Gardening through ages

- As old as civilization and origin of earth 500m years ago
- Garden of Eden is the genesis of gardening
- Adam was the first person who grew ornamental trees and plants in garden
- In India gardening as old as civilization of Indus of Harrapan (2500 BC to 1750 BC)
- Aryans came around 1600 BC.
- Gardening is associated with Lord Budha’s life from birth to eternity.

Gardens described by Vatsyana

- Pramadodyan: For king and queen
- Udyan: King passes time by listening music and watching dance
- Vrikshavatika: Garden for courtiers and ministers
- Nandanvana: Garden dedicated to Lord Indra
- Gardens were developed at Nalanda and Takshila
Gardening over ages

- Mughal’s period
- English period
- Post-independence period

Garden and Landscape

Garden:
- Garden is a place for growing plants.

Landscape garden:
- It is a design with definite use of plants to serve certain aesthetic or utilitarian purpose. It is a manmade creation for ornamental or practical or both the uses.

Landscape:
- It is the general outlaying or appearance of an area in relation to its surroundings.

Ornamental Horticulture

- Ornamental Horticulture is branch of Horticulture which includes both the aspects of Floriculture and Landscaping.
Floriculture

- Floriculture is a branch of Horticulture which deals with commercial growing, marketing and arranging flowers and ornamental plants, which includes annuals, biennials and perennials viz., trees, shrubs, climbers and herbaceous perennials.

Landscaping

The design and alternation of a portion of land by use of planting material and land reconstructions is known as landscaping.

Landscape gardening

It is the planning and planting of outdoor space to secure the most desirable relationship between the landform architect and plants to best meet the human needs for beauty and function.
Floriculturist, Florist and Amateur

Floriculturist:
A person involved in growing, improving and teaching ornamental horticulture is known as a Floriculturist.

Florist:
A person dealing the business of cut flowers, cut greens, loose flowers and floral products is known as a Florist.

Amateur Gardener:
A person who grows and arranges flowers and ornamental plants for personnel satisfaction and not for financial gains is known as an amateur gardener.

Why gardening?

- Gardening is a confluence of science and beauty.
- Gardening provides the feeling of peace and tranquility.
- It reduces the stress and offers a sense of self esteem and mastery of environment.
- It is a kind of therapy used in psychiatric hospitals, general hospitals, physical rehabilitation centres, Homes for elderly, prisons and educational institutions.
- It helps the individuals to overcome the diagnosed problems or cope with the problems much better while developing relationship with the plants and landscape.
- The patients achieve higher level of personnel development and satisfaction.
- It can be concluded that the gardening is providing a three prolonged service to the mankind as scientific, educational and social.
In the present scenario this has become an integral part of human civilization.

It is a common saying in our country that a child is borne with flowers, grows with flowers and finally departs with flowers.

In day to day activities flowers are used for various activities such as worshiping, social functions such as birthday, wedding, anniversary, welcoming and departing dignitaries, etc.

Flowers and ornamental plants have become an integral part of interior decoration of homes, offices, clubs, hotels, restaurants, banks, banquets halls, etc.

Flowers have also become part of daily self adornment.

Perfume extracted from flowers is used in soaps and cosmetics.

Flower products are used as source of food and also an additive in food and sweets.

It can be concluded that in the present scenario the flowers and mankind have become complimentary to one another.
Attributes of Ornamental Gardens

- Providing profit, pleasure passion and thrill to the persons engaged in gardening.
- Amelioration of the fast deteriorating environment by combating pollution.
- Beautification of indoor and outdoor places.
- Overall improvement of quality of life.
- Wider choice of crops, species and cultivars make it easy to diversify in agriculture.
- Generate ample employment opportunities.
- Higher profit per unit area in comparison to other agricultural crops.
- Higher potential for export of non-traditional items.
- Development of a permanent sustainable agriculture system.

Flowers convey human feelings

- Love (rose, tulip, carnation),
- Sorrow-jealousy (French marigold),
- Regard (daffodil),
- Self-esteem (narcissus),
- Message (iris),
- Pride (amaryllis),
- Departure (sweet pea),
- Luxury (stock),
- Presumption (snapdragon), and
- Purity (lily).
Flowers- symbolized as national flowers

- Lotus (India, Egypt),
- Rose (UK, USA, Iran, New Zealand),
- Narcissus (China),
- Chrysanthemum (Japan),
- Tulip (the Netherlands),
- Lily (Italy),
- Corn flower (Germany), and
- Daffodil (Wales).

Ornamental Horticulture industry components

- Florist trade,
- Plant nursery,
- Bedding plant industry,
- Seeds and bulbs,
- Plant rental service
- Flower perfumery
- Landscape gardening
Users of floricultural products

- Professional gardeners,
- Commercial flower growers,
- Landscape architects, consultants and designers,
- For planting in public parks and gardens,
- Florist traders,
- Amateur home gardeners and
- Flower exporters.

Associated industries

- Greenhouse material,
- Potting media,
- Pots and containers manufacturers
- Packaging material,
- Transportation vehicles,
- Cold storage,
- Horticultural inputs and
- Scientific apparatus, equipments and chemicals
- Publicity
Global Floriculture Industry

- Biggest International flower market is at Aalsmeer owned by Flora Holland in the Netherlands
- Countries involved in floriculture trade: 191
- Total value flower trade: 20814 million US $
- Value at whole sale level: Over 50 billion US$
- Estimated global area under flowers: 2m ha
- Rate of development of global floriculture industry in the last decade is about 10 per cent

Flora-Holland Flower Auction Aalsmeer
Flower trade in the world in 2011 (Export)

Total Value Flower trade in the world:
- **20814 million US $ during 2011**
- Cut flowers: 8591 million US $
- Live plants: 8896 million US $
- Cut foliage: 1319 million US $
- Bulbs: 1854 million US $

Source: UNCOMTRADE

Leading flower products exporting countries in 2008 and 2011

- **2011**: Netherlands (54%), Colombia (6%), Germany (4.8%), Italy (4.4%) and Belgium (4.4%)
- **2010**: Netherlands (48%), Colombia (7%), Belgium (5%), Italy (5%) and Germany (4%)
- **2009**: Netherlands (49%), Colombia (6%), Belgium (6%), Italy (5%) and Germany (4%)
- **2008**: Netherlands (49%), Colombia (7%), Italy (5%), Germany (4%) and Belgium (4%)
- **India (0.36%)**
Leading flower products importing countries

- 2011: Germany (17%), USA (9.4%), Netherlands (9.4%) UK (8.7%) and France (7.3%)
- 2010: Germany (17%), USA (10%), UK (9%), France (9%) and Netherlands (9%)
- 2009: Germany (17%), USA (10%), France (10%) Netherlands (10%) and UK (9%)
- 2008: Germany (16%), Netherlands (10%), UK (10%), USA (10%) and France (9%)
- India (0.07%)

Maximum acreage under Flowers

- China (over 8.34 lakh ha till 2009)
- India (over 2.33 lakh ha till 2012-13)
- the Netherlands: 5311 ha in greenhouses and 2573 ha area in open during 2007
Top ten cut flowers in the world Floriculture trade

- Rose
- Chrysanthemum
- Tulip
- Lilium
- Gerbera
- Chrysanthemum
- Cymbidium
- Freesia
- Eustoma
- Anthurium

Top ten pot plants in the world Floriculture trade

- Phalaenopsis
- Anthurium
- Kalanchoe
- Rose
- Dracaena
- Chrysanthemum
- Ficus
- Hydrangea
- Spathiphyllum
- Hyacinth
Major Flowers auction centres around the world in 2012

- FloraHolland, the Netherlands (4145 million Euros in 2011)
- Veiling Rhein-Maas, Germany (282m Euros)
- Ota Floriculture Auction Co. Ltd. Japan (246m Euros)
- The Flower Auction Japan (FAJ)- (207m Euros)
- Veilling Holambra, Brazil (148m Euros)

Indian Floriculture Industry

- National Flower: Lotus
- Contribution in global flower trade: 0.36%
- Final area 2010-11: 1.91
  - 2011-12: 2.54 lakh ha  2012-13: 2.33 lakh ha
- Final export (2010-11): Rs. 296.03 crores
- Final export (2011-12): Rs. 365.24  2012-13: 423.4
- Alone in Delhi over Rs. 10,000 million business is done annually
Congenial conditions for Ornamental Horticulture in India

- India is endowed with diverse agro-climatic conditions congenial for growing of a variety of flower crops throughout the year
- Fertile soil
- Abundant water and sunlight
- Readily available low cost labour
- Liberalized Seed and EXIM policy
- Adequate support from financial institutions

Congenial conditions for Ornamental Horticulture in India

- Increase in per capita income specially the disposable income
- Change in rural-urban population ratio
- Higher population growth rate in cities
- Depletion of ozone layer is resulting in climate change and environmental pollution
- Development of hotel and tourism industry
- Use of flowers is being considered as important parameter for high social values
### All India Area and Production of Flowers

<table>
<thead>
<tr>
<th>Year</th>
<th>Area (lakh ha)</th>
<th>Production</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Loose (lakh MT)</td>
</tr>
<tr>
<td>2008-09</td>
<td>1.67</td>
<td>9.87</td>
</tr>
<tr>
<td>2009-10</td>
<td>1.83</td>
<td>10.21</td>
</tr>
<tr>
<td>2010-11</td>
<td>1.91</td>
<td>10.31</td>
</tr>
<tr>
<td><strong>2011-12</strong></td>
<td><strong>2.54</strong></td>
<td><strong>16.62</strong></td>
</tr>
<tr>
<td><strong>2012-13</strong></td>
<td><strong>2.33</strong></td>
<td><strong>17.29</strong></td>
</tr>
</tbody>
</table>

### Area and Production during 2012-13

<table>
<thead>
<tr>
<th>State</th>
<th>Area ‘000 ha’</th>
<th>Loose fls ‘000 MT’</th>
<th>Cut flowers ‘Lakh No.’</th>
</tr>
</thead>
<tbody>
<tr>
<td>Andhra Pradesh</td>
<td>34.9</td>
<td>224.4</td>
<td>6809.0</td>
</tr>
<tr>
<td>Karnataka</td>
<td>29.7</td>
<td>207.5</td>
<td>9441.8</td>
</tr>
<tr>
<td>Tamil Nadu</td>
<td>28.7</td>
<td>313.0</td>
<td>1168.0</td>
</tr>
<tr>
<td>West Bengal</td>
<td>24.4</td>
<td>65.14</td>
<td>25429.0</td>
</tr>
<tr>
<td>Maharashtra</td>
<td>22.0</td>
<td>119.0</td>
<td>7914.0</td>
</tr>
<tr>
<td><strong>Himachal Pradesh</strong></td>
<td><strong>0.91</strong></td>
<td><strong>37.7</strong></td>
<td><strong>1760.3</strong></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>232.7</strong></td>
<td><strong>1729.2</strong></td>
<td><strong>76731.9</strong></td>
</tr>
</tbody>
</table>
Marigold  Rose  Jasmine  Garlands

Crossandra  Chrysanthemum  China aster  Tuberose

Traditional (loose) flowers grown in India

New Flower Market Gajipur (Delhi) started in November 2011
### Export of various flower products from India

<table>
<thead>
<tr>
<th>Commodity</th>
<th>2009-10</th>
<th>2010-11</th>
<th>2011-12</th>
<th>2012-13</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dried ornamentals</td>
<td>195.17</td>
<td>211.89</td>
<td>282.00</td>
<td>326.7</td>
</tr>
<tr>
<td>Rose cut flowers</td>
<td>16.59</td>
<td>19.94</td>
<td>21.79</td>
<td>23.5</td>
</tr>
<tr>
<td>Carnations</td>
<td>0.27</td>
<td>0.15</td>
<td>0.43</td>
<td>0.4</td>
</tr>
<tr>
<td>Chrysanthemums</td>
<td>0.01</td>
<td>0.01</td>
<td>0.01</td>
<td>0.0</td>
</tr>
<tr>
<td>Other cut flowers</td>
<td>23.69</td>
<td>8.11</td>
<td>3.08</td>
<td>2.3</td>
</tr>
<tr>
<td>Rose plants</td>
<td>11.81</td>
<td>6.05</td>
<td>8.05</td>
<td>17.1</td>
</tr>
<tr>
<td>Tissue culture plants</td>
<td>27.70</td>
<td>30.28</td>
<td>37.75</td>
<td>40.0</td>
</tr>
<tr>
<td>Rhododendrons/ Azaleas</td>
<td>0.50</td>
<td>0.001</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Flowering/live plants</td>
<td>10.92</td>
<td>0.57</td>
<td>1.26</td>
<td>1.1</td>
</tr>
<tr>
<td>Cut foliage/ mosses</td>
<td>1.39</td>
<td>0.39</td>
<td>0.17</td>
<td>0.04</td>
</tr>
<tr>
<td>Un-rooted cuttings</td>
<td>0.44</td>
<td>0.13</td>
<td>0.50</td>
<td>0.5</td>
</tr>
<tr>
<td>Bulbs</td>
<td>3.99</td>
<td>1.26</td>
<td>2.68</td>
<td>2.5</td>
</tr>
<tr>
<td>Other seeds/ plants</td>
<td>1.98</td>
<td>0.39</td>
<td>4.48</td>
<td>4.5</td>
</tr>
<tr>
<td>Total</td>
<td>294.46</td>
<td>296.03</td>
<td>365.32</td>
<td>423.4</td>
</tr>
</tbody>
</table>

### Flower Cultivation statistics at Glance in HP during 2012-13

<table>
<thead>
<tr>
<th>Item</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Area</td>
<td>914 ha</td>
</tr>
<tr>
<td>Total Flower Growers</td>
<td>3500</td>
</tr>
<tr>
<td>Total revenue</td>
<td>Rs. 98.98 crores</td>
</tr>
<tr>
<td>Leading Flowers</td>
<td>Chrysanthemum, Marigold,</td>
</tr>
<tr>
<td></td>
<td>Gladiolus and Carnation</td>
</tr>
<tr>
<td>Leading Districts</td>
<td>Sirmaur, Kangra, Solan,</td>
</tr>
<tr>
<td></td>
<td>Chamba, Bilaspur, Shimla</td>
</tr>
<tr>
<td></td>
<td>and Kullu</td>
</tr>
<tr>
<td>Protected Area under flowers</td>
<td>120+ ha (Approx.)</td>
</tr>
</tbody>
</table>
**Rhododendron campanulatum** - State flower

---

**Flower Production in Districts of HP during 2012-13**

<table>
<thead>
<tr>
<th>District</th>
<th>Area (ha)</th>
<th>District</th>
<th>Area (ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bilaspur</td>
<td>47.2</td>
<td>Lahul &amp; Spiti</td>
<td>1.4</td>
</tr>
<tr>
<td>Chamba</td>
<td>49.7</td>
<td>Mandi</td>
<td>11.0</td>
</tr>
<tr>
<td>Hamirpur</td>
<td>4.6</td>
<td>Shimla</td>
<td>38.3</td>
</tr>
<tr>
<td>Kangra</td>
<td>90.5</td>
<td>Sirmaur</td>
<td>558.5</td>
</tr>
<tr>
<td>Kullu</td>
<td>26.3</td>
<td>Solan</td>
<td>66.0</td>
</tr>
<tr>
<td>Kinnaur</td>
<td>0</td>
<td>Una</td>
<td>20.4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>913.8</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Bottlenecks in the development of Ornamental Horticulture in India

- Lack of trained man power and inadequate extension network
- Non-availability of suitable planting material
- High cost of construction of greenhouses i.e. Rs. 21 million per hectare for Indigenous technology and Rs. 33 million per hectare for the foreign technology (the Netherlands/Israel)
- Inadequate infrastructural facilities
- Heavy duty on Indian flowers in Europe i.e. 18 percent in Summer and 13 percent in winter

Bottlenecks in the development of Ornamental Horticulture in India

- Non-existence of suitable nursery regulatory act
- Unorganized marketing in India
- Inadequate financial support for floricultural projects
- Inadequate research and teaching facilities in this subject
- Inadequate transportation facilities
- Inelasticity in demand of flowers and floricultural products in India
- Non-availability of regular supply of flowers and floricultural products
- Regular cut in electricity