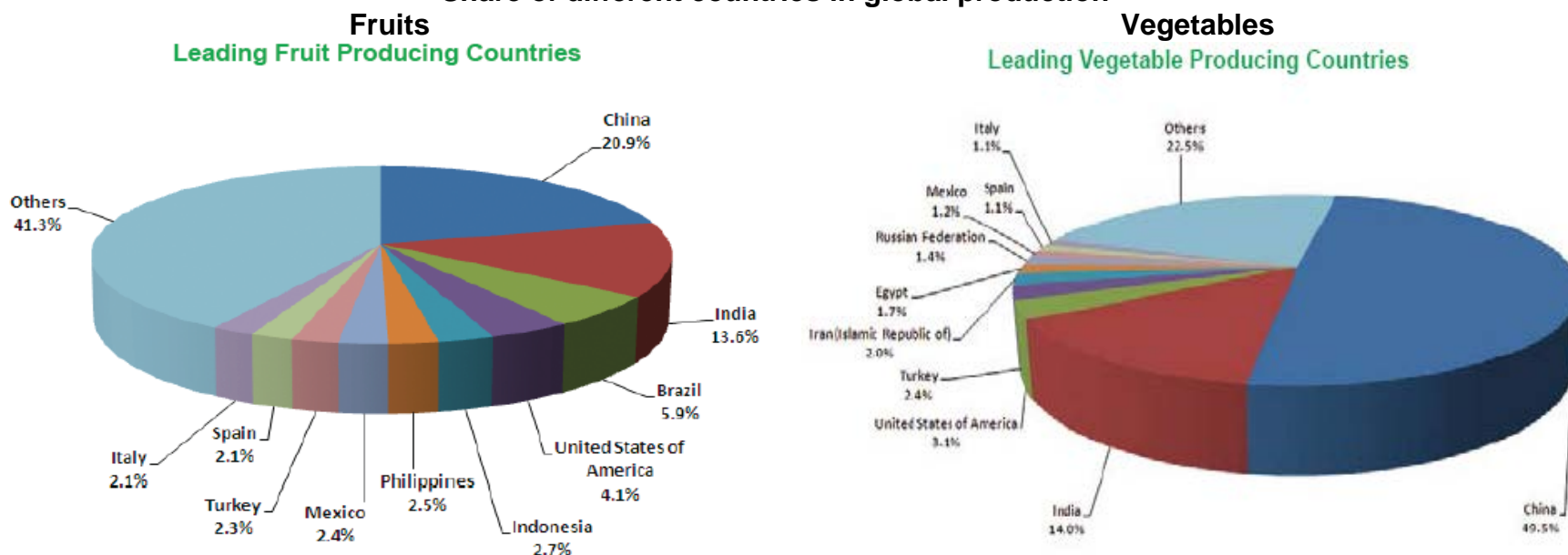


CHAPTER 9

HORTICULTURE

9.1 India & World: India has been bestowed with wide range of climate and physic-geographical conditions and as such is most suitable for growing various kinds of horticultural crops such as fruits, vegetables, flowers, nuts, spices and plantation crops (coco nut, cashew nut and cocoa). Its horticulture production has increased significantly over the last two decades and as per the final estimates, by 2013-14, it has increased to about three times (2.87) since 1991-92 and to about twice (1.90) compared to the production in 2001-02. This has placed India among the foremost countries in horticulture production, just behind China. As per National Horticulture Database 2014, during 2013-14, India's contribution in the world production of fruits & vegetables was 13.6 % & 14% respectively. Total production of fruits during 2013-14 was about 89 million tonnes while that of vegetables was 163 million tones whereas the third advance estimates put the production at 86 million tonnes and 167 million tonnes respectively for 2014-15.

Share of different countries in global production



Source : FAO Website February 2015 (Data for 2012,2013) & For India : DAC (Data for 2013-14)

9.2 India is the largest producer, consumer and exporter of spices. It is the second largest producer of fruits and vegetables in the world and occupies first position in the production of fruits like mango, banana, papaya, sapota, pomegranate, acid lime and aonla and vegetables like peas and okra . it is next only to china in production of many vegetables like potato, tomato, onion, brinjal, cabbage, cauliflower and broccoli etc.

9.3 As per National Horticulture Database 2014, India's significant horticulture production is despite its comparatively lower productivity. Both in case of fruits & vegetables productivity of India (12.3 & 17.3 tonnes per hectare respectively) is about half of the productivity of USA (23.3 and 32.5 tonnes per hectare). During 2013-14, India's productivity was marginally better than the world average in case of fruits (11.4 tonnes per hectare) whereas it was below the world average (19.6 tonnes per hectare) in case of vegetables. Comparison of India's horticulture productivity with that of China, the leading producer of fruits & vegetables, also gives identical results as in case of overall global productivity with significantly lower vegetable productivity whereas the productivity in case of fruits surpassing that of China. In case grapes production India's yield is best amongst the major producers of the fruit.

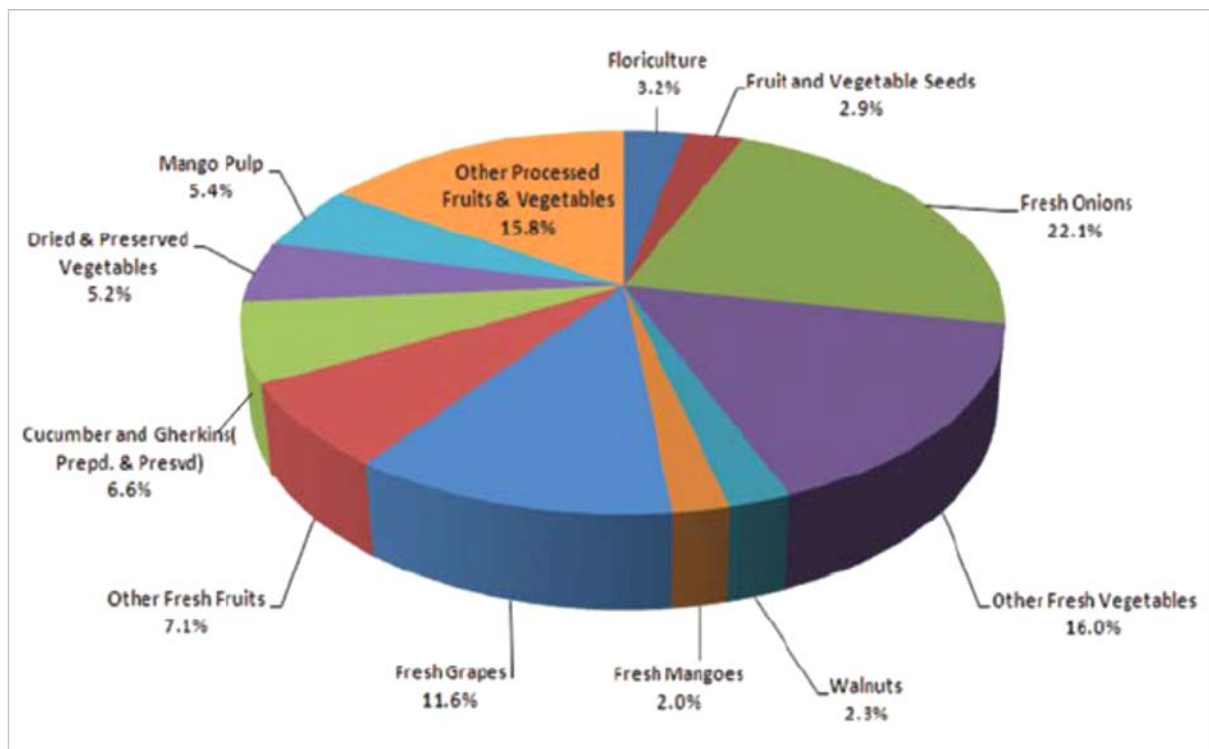
Global Comparison in Area, Production & Productivity among leading producers (Source :FAO & NHB,India)
Fruits Vegetables

Country	Area (in HA)	Production (in MT)	Productivity MT/HA	Country	Area (in HA)	Production (in MT)	Productivity MT/HA
China	11834450	137066750	11.6	China	24560900	573935000	23.4
India	7216312	88977134	12.3	India	9396057	162896911	17.3
Brazil	2325385	38368678	16.5	United States of America	1104640	35947720	32.5
United States of America	1137779	26548859	23.3	Turkey	1111702	27818918	25.0
Indonesia	796530	17744411	22.3	Iran (Islamic Republic of)	876830	23485675	26.8
Philippines	1240370	16370976	13.2	Egypt	772487	19825388	25.7
Mexico	1256730	15917806	12.7	Russian Federation	790500	16084372	20.3
Turkey	1102662	14974561	13.6	Mexico	683294	13599497	19.9
Spain	1539100	13996447	9.1	Spain	318971	12531000	39.3
Italy	1125593	13889219	12.3	Italy	450186	12297645	27.3
Others	27924521	270594597	9.7	Others	19096425	261467661	13.7
World + (Total)	57499432	654449438	11.4	World + (Total)	59161992	1159889787	19.6

Source : FAO Website February 2015 (Data for 2012,2013) & For India : DAC (Data for 2013-14)

9.4 **Exports:** Besides meeting the increasing demand of the domestic population, which continues to grow, India exports some portion of its horticulture produce. During 2013-14 total exports of horticulture produce by India was 3.69 million metric tonnes which amounted to about Rs 143.6 billion. Even though the quantum of export decreased in comparison to the year before i.e. 2012-13 when it was 3.7 million metric tonnes , the value of export of horticulture produce increased by about 35.6 % from Rs 105.9 billion in 2012-13. Except for 2010-11 when the exports of horticulture declined by about 7%, the export of horticulture produce has seen an increased during the last six years.

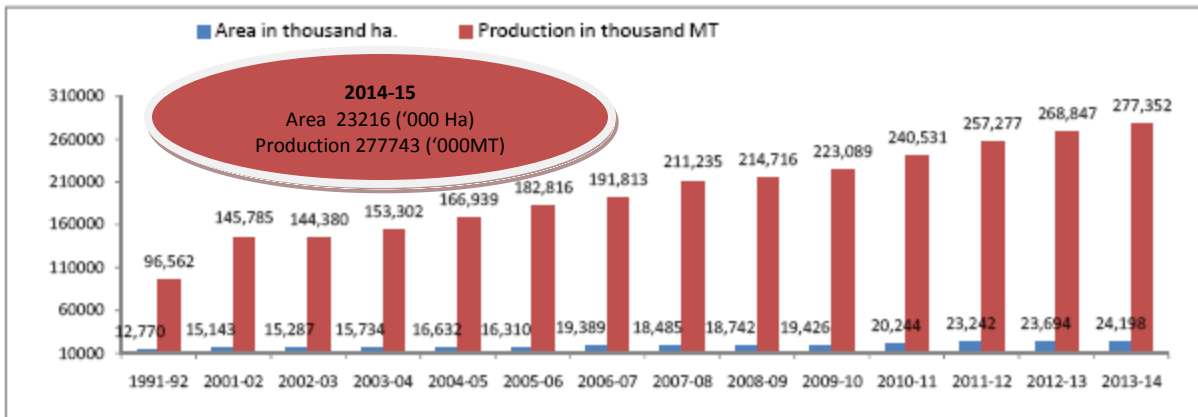
Commodity Wise share of Exports of Horticulture Products From India 2012-13



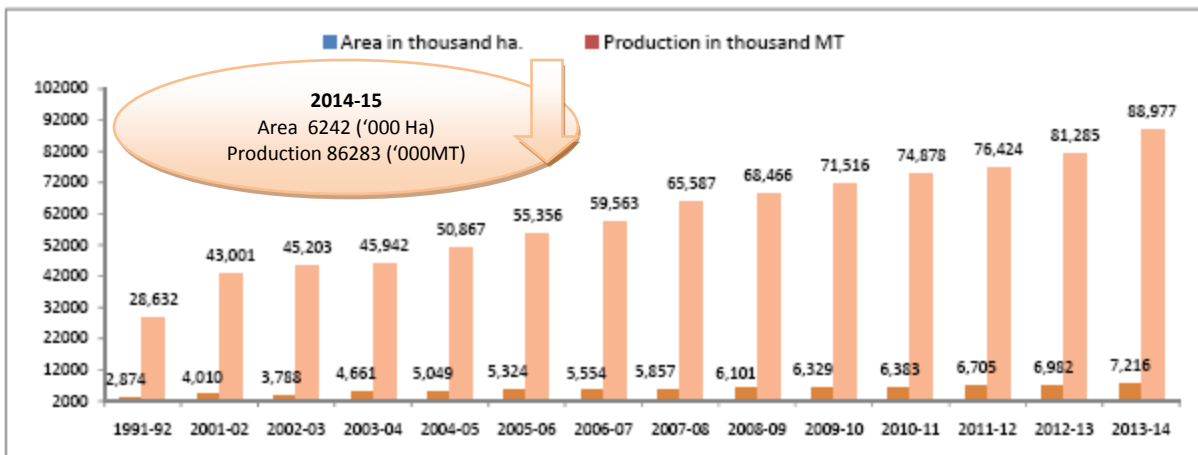
9.5 Trends in Horticulture Production & Present Status: As per the data available in National Horticulture Database 2014, increase in horticulture produce has far outpaced the increase in area of crops under horticulture. Comparison of 2013-14 (final estimates) with 1991-92 reveals that while the area has about doubled, the production has become three times of the level since 1991-92. This is indicative of improved productivity. The third advance estimate released by Ministry of Agriculture also corroborates the same as it indicates that the area under horticulture decreased from 24,198 thousand hectares in 2013-14 to 23,216 thousand hectares in 2014-15 whereas the production is estimated to have increased from 277,352 thousand MT in 2013-14 to 277,743 thousand MT in 2014-15. Despite of improvement in productivity, the same is yet to catch up with the world leaders, especially in case of vegetables where the productivity is lower than the world average.

9.6 Among fruits, banana and mango accounted for more than half (55 %) of total fruit production both during 2013-14 and 2014-15, with production of banana alone accounting for about 33 %. Share of Citrus fruits was also significant and they accounted for about 13-14 % of overall fruit production. Among vegetables, potato production comprised the major share with 26 % and 28% of overall vegetable production in 2013-14 and 2014-15 respectively. Together with tomato & onion (each accounting for 11-12 % of total vegetable production during 2013-14 & 2014-15) and brinjal (7-8% share in vegetable production during 2013-14 & 2014-15), potato accounted for about 57-58% of vegetable production during 2013-14 and 2014-15. During 2013-14, the 0.4 % annual growth rate in production of vegetables was much less than 9.5 % growth rate in case of fruits .However, as per the third advance estimates, the fruit production has declined by 3 % during 2014-15 even though the vegetable production has increased by 3% during the period. Overall annual growth rate in case of horticulture produce is estimated to be merely 0.1% during 2014-15. The same may be explained by about 4 % decline in area under horticulture crops with area under fruit crops declining by more than 13%. Coconut continues to account for more than 90 % of plantation crop (areca nut, cashewnut , cocoa, coconut) production during 2013-14 and 2014-15. Chilies accounted for about a quarter of total spice production during 2013-14 and 2014-15 followed by garlic with 21 and 23% share during 2013-14 and 2014-15 respectively. Among major spices, production of turmeric is estimated to decline steeply (by 28%) during 2014-15 compared to 2013-14.

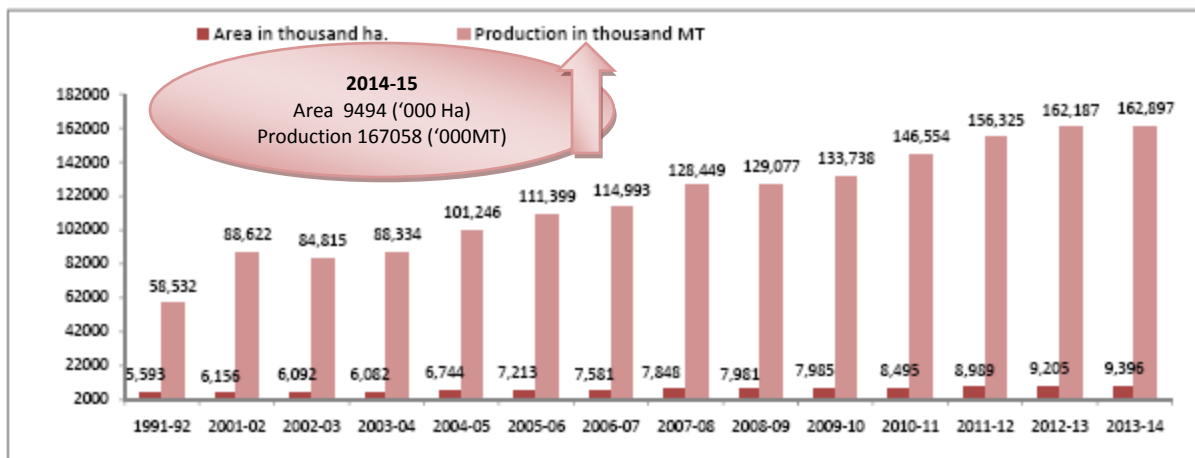
Area and Production Growth Trends for Horticulture Crops



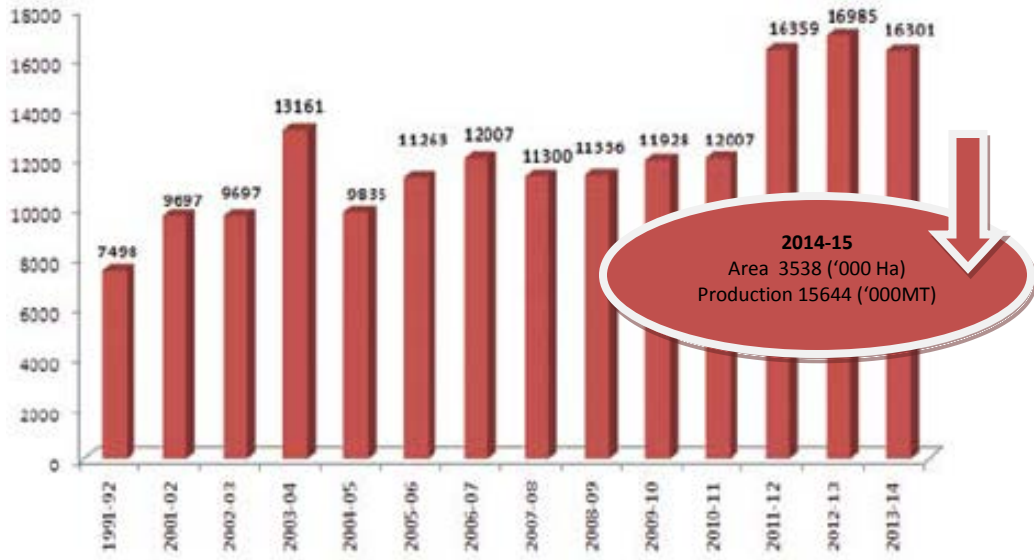
Area and Production Growth Trends for Fruit Crops



Area and Production Growth Trends for Vegetables Crops



Production Trend of Plantation Crops('000 MT)

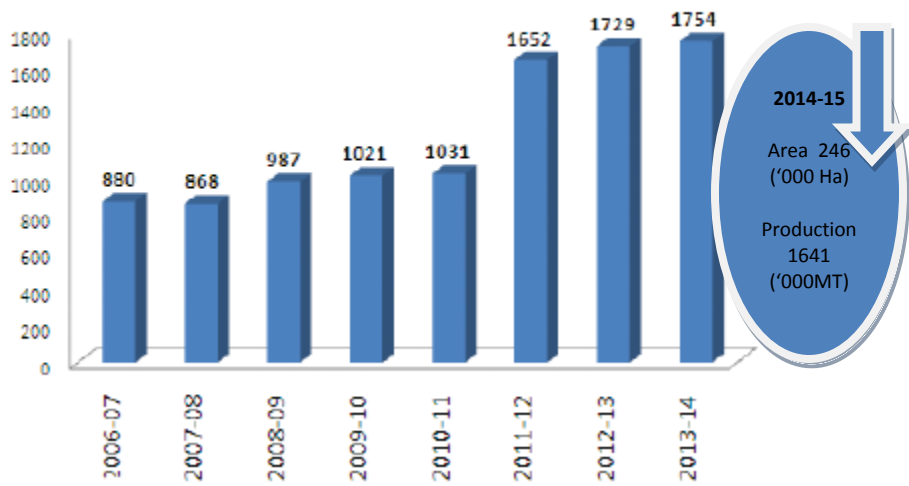


Production Trend of Spices('000 MT)



ALL INDIA PRODUCTION OF FLOWERS AT A GLANCE

■ LOOSE (in '000MT)



9.7 State Wise Comparison: Maharashtra leads in fruits production during 2014-15 with a share of about 12 % followed by Andhra (11% share) and Uttar Pradesh (10 % share).Gujrat, Karnataka, MP, Tamil Nadu & Telangana each contributed more than 5 % in total fruit production. In case of vegetable production, West Bengal with about 16 % share during 2014-15 , followed by UP (12 % share), Bihar (8.7 % share) & Madhya Pradesh (8.6% share) whereas Gujarat, Odisha & Karnataka each contributed more than 5 % in total vegetable production with Maharashtra also contributing about 5 %. West Bengal accounted for about a third (31%) of cut flower production as per the third advance estimates whereas Tamil Nadu (21 % share) led in production of loose flowers followed by Karnataka & MP each with a share of about 13%.Gujrat with 18% share during 2014-15 lead in spices, whereas Tamil Nadu accounted for about a third (31%) of plantation crops (cashew nuts, areca nuts , cocoa and coconuts). The leading producers of honey, during the year, were West Bengal (20%), Punjab(18 %) and UP(16%). Maharashtra accounted for about 32 % of cashewnut production, Karnataka led in Arecanut with 61 % share in production, Kerala produced 37 % of total cocoa while Tamil Nadu (34% share), Karnataka (25 % share) and Kerala (24 % share), all the three contributed significantly in coconut production during 2014-15 . J&K accounts for more than 60 % in apple production and together with Himanchal Pradesh it accounted for about 93 % of apple production in India during 2014-15, as per the third advance estimates. Gujrat leads in banana production with 15% share, and together with Maharashtra and Tamil Nadu it accounted for 40 % of banana production during 2014-15 whereas UP accounted for about a quarter (24%) of mango production, followed by Andhra with 15% share in mango production. Gujrat was also leading producer of papaya accounting for about a quarter of total papaya production in India during 2014-15 while Telangana accounted for about more than a quarter (26%) of citrus fruit production. Amongst the vegetables produced during 2014-15, potato had the largest share (28%) . UP with 29 % share in potato production and West Bengal with about 26 % share together accounted for more than half of the potato produced in the country. Andhra led in tomato production with 18 % share followed by MP & Karnataka, each , with share of about 11%. In case of Onion, Maharashtra was the leading producer with 29% share in onion production followed by Karnataka and MP each with 16 % share. West Bengal was the leading producer of Brinjal , Cabbage and Cauliflower accounting for about a quarter of total production in each case.

Government Initiatives:

9.8 Keeping in view the importance of Horticulture sector, the Government of India has launched a centrally sponsored scheme called the **National Horticulture Mission (NHM) in 2005-06**. The objectives of the Mission were to enhance Horticulture production and improve Nutritional security and income support to farm households and others through area based regionally differentiated strategies. Crops such as fruits,

spices, flowers, medicinal and aromatic plants, plantation crops of cashew and cocoa were included for area expansion whereas vegetables were covered through seed production cultivation, integrated Nutrient management, integrated pest management and organic farming.

9.9 The Centrally Sponsored Scheme to promote holistic growth of the horticulture sector through an area based regionally differentiated strategies, has been subsumed as a part of **Mission for Integrated Development of Horticulture (MIDH)** during 2014-15.

9.10 **Horticulture Mission for North Eastern and Himalayan states.** HMNEH is a part of Mission for Integrated Development of Horticulture (MIDH) scheme, being implemented for overall development of Horticulture in NE and Himalayan states. The mission covers all NE States including Sikkim and three Himalayan states of Jammu & Kashmir, Himachal Pradesh and Uttarakhand. The mission addresses entire spectrum of horticulture from production to consumption through backward and forward linkages.

9.11 **National Bamboo Mission (NBM)** is another sub scheme being implemented by DAC as a sub scheme of MIDH to harness the potential of Bamboo Crop. Under the scheme new nurseries have been set up and steps have been taken to strengthen marketing of bamboo products.

9.12 **National Horticulture Board (NHB)** is implementing various schemes under Mission for Integrated Development of Horticulture (MIDH) in all States and UTs.

9.13 Various Institutes like **Indian Agricultural Research Institute (IARI)**, Horticulture Wing in **Indian Council of Agricultural Research (ICAR)**, **Indian Institute for Horticulture Research**, Bangalore, Agricultural universities etc have been continuously striving to improve the quality of the horticultural products as well as to increase their productivity.

9.14 **Sources of Horticulture Data:**

- **Department of Agriculture, Cooperation and Farmers Welfare, Ministry of Agriculture and Farmers Welfare:** Horticulture Division in the Department releases Area & Production Estimates for horticulture crops. The Department brings out District wise production data for horticulture crops besides a Publication called **Handbook of Horticulture Statistics**. The Department collects information from

State Horticulture Departments, Directorate of Areca nut and Spice Development and Directorate of Cashew nut and Cocoa Development .

- **The National Horticulture Board (NHB)** compiles and publishes annual data base for horticulture sector (**National Horticulture Database**) in respect of all the states and the crops. The publication contains data on exports of horticulture produce besides production area , production and yield of horticulture crops.
- Various **Boards** like **Rubber Board, Coffee Board etc** compile their own statistics.
- **Agriculture & Processed Food Products Export Development Authority (APEDA)**, Ministry of Commerce and Industry, publishes data on exports of Agricultural and processed food products. The information is based on the trade data maintained by **Directorate General of Commercial Services and Intelligence (DGCI&S)**.
- **Food & Agriculture Organization (FAO)** maintains the information on area under cultivation of horticultural products, production & productivity for various countries in the world.

9.15 Challenges before Horticulture Sector: The horticulture sector in India is characterized by small, segregated farms with low per-hectare yields and huge post-harvest losses, owing to outdated practices. A past study by YES Bank showed India stored only two per cent of its horticulture products in temperature-controlled conditions, while China stored 15 per cent and Europe and North America stored 85 per cent of their products in such conditions.

9.16 Adequate cold storage facilities were available for just about 10 per cent of India's horticulture production. Of the total annual production, 30-40 per cent was wasted before consumption. During the peak production period, the gap between the demand and supply of cold storage capacity was huge.

9.17 As per National Centre for Cold Chain Development, "The biggest wastage happens during the transportation of horticulture products from the farm gate to mandis and thereafter. Storage solutions can be provided only near the mandis, and this does not solve the problem. The answer lies in minimizing the wastage that happens during transportation." From a farm gate to a consumer, a horticulture product passed through seven different distribution channels, and in every step, there was a loss of five-seven per cent.

9.18 Processing losses also abound. While China processed about 30 per cent of the food (fruits and vegetables) in 2009, the Indian food processing industry has been set a target of raising the level of processing perishable products from six per cent to 20 per cent by 2015. The \$70-billion Indian food processing industry is dominated by small and medium enterprises, which do not have the capacity to undertake large-scale processing of fruits and vegetables.

9.19 Recent initiatives of the government to open Foreign Direct Investment (FDI) in retail is expected to minimize some of these problems. It is expected that entry of international retail chains would improve the situation by augmenting the storage capabilities, processing facilities & through efficient distribution, thereby minimizing wastage and benefitting the farmers as well as the consumers through a more coordinated and systematic approach besides economy of scale operations.

9.20 Government is also taking steps to reduce food processing bottlenecks by augmenting processing and storage capabilities and making finance available. Agricultural and Processed Food Products Export Development Authority (APEDA) released financial assistance of Rs 38.50 Cr during the year 2013-14 under the Scheme for Infrastructure Development , sanctioned eleven common infrastructure projects and provided financial assistance to 7 exporters under various components of the Scheme. Under the PMO's initiative for Creation and Management of Cold Chain Infrastructure - Thrust area, APEDA created cold storage capacity of 3835 MT during the 2013-14.

References:

- Indian Horticulture Database 2014
- Annual Report 2013-14, Agricultural and Processed Food Products Export Development Authority (APEDA)