka period, AD 78-101) and Ajanta frescoes (AD 100-600) also bear testimony to the importance of plants and flowers in ancient India. The relationship of trees with the Brahmanical and Buddhist gods and goddesses and

Jain Tirthankaras in Indian art date back from the 151 century AD to 1200 AD. Trees and flowers have been also delineated in ancient coins found at the pre-Mauryan site, Sugh, Taxila, Ayodhya during Mitra Kings, Kausambi and Mathura and also of the Andhra dynasty and Pandyan territory. The ancient Sanskrit and other literature and texts, mythological epics and legends, paintings, cave murals and frescoes, sculptures, architecture, folklores and tribal arts and crafts provide evidences of the kind of plants and trees and flowers growing in the forests and gardens. The science of plant life, (Vrikshayurveda) and arbori-horticulture, and usefulness of forests and gardens were well-known in ancient India. The utilitarian qualities of trees and plants for food, medicine, shelter, shadow and fuel, and the relationship of trees with fertility were also known to ancient Indians. They were concerned with the conservation of trees and biodiversity in nature and ecological balance in environment. Their concept of identifying trees with gods and goddesses, and threats and punishments against the destruction of useful trees helped to save the trees and flora, which is a remarkable contribution of our ancient people.

Mughal period

With the renaissance of gardening in India by the Mughal rulers beginning with Babur, many plant species were brought by them from Persia and Central Asia where herbaceous and bulbous flowers were already under cultivation. Many of these have been mentioned in autobiographies and other books written during those days. Besides, in Mughal paintings also we find illustrations of many flowers. These have also been used to illustrate the borders of those paintings. In the book Bagh-i- Wafa. Babur has presented a description of gardening in India.

During the 16th and 17th centuries AD, Mughal gardens were developed in Agra, Delhi, Pinjore (near Shimla) , Srinagar, Kashmir and a few other places. The most important Mughal gardens are the Taj Mahal Garden, Agra; Shalimar and Nishat Gardens, Srinagar; Pinjore

Gardens, Pinjore and the garden at Hamayun's tomb, Delhi. The rose was introduced into our country via the port of Bussorah by Babur in around 1526. Jehangir and Nurjehan were ardent lovers of the rose and encouraged rose growing in gardens. The most important plants introduced in Kashmir from Persia by the Mughal ruler, Jehangir in 1619 when he laid out the famous Shalimar Bagh in Srinagar, were the majestic Chinar tree (*Platanus orientalis*), the cypress (*Cupressus sempervirens*) and the weeping willow (*Salix babylonica*), and flowers like rose, narcissus, daffodil, iris, lilies, tulip and carnation.

European period

Later, mainly Englishmen and the Portuguese introduced many species. Missionaries and priests, civil servants and individual amateur gardeners mostly brought these in. One of the important missionaries who introduced a number of exotic plants was Dr Firminger, an Englishman, who wrote a book on gardening, giving descriptions of various species of flowers in 1863. The book titled 'Firminger's Manual of Gardening in India' is an authoritative reference book on ornamental flowering plants even today.

With the establishment of Government Botanic Gardens by the British rulers during 18th and 19th centuries, such as Lalbagh Botanical Garden, Bangalore (1760); the Government Botanic Garden, Saharan pur (1779); the Indian Botanic Garden, Sibpur, Calcutta (1787); the Lloyd Botanic Garden, Darjeeling (1878); and the Government Botanic Garden, Ootacamund (1884), numerous economic plants as well as ornamentals were introduced in these gardens.

Among the noteworthy introductions of that period are the mahogany (*Swietenia mahogany*) from Jamaica in 1795 and the Giant Amazon lily, *Victoria regia*, into Sibpur garden followed by *Grevillea robusta* and *Araucaria excelsa* in 1857 and *Amherstia nobilis* in 1859 in the Lalbagh Botanical Garden, Bangalore. A few important and rare flowers of India are *Agapetes auriculata*, *Corydalis govaniensis*, *Dendrobium chrysanthum*, *D. nobile*, *Geranium wallichianum*, *Katherinea ampla*, *Meconopsis aculeata*, *Notholirion thomsonianum*, *Nepenthes*

khasiana, *Rhododendron macabeanum*, *R. hodgsonii*. and *R. thomsonii*.

Native Indian Ornamental Plants

Trees

Albizia lebeck, *Alstonia scholaris*, *Anthocephalus cadamba*, *Azadirachta indica*, *Bauhinia variegata*, *Bombax malabaricum*, *Butea monosperma*, *Cassia fistula*, *C. nodosa*, *C. siamea*, *Erythriana indica* var. *parcellii*, *E. Variegata* var. *orientalis*, *Ficus religiosa*, *F. benghalensis*, *F. benamina*, *F. elastica*, *F. infectoria*, *F. retusa*, *Lagerstroemia speciosa*, *Michelia champaka*, *Milletia ovalifolia*, *Millingtonia hortensis*, *Mimusops elengi*, *Polyalthia longifolia*, *Pongamia pinnata*, *Pterospermum acerifolium*, *Putranjiva roxburghii*, *Rhododendron arboreum*, *Saraca asoca*, *Tecomella undulata*, *Terminalia arjuna*, *Thespesia populnea*.

Shrubs

Barleria cristata, *Buddleia asiatica*, *Daedalacanthus nervosus*, *Dombeya spectabilis*, *Holmskioldia sanguinea*, *Jasminum sambac*, *J. grandiflorum*, *J. humile*, *J. officinale*, *Nyctanthes arbortristis*, *Russellia juncea*, *Spermadictyon suaveolens*.

Climbers

Clematis paniculata, *Clitoria ternatea*, *Ficus repens*, *Hiptage benghalensis*, *Jasminum grandiflorum*, *J. humile*, *J. officinale*, *Porana paniculata*, *Thunbergia grandiflorum*.

Seasonal Flowers

Amaranthus spp., *Celosia*, *Gomphrena*, Lady's lace (*Pimpinella monoica*), *Torenia*.

Bulbous Flowers

Allium giganteum, *Canna*, *Gloriosa superba*, *Iris* spp., *Tulip* spp., Orchids (*Aerides*, *Anoectochilus*, *Arachnis*, *Arundina*, *Calanthe*, *Coelogyne*, *Cymbidium*, *Dendrobium*, *Paphiopedilum*).

Other Plants

Lotus (*Nelumbo nucifera*), *Nymphaea* spp. (*N. pubescens*, *N. rubra*, *N. stellata*)

Indoor Foliage Plants

Aglaonema, *Asplenium nidus*, *Begonia rex*, *Coleus blumei*, *Pilea cadierei*, *Pteris cretica*
var. *crispate*.

Indoor Flowering Plants

Crossandra infundibuliformis, *Gynura aurantiaca*, *Kalanchoe blossfeldiana*.