

CHAPTER - IV

FLORICULTURE

INTRODUCTION :

Flower, the emblem of beauty and purity, is the medium of expression of human sentiments also. It has become an integral part of our daily life with their useage in social and religious functions. According to a Chinese proverb 'Habits and culture differ, but all people have the love for flowers in common. Commercial production started with the growth of cities and social activities of the peoples. For all the economic uses like cut flowers, seed and nursery business, extraction of perfumes, etc., floriculture today is a source of livelihood of many.

4.1. HISTORY OF FLORICULTURE OF INDIA

4.1.1. Hindu Classics

The study of Hindu classics and literature as well as the religious scripts and hymns (mantra) with particular reference of flowering trees, reveal the aesthetic sense of our ancestors and that is why "lotus" (*Nelumbo nucifera*) is a very common name found in the 'Vedas' and 'Puranas'. 'Kadamba' (*Anthocephalus - indicas*) is associated with Lord Krishna and 'Asoka' (*Saraca indica*) with Sita (Ramayana). Hindu culture reached its height in the period 100 to 500 A.D., from the reign of 'Kanishka' to the close of the 'Gupta Period'.

According to Dr. M.S.Randhwa, the flowering trees are commonly grown in the gardens from the Hindu - Buddhist period and the native herbaceous plants were perhaps not cultivated. The poets and authors of this period like Ashvaghosha (Sundar Nanda) Kalidasa (Avigyana Shakuntalam, Ritusamhara etc.), Vatsyana (Kamasutra), have given descriptions and uses of flowers as to how the Hindu mind was fully in touch with nature. The noted poet Kalidasa gave a charming description of our indigenous trees which flower from month to month in his "Ritusamhara". In his description of a woman's toilet (in Avigyana Shakuntalam) names of Kadamba-Keshara, Kakuva, Ketaki, Jasmine, Champaka, are described very romantically. Beautiful sculptures of Bharut, Sanchi, Mathura, the murals of Ajanta (Cave) are glorious history of cultured life-style. The important native flowering trees mentioned in our ancient literature are : Kachner (Kanchana) (Bauhinia Variegata), Amaltus (Cassia fistula), Pink Cassia (Cassia nodosa), Dhak or Kingshuka or Palas (Butea frondosa), Jasmine (Jasminum Sambac) and Madhabi (Hiptage madoblata) etc.(Bose, D.M. et al, 1960)

4.1.2. Foreign Contribution in our Floriculture

Several flowering plants, especially annuals, biennials and perennials as well as the bulbous flowers grown in our country are originally native of Europe, America, Africa, China, Japan and other countries. Most of the exotic flowers were introduced during 'Mughal' and 'British period'. Many plants and species were brought by them from Persia and Central Asia where herbaceous and bulbous flowers were already in cultivation. In the book "Bagh-i-wafa", Babur, the founder of the Mughal Emperor, gave descriptions of gardening in India. The species brought by them are the famous 'Chenur tree', 'roses', 'carnations', 'Iris', 'Narcissus', 'Daffodils', 'Lily', 'Tulip' etc. Later, in the British

Period, Missionaries, priests, civil servants and amateur gardeners introduced various species of flowers. Dr. Firminger's "Manual of Gardening in India", written in 1963 is an authoritative reference book on ornamental plants even today (Vishnu Swaroop, 1968).

Evolution of floriculture or outdoor gardening grew up as the demand for 'out-of season' flowers increased. Other than permanent plantings of ornamental trees, herbaceous annuals and biennials (in shrubs and climbers) are grown for commercial productions. Before going to the analytical study of floriculture of West Bengal the ABC of floriculture may be discussed in short.

4.2. CULTURAL PRACTICE :

The four cultural facets of floriculture industry are:

4.2.1. The production of Cut Flowers

Cut flowers can be grown in green houses, shade houses as well as in outdoor also. Environmental factors like water, temperature, light and other essential factors like manure, fertilizers etc. are either partially or entirely should be under strict control. Carnation (*Dianthus - caryophyllus*), Chrysanthemum (*Chrysanthemum Segetum*), Orchid (several genera and species), Rose (*Rosaceae F*), Sanpdragon (*Antherhinum majus*) are grown successfully in green houses. Water is supplied by specialized irrigation devices. Night temperatures are controlled either manually or thermostatically. Shading materials are very often used. Slowly soluble fertilizers, urea, aldehydes and fritted salts are used as essential elements. Cut flowers are grown either in ground beds or in raised (1.2 metres) wide benches. Outdoor culture requires a favourable temperature range chrysanthemum and gladiolus (*Iridaceae*) are the most common

species of cut flower.

4.2.2. Potted Plants

Production of potted plants need some extra care as the volume of soil in container is small which affect the root system greatly. Soil nutrients are limited due to frequent watering which is conducive to the leaching of nitrates and other essential ions. All these factors are reinforced with heavy application of highly decomposed organic matter with other mineral salts like Calcium, Magnesium and Superphosphates as a routine fertilization schedule. Pruning is necessary as growth regulation. Ornamental pot plants, grown for sale are : (a) for beauty of flowers and (b) attractive foliage. African violet, Azalea (Rhododendron simsii and other species) chrysanthemum, Begonia, Geranium Poinsettia are the first category and different types of Asparagus, rubber plant, cacti and succulants are the popular type of second category.

4.2.3. Growing and forcing of bulbs and corns

Flowering bulbs and corns are developed for their large quantity of reserve carbohydrates which are changed into sugar and other compounds for the development of the roots, stems, leaves and flowers. Major crops, suitable for this purpose are : lilies, gladiolus white Iris (Iridaceae), Narcissus (Amaryllidaceae), hyacinth and tulips. The main objective of the florists is to produce attractive foliage and brilliant flowers for sale in right time. These requirements have been developed by growers and experimentations.

4.2.4. Production of Bedding Plants

Ornamental bedding plants are grown in beds of home grounds, public places or in the porch boxes. Most of the bedding plants are herbaceous annuals and are propagated by seeds. Important practices are : (1) germinating seed under optimum climatic conditions, (2) well prepared and sterilized soil in the nursery container, (3) transplanting the seedlings, (4) watering and fertilizing. Large scale production reduces the cost of cultivation and increases profit of the growers. Geranium, Pansy, Petunia, Marigold, Salvia, Snapdragon etc. are frequently grown as bedding plants. Flowering plants can be divided into trees, shrubs, climbers, herbaceous, annuals, biennials, perennials and bulbous plants.

4.3. SUITABLE PLANTATIONS:

For permanent plantings ornamental trees, shrubs and climbers are commonly used. Herbaceous, annuals and biennials are generally grown in beds and pots, window boxes and porches with or without regularity with respect to their height but grouped in suitable colour combination to produce harmonious and pleasing effects. Annuals best suited for pots, window boxes or porches are : Aster, Carnation, Petunia, Calendula, Pansy, Viola, cockscomb, Flox, Salvia, Stock, Zinnia, Marigold etc. Annuals, best suited for bedding plants are : hollyhock, cosmos, salpiglossis, nicotiana etc. Several beautiful annual climbers are : sweet pea, morning glory, cardinal climbers etc. Annuals, excellent for cut flowers (commercially adorable) are : Aster, Carnation, Chrysanthemum, Cornflower, Cosmos, Dahlia, Marigold, bells of Ireland, Nemesion, Pappy, Sunflower, Sweet Suttan, Sweet Pea, Sinnia etc. (Randhawa, M.S. 1960).

4.4. METHOD OF CULTIVATION :

4.4.1. Seasons :

Three broad types of seasonal (Plants cover their life period within twelve months) flowers are grown as summer, winter and rainy season annuals. Depending upon local climatic conditions summer annuals are sown from January to June ; rainy season annuals are sown at the out break of monsoon or a little earlier in June or July. Winter annuals are sown in September - October except a few late flowering ones.

4.4.2. Sowing of seeds

The best mixture of soil for sowing contains two parts of loam, one part of leaf mould and one part of coarse sand. Potting mixture needs an extra amount of well-rotten cowdung manure. If the soil is heavy, most of the annuals can be grown. Apart from the sterilization, seeds are also treated with fungicides such as captan, Fytolan or Arson to avoid "damping off". Small seeds are mixed with a little quantity of sand for uniform placing.

4.4.3. Picking out

Young seedling are often picked out by transferring them into another seed pan or tray in slightly richer soil for better growth. Seedlings are transplated on a cloudy day when they are at least one month old with three to four leaves. After care is needed like weeding and watering. Pruning is done timely and faded blooms are regularly removed so that plants and flowers thrive well.

Plate: 13.



Tube roses, cockscomb and gladioli are brought for the city market

Plate: 14.

Roses, along with other flowers for everyday's demand



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Roses, along with other flowers for everyday's demand



4.4.4. Diseases and Pesticides

Most annuals collapse and die of fungus attack in the root or at the base of the stems and this "damping off", disease is very common in "stock", 'Sweet pea', 'Larkspur', 'Aster' 'Carnation' etc. Application of "Chest nut compound" (a mixture of two parts of ammonium carbonate and two parts of copper sulphate well mixed and stored for 24 hours) is very effective in controlling the disease. Chrysanthemum is very often attacked by fungi (*septoria chrysanthemi*) and spots are found on leaves. Spraying of Fytolan helps to avoid them. Copper fungicide saves Jasmines to dry up from disease caused by "*cercaspora Jasminicola*". "Thrips" are found in gladiolous, lily, iris, freesia, roses, lupins, carnation and chrysanthemum. Malathion controls the posts cutworm. Caterpillar can be avoided by D.D.T. when "Scale" insect in roses need spraying of parathion or Folictol. (Pinney, J.J. 1971).

4.5. FLORICULTURE IN WEST BENGAL :

The plains of West Bengal is the paradise of seasonal flowers whens the Northern hilly areas are endowed with wide range of wild flowers of the Himalayas, bulbs, orchids, ferns and many other ornamental shrubs and climbers. Due to favourable climatic conditions with tolerable temperatures and graceful monsoon, plants flourish with minimum attention in West Bengal. (Plate-13)

Dr. William Carrey, the famous educationist and phillanthropist founded the Royal Agri-Horticultural Society in India in 1820 in the attractive suburb of Alipur in Calcutta. The society was highly successful by way of

introduction to high yielding grains of cereals, fruits, vegetables and numerous flowers from different places of India and abroad and also supplied informations regarding improvements of cultivation. Branches of society were founded gradually in Delhi, Punjab, Lucknow, Cuttack, madras, Bangalore, Bombay and other centres of India (Bulletin, Agri-Horticultural Society).

A recent survey made by the Indian Council of Agricultural Research has revealed that about 10,500 tons of cut flowers worth Rs. 9.25 crores are sold annually in the markets of Metropolitan cities of Delhi, Mumbai, Calcutta, Madras and Bangalore. (Plate-14)

4.5.1. Flower Zones of West Bengal

To meet the recurring demand of flower in our daily life, floriculture has been developed in West Bengal in a notable way. Today, approximately one and a half million cultivators are engaged in floriculture in West Bengal. Among the small farmers also some 8h to 35 ha land is available for such purpose. The important floricultural zones of the states are : (Appendix-VI)

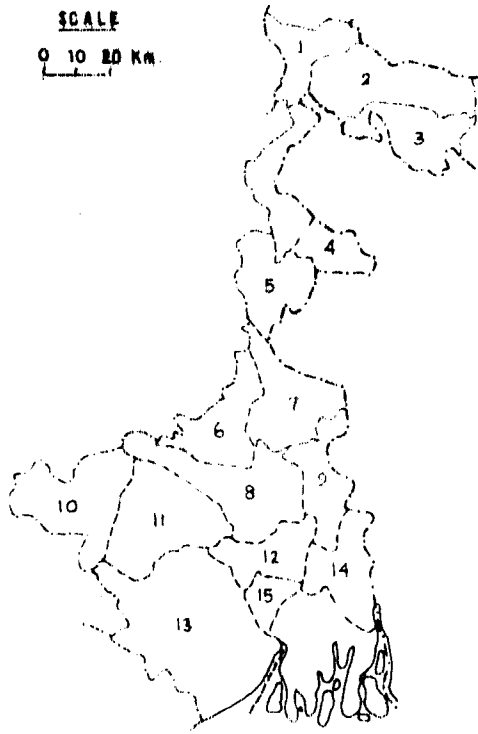
4.5.1(a) Panskura-Kolaghat Region (Medinipur district)

Panskura!Kolaghat region is one of the three important flower producing zones of West Bengal. This zone is by far the largest one covering Medinipur district and the adjoining banana producing areas of Haora district, where, about 1,200 ha, covering more than 100 villages, are under flower production. The flower is cultivated in six blocks of East Medinipur district. The area and production are being 5,032 ha and 2,404 metric ton respectively. Area and

MAJOR FLOWER PRODUCING AREAS OF WEST BENGAL

SCALE
0 10 20 Km.

INDEX	
1.	Darjiling
2.	Jalpaiguri
3.	Koch Bihar
4.	Dinajpur
5.	Malda
6.	Birbhum
7.	Murshidabad
8.	Bardhaman
9.	Nadia
10.	Puruliya
11.	Bankura
12.	Hugli
13.	24 Parganas
14.	Medinipur
15.	Haora



Major Producing area in SOUTH BENGAL

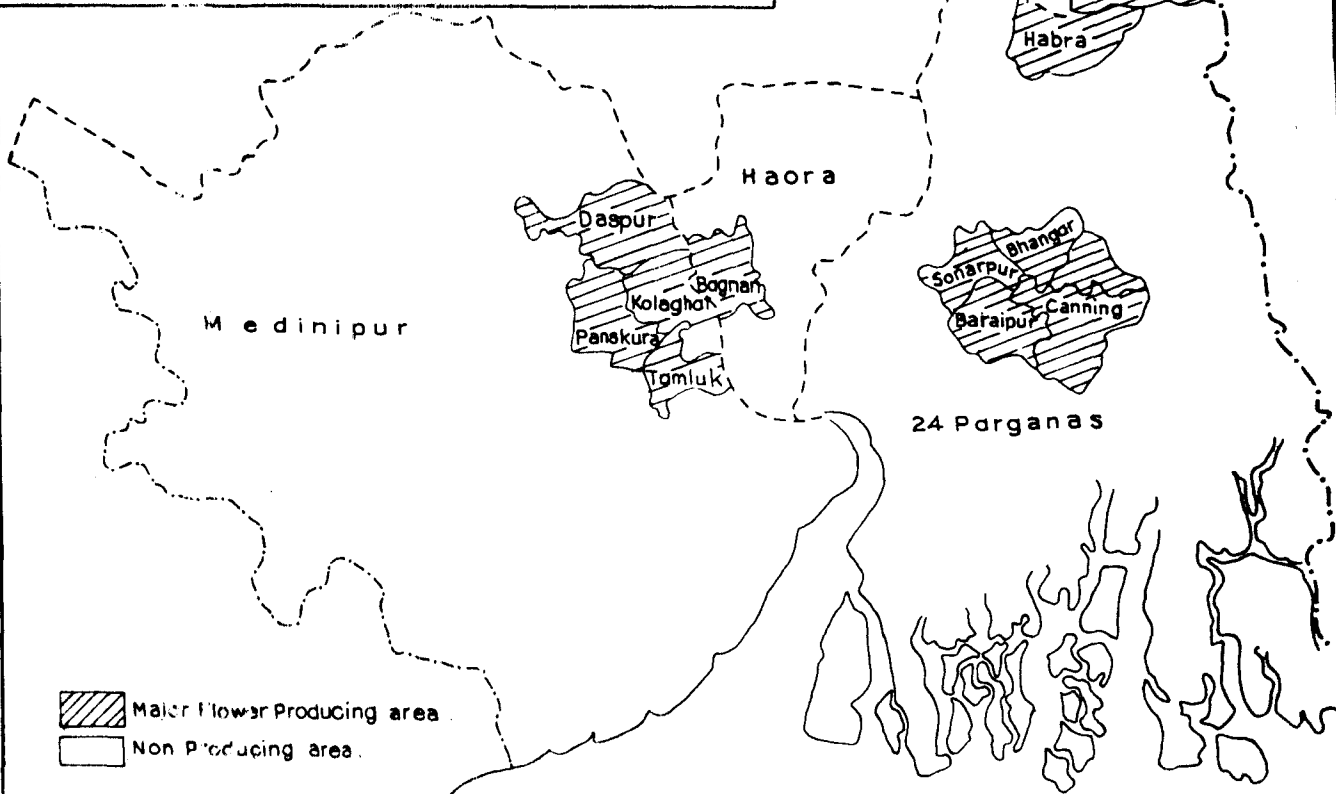
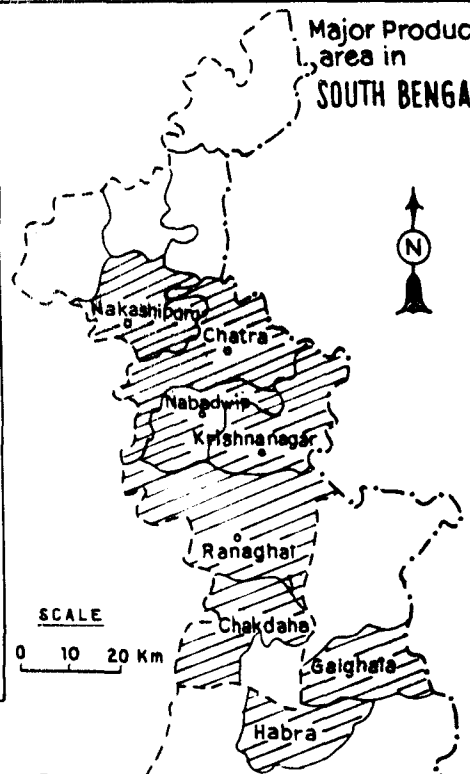


Fig. 4.1

production of Panskura Block I and Block II are 4,850 ha and 23,097 metric ton respectively contributing 96% of the district's total. A huge quantity of flowers is supplied to Calcutta everyday from this zone and its surrounding areas. Types of flowers grown here are : Tube rose, Rose, Jasmine, and season flowers like, Marygold, Aster and Cockscomb. Important flower producing areas are Deulia, Kolaghat, Pulshita and Khanyadihi in Tamaluk block; Keshapat, Debra, Loada, Baishnabchak, in Panskura block and Sagarbar, Gopalnagar and Brindabanchak in Daspur block. Chrysanthemum, Cosmos, Dianthus, Lurkspore, Sweet sulton etc. Some Gladiolous, Gerbera and Asparagus are also grown commercially. Fig. 4.1 shows the flower zones of West Bengal. (Vikshu Buddhadev, 1982).

4.5.1(b) Haora Region

In Haora district the flower producing areas concentrate in Bagnan block. The flowers that this area supplies regularly are ^{from} Heledwip, Orphully, Dharmonna and Deulti. Varieties grown in summer are Bel, Jasmin, rose and tube rose while in winter Tuberose, rose and marygold flood the market. Approximate areas under floriculture are 3,700 ha and almost 3,250 quintals are produced annually. (Plate- 12)

4.5.1(c) Ranaghat Region (Nadia District)

Nadia district comes next in importance in floriculture of West Bengal. Flower producing areas are : Chakdah, Ranaghat, Nakashipara and Karimpur block of the district. Tube rose is the leading flower which covers an area of 40ha. Flower producing areas of Ranaghat block are Nokari and Karimpur while areas of Nakashipara block are Debagram,

Jugalkishor, Raghunathpur, Dhantala and Punynagar. Varieties grown in these areas are Tube rose, Dopati, Aparajita and Mary gold. Approximate areas under floriculture are today 10,000 ha which supply 10,500 quintols of flowers annually.

4.5.1(d) Hilly Areas of Darjeeling and Kalimpong (Darjeeling District)

The region covers an area of 400 ha, which commercially produces a wide range of flowers, namely, Agapanthus, (African lily), Althea (Hollyhock), Amaryllis, Antirrhinum (Snap dragon), Aster, Begonia, Bellis (Daisy), Calendula, Canna, Carnation, Chrysanthemum, Clarkia, Cosmos, Dahlia, Geranium, Gerbera, Gladiolous, Hibiscus, Iris, various types of Lilium Narcissus, Piloax, Papavar (Poppy) Salvia, Sweet Pea, Zinnia etc. (Horticulture Office, Darjiling, 1990).

The Agro-climatic conditions of the hill region are most congenial for the production of ornamental plants, like, orchid, cacti, ferns, bulbours plants as well as the above mentioned flowering plants.

4.5.2. Other Areas

Besides these three major flower producing zones almost all the districts of West Bengal contribute a good percentage of share in floriculture. Flowers are grown as backyard crop and as a substitute income for the lean season in 24 Parganas (Dakshin specially). Some 165 ha of lands are used for floriculture in this district, and it is assumed that an additional area of 40 ha are being brought under floriculture every year.

The laterite tract of Western part of West Bengal with its well defined summer and winter, perfectly drained soil with good iron content, is conducive to the production of good quality cut roses, both for internal and external markets.

4.6. AREA AND PRODUCTION OF FLOWERS:

From the Appendix-VI fairly detail account of West Bengal's flower sproducing areas with approximate quantity of production can be visualized. It has been observed that Medinipur is leading in flower production in West Bengal. it shares about 59.2% of total area and 92.3% of total production of West Bengal. Next position on the basis of area comes to Nadia district. The other main flower producing districts are Haora, Uttar and Dakshin 24 Parganas and Darjiling. All these districts produce a significant amount of production in West Bengal.

CONCLUSION :

From the time of independence to the early sixties, the picture of floriculture of West Bengal is not clear and was limited to a naturalists mainly. The scenerio has changed from the seventies onward. From the study, it has been seen that floriculture was practised in ancient India. Hindu classics and literature, religious scripts and hymns (mantras) referring flowers, flowering trees and their culture reveal the aesthetic sense of our ancestors. Several flowering plants, especially annuals biennials and perennials as well as some bulbous flowers were introduced to India from Europe, America and Central Asia during Mughal and

British period. The four cultural facets of floriculture industry, namely cut flowers, potted plants bulbs and corns along with bedding plants are identified. Method of cultivation includes climatic condition, sowing of seeds, pricking out and diseases and pests are very much important in floriculture as well as other horticultural crops. There are a number flower producing zones. In the districts of West Bengal, flowers are grown as backyard crop and as a substitute income for the lean season. Mainly five districts, namely, Medinipur, Nadia, Haora, 24-Parganas (N & S) and Darjiling produce the varieties of flower which are commercially important, covering an area of approximately 67050 ha of land. Informations from different sources reveal that West Bengal produce almost 374175 quintols of flower in a year of which 138125 quintols are summer flowers and the rest 236050 quintols are of winter variety. Winter flowers (Tuberose, marygold, gladioli and a large variety of season flowers) are produced largely due to their longevity and fetch high price for they are used for decorative purposes while summer flowers are very much delicate in handling. Economics of horticulture is discussed in the following chapter V.