



**FACULTY OF AGRICULTURAL SCIENCES & ALLIED INDUSTRIES**

- As per Indian Horticulture Database (2005), fruit crops cover an area of 4.96 m ha. and vegetables crops 6.75 m.ha.. Accordingly, 49.29 m.ton of fruits and 101.43 m ton of vegetables are produced in the country annually. To meet out the projected demand of population by 2020 A.D, about 50 m.ton of fruits and 143 m. ton of vegetables would be required. Therefore by 2020 A.D. the production of fruits needs to be increased. Requirements of export and processing industry further add to the requirements of horticultural produce. In view of these, there is lot of scope of increasing production and potentiality of horticulture crops.
- Apart from fruits and vegetables, floriculture industry in India comprising of florist trade, nursery plants, potted plants, seed and bulb products is being observed as sunrise industry. There is soaring business of flowers in almost all metropolitan cities of the different states. The developed flower market in the country during 2005 is with area of 2.24 lakh ha with a production of 6.54 lakh MT loose flowers and 19515 lakh cut flowers. The traditional flowers are grown on a large hectare of land on a commercial scale. These flowers are mostly grown for loose flower purpose. Area under cut flowers like rose, chrysanthemum, gladiolus, carnation and orchids is increasing day by day.
- Plantation crops are another potential sector with lot of opportunities of employment generation, foreign exchange earnings and overall supporting livelihood sustenance of mankind at large. These crops form the mainstay of lives especially in coastal areas of the country where predominating stands of plantation crops are found. Coconut has so much importance in the country that the state Kerala receives its very name on the basis of coconut, the Malayalam name of which is Kera.. These cover an area of 31.02 lakh ha with a production of 131.60 lakh MT.

### **Horticulture is important for the following considerations**

1. As a source of variability in produce.
2. As a source of nutrients, vitamins, minerals, flavour, aroma, alkaloids, oleoresins, fibre, etc.
3. As a source of medicine.
4. As an economic proposition as they give higher returns per unit area in terms of energy, money, job, etc.
5. Employment generation 860 man days/annum for fruit crops as against 143 man days/annum for cereal crops and the crops like grapes, banana and pineapple need 1000-2500 man days per annum.
6. Effective utilization of waste land through hardy fruits and medicinal plants.
7. As a substitute of family income being component of home garden.
8. As a foreign exchange earner has higher share compare to agriculture crops.
9. As an input for industry being amenable to processing, especially fruit and vegetable preservation industry.
10. Aesthetic consideration and protection of environment.

## 11. Religious significance.

- In short horticulture supplies quality food for health and mind, more calories per unit area, develops better resources and yields higher returns per unit area.
- It also enhances land value and creates better purchasing power for those who are engaged in this industry.
- Therefore, horticulture is important for health, wealth, hygiene and happiness.

### **Scope of Horticulture**

Like any other things, scope of horticulture depends on incentive it has for the farmers, adaptability of the crops, necessity and facilities for future growth through inputs availability and infrastructure for the distribution of produce/marketing etc.

### **Incentive for the farmer**

- The biggest incentive for the farmer is money and horticultural crops provide more returns in terms of per unit area production, export value, value addition compared to agricultural crops.

### **Adaptability**

India is bestowed with a great variety of climatic and edaphic conditions as we have climates varying from tropical, subtropical, temperate and within these humid, semi-arid, arid, frost free temperate etc.

- Likewise we have soils like loam, alluvial, laterite, medium black rocky shallow, heavy black, sandy etc. and thus a large number of crops can be accommodated with very high level of adaptability. Thus, there is good scope for horticultural crops.

### **Necessity**

- After having achieved self sufficiency in food, nutritional security for the people of the country has become the point of consideration/priority.
- Moreover, Indians are basically vegetarians, and to meet their nutritional requirement in terms of vitamins and minerals horticulture crops are to be grown in sufficient quantities to provide a bare minimum of 85 g of fruits and 200 g of vegetables per head per day with a population of above 120 crores.
- Continued increase in demand for horticultural produce provides tremendous scope for the growth of this industry.
- Good land is under pressure for stable food, industry, housing, roads and infrastructure due to population explosion and only wasteland had to be efficiently utilized where cultivation of annuals is a gamble due to restricted root zone and their susceptibility of abiotic stress.
- These lands can be best utilized to cultivate hardy horticultural crops like fruits and medicinal plants.
- At present our share in international trade of horticultural commodities is less than one per cent of total trade. Moreover, these commodities (spices, coffee, tea) fetch 10-20 times more foreign exchange per unit weight than cereals and therefore, taking advantage

of globalization of trade, nearness of big market and the size of production, our country should greatly involve in international trade which would provide scope for growth.

**Export value**

Among fresh fruits, mangoes and grapes; in vegetables, onion and potato; among flowers, roses; among plantataion and spice crops, black pepper,cardamom, ginger, turmeric,chillies, cashewnut, tea , coffee, coconut, arecanut, etc constitute the bulk of the export basket.

- European and gulf countries are major importer of horticultural produce.

**Table: Major countries for export of horticultural produce**

ommodity	Major importer	Share value(%)
Fruits and vegetables	United Arab Emirates	28.00
Floriculture	U.S.A	37.70
Processed products	Soviet Union countries	14.60
Spices	U.S.A	43.50
Cashew	U.S.A	40.00

**Reason for scope of Horticulture**

**In brief it can be stated that horticulture has great scope for the following reasons**

- To exploit great variability of agro climatic conditions.
- To meet the need for fruits, vegetables, flowers, spices, beverages in relation to population growth based on minimum nutritional and other needs.
- To meet the requirement of processing industry.
- To substitute import and increase export.
- To improve the economic conditions of the farmers and to engage more labourers to avert the problem of unemployment.
- To protect environment.

**Other importance**

- Horticultural trees work in near semblance to forest trees in maintaining ecosphere
- They helps in transforming micro climate
- Provides shelter to birds, reptiles and other micro organisms and add to the geo-ecological diversity on the land
- Provides impetus to the writers, poets, thinkers and analysts and thus keeps their cultural impulse alive
- Adds to the survival of life-spheres of living entity

**Horticultural Crops and Human Nutrition**

- Fruits and vegetables play an important role in balanced diet.

- These provide not only energy rich food but also provide vital protective nutrients/elements and vitamins.
- Comparatively fruits and vegetables are the cheapest source of natural nutritive foods.
- Since most of Indians are vegetarians, the incorporation of horticulture produce in daily diet is essential for good health.
- With the growing awareness and inclination towards vegetarianism worldwide the horticulture crops are gaining tremendous importance.

### Functions of Fruits and Vegetables

#### Functions of fruits and vegetables in human body

- Fruits and vegetables provide palatability, taste, improves appetite and provides fibre thereby the constipation can be overcome.
- They neutralize the acids produced during digestion of proteins and fatty acids.
- They improve the general immunity of human body against diseases, deficiencies etc.
- They are the important source of vitamins and minerals for used in several bio-chemical reactions occur in body

#### Fruits

Fruits provide higher energy value per unit area compared to cereals. Some of the essential vitamins provided by different fruits are:

Vitamines	Role on Human Body	Source
Vitamin A	Essential for growth and reproduction Helps in resistance to infections, increases longevity and decreases senility. Deficiency causes night blindness, xerophthalmia, retardation in growth, roughness in skin, formation of stones in kidney.	Mango, Papaya, persimon, Dates, Jack fruit, Walnut, Oranges, Passion fruit, Loquat etc
Vitamin B <sub>1</sub>	Essential for the maintainance of good appetite and normal digestion. Necessary for growth, fertility, lactatio and for normal fucioning of nervous system. Deficiency causes beri-beri,paralysis, loss the sensititivity of skin, enlargement of heart, loss of appetite and fall in body temperature.	Walnut, Apricot, Apple, Banana, Grapefruit, Plum & Almond.

Vitamin B <sub>2</sub>	<p>Important for growth, health of skin and for respiration in poorly vascularised tissue such as the cornea.</p> <p>Deficiency causes pellagra and alopecia, loss of appetite, loss of weight, sore throat, development of cataract, swollen nose and baldness.</p>	Bael, Papaya, Litchi, Pomegranate, Wood Apple and Pineapple
Vitamin C	<p>Deficiency causes scurvy, pain in joints, swelling of limbs, unhealthy gums, tooth decay, delay in healing of wounds and rheumatism.</p>	Barbados cherry, Aonla, Gauva, Lime, Lemon, Sweet oranges, Ber, Pineapple & Pear.

### Area production and export in Horticulture

- India is leading producer of horticultural crops. Horticultural crops cover 13.08 per cent of the total area under agriculture, but contribute to about 28 per cent of the GDP. These crops accounts for 37 per cent of the total exports of agricultural commodities. Due to planned emphasis laid on Horticulture, India is accredited as the second largest producer of fruits and vegetables, largest producer and consumer of cashew nut, tea and spices, third largest producer of coconut, fourth largest producer and consumer of rubber and sixth largest producer of coffee in the world.
- India exports fruits, vegetables, processed products, flowers, seeds and planting materials, spices, cashew nut, tea, coffee etc. During 2005-06, the value of export material was worth Rs.1,24,175 million. During the year, export of cashew nut was dominantly higher followed by spices, tea and coffee.

### Fruits

- India is the largest producer of mango, banana, grape and litchi. However, the bulk of the production is consumed domestically.
- Of the total global exports for fruits, India 's share is only 0.3%. Fruits accounts for about 11% of total horticultural export from country.
- Grape and mango together constitute 60% of India's exports of fresh fruits. Citrus, banana, apple and papaya are other important fruits for export.

### Vegetables

- During the year 2005-06, the export of fresh vegetables was of the order of Rs 919.8 crore. Onion accounts for maximum share in exports trade. Other major vegetables are tomato, potato, bean, pea, mushroom, asparagus, capsicum and okra.

### Floriculture

- In floriculture, cut flowers alone account of 86% of the total trade in this sector. Dried flowers and other plant parts are other prominent commodities.

- Processed products: Of the total horticultural trade, processed fruits and vegetables account for 20% and 17% respectively. Among the processed fruits, fruits juice and dried fruits contribute to 41% and 12% of trade respectively. Mango pulp, pickles and chutneys of various fruits remain in high demand in export trade. Among processed vegetables, mushrooms, gherkins, dehydrated onion and frozen pre-cut vegetables are important items.

### **Spices**

- World trade in spices has been estimated of the magnitude of 7.5 lakh metric tonnes valued at Rs 1650 million US\$.
- Indian spices command 43% share in volume and 31% in value of the world trade(2005-06).
- These commodities account for more than 5% of the total agricultural export earnings in the country.
- Value added spices are in large demand in export trade and their share is 60% of total export under spices.

### **Seeds and planting materials**

- The country exports seed and planting materials of fruits and vegetables. The export of these commodities was of the order of Rs.63 crores during the year 2004-05
- Medicinal and aromatic plants: The country has its credits of exporting herbal material raw drugs to world market.
- Before 2005, Indian export of herbal material was worth Rs. 446 crore.
- China export in this regard has been worked out of the tune of Rs. 18000-22000 crore.
- Aloe, belladonna, acrus, cinchona, cassia tora, dioscorea, senna, isbgol,etc.hold prominence in export trade under the sector.

### **Cashew nut**

- During the year 2004-05, cashew nut kernels worth Rs.2709 crore were exported.
- At present, the country exports about 1.27 lakh metric tonnes of cashew kernels worth Rs. 2500 crore.

### **Tea**

- Until 1987-88, India was dominant exporter of tea in the world market.
- The share of tea in total agricultural export was 20.7%.
- In view of stiff competition from Sri Lanka,Kenya, China tea export from the country has been divided down.
- At present share of tea in total agricultural export has been merely 5%.

### **Coffee**

- After petroleum, coffee is the second largest commodity in the world trade. From India, 70% of the total production of coffee is exported.

### **Coconut**

- The recent trends in the exports of coconut products witness decrease in export of copra and copra meal.

- There has been moderate increase in coconut oil, desiccated coconut and shell charcoal while significant increase in coco chemicals, activated carbon, coir and coir products.
- Coir and coir products are major coconut based commodities in the export basket.

### **Rubber**

- The country exports natural rubber. Under this sector, it accounts for 1.1% of the global share.
- The export of natural rubber rose from 6995 metric tonnes in 2001-02 to 75,905 metric tonnes during 2003-04.

### **Cocoa**

- India exports cocoa products. During the year 2005-06, India earned foreign exchange worth Rs. 24.80 crore out of export of cocoa beans/products.

### **Imports**

- There is rise in the imports of certain commodities.
- Commodities like dried pea, apples, apple juice, dried vegetable, black pepper, raw cashew nut, areca nut, cocoa etc. are important items imported by India.
- In spice sector, India is leading producer but bulk of its production is utilized domestically itself.
- In cashew nut production scenario, the country produces 5.4 lakh tonnes of raw cashew nuts, as against the requirement of 11-12 lakh tonnes per annum to feed out 1700 cashew processing units.