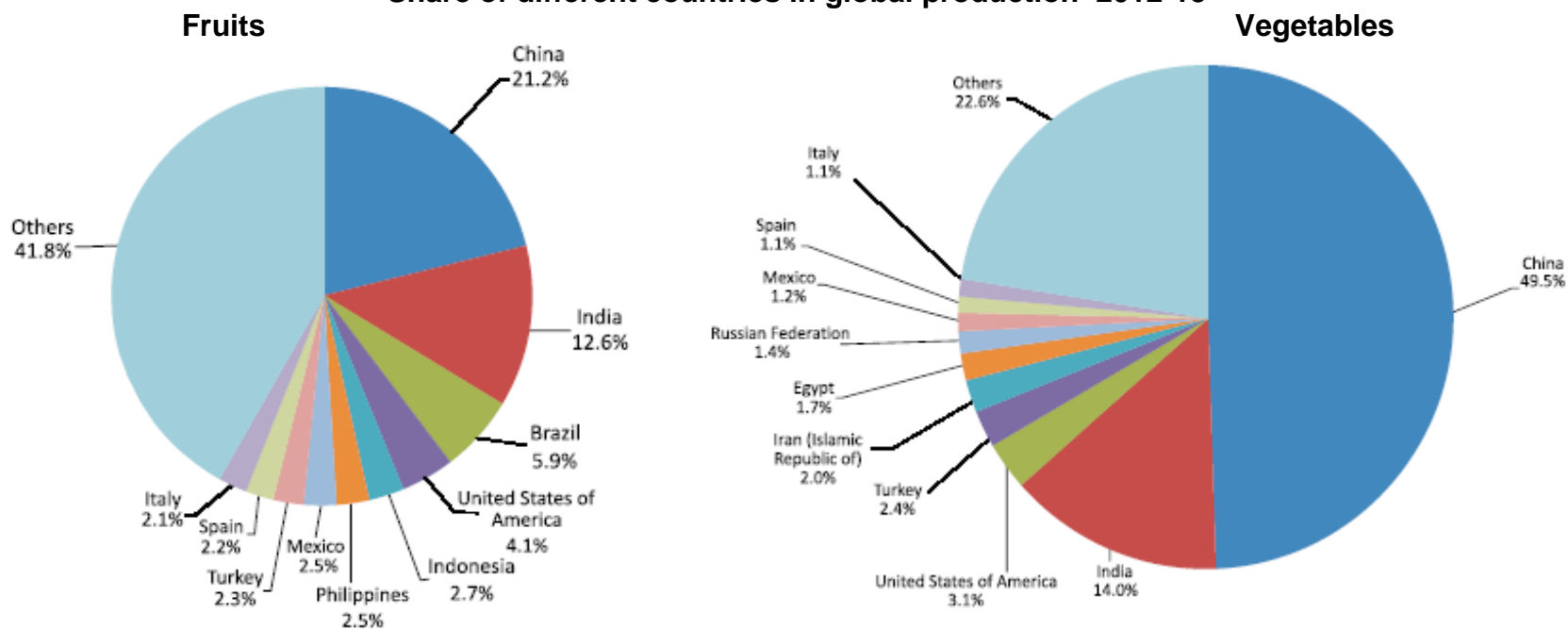


CHAPTER 9

HORTICULTURE

9.1 India & World : India has been bestowed with wide range of climate and physio-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 by 30 per cent in the last five years. This has placed India among the foremost countries in horticulture production, just behind China. During 2012-13, its contribution in the world production of fruits & vegetables was 12.6 % & 14% respectively. Total production of fruits during 2012-13 was 81.2 million tonnes while that of vegetables was 162 million tones whereas the second advance estimates put the production at 84.4million tonnes and 170.2 million tonnes respectively for 2013-14.

Share of different countries in global production 2012-13



Source : FAO & NHB, India

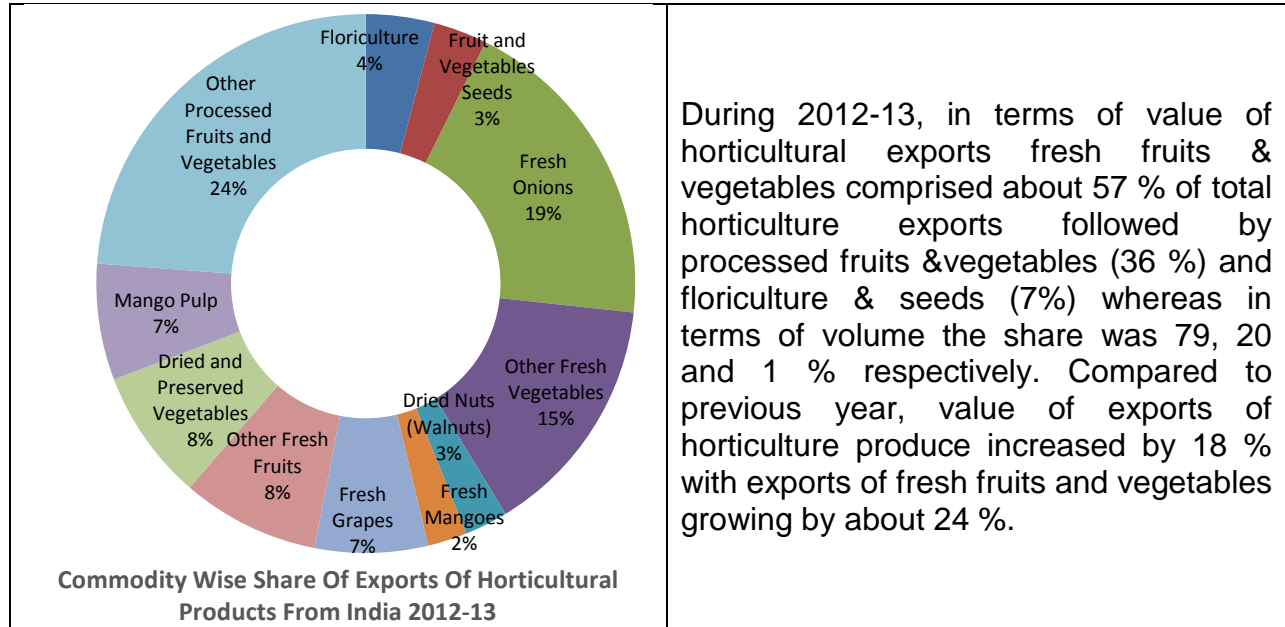
9.2 India is the largest producer, consumer and exporter of spices. India is also the largest producer of mango, banana, papaya, coconut, areca nut and cashew nut in the world .

9.3 India's significant horticulture production is despite its comparatively lower productivity. Both in case of fruits & vegetables productivity of India (11.6 & 17.6 tonnes per hectare respectively) is about half of the productivity of USA(23.3 and 32.2 tonnes per hectare). During 2012-13, its productivity was marginally better than the world average in case of fruits (11.3) whereas it was below the world average (19.7 tonnes per hectare) in case of vegetables . Compared to the leading producer of fruits & vegetables China, India lags behind significantly in vegetable productivity whereas its productivity in case of fruits equals that of China and in case of some fruits like grapes it is amongst the highest in the world.

Global Comparison in Area, Production & Productivity among leading producers 2012-13 (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	6982015	81285334	11.6	India	9205186	162186567	17.6
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)	57265135	646757638	11.3	World + (Total)	58971121	1159179443	19.7

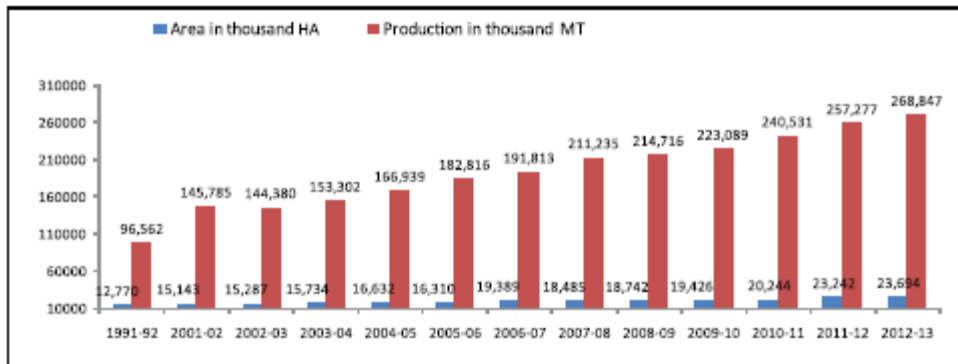
9.4 **Exports:** Besides meeting the increasing demand of the domestic population, which continues to grow , India exports some portion of its horticulture produce. During 2012-13 total exports of horticulture produce by India was 37.02 lakh metric tonnes which amounted to about Rs 105.9 billion. Except for 2010-11 when the exports of horticulture declined by about 7% , the export of horticulture produce has increased during the last five years.



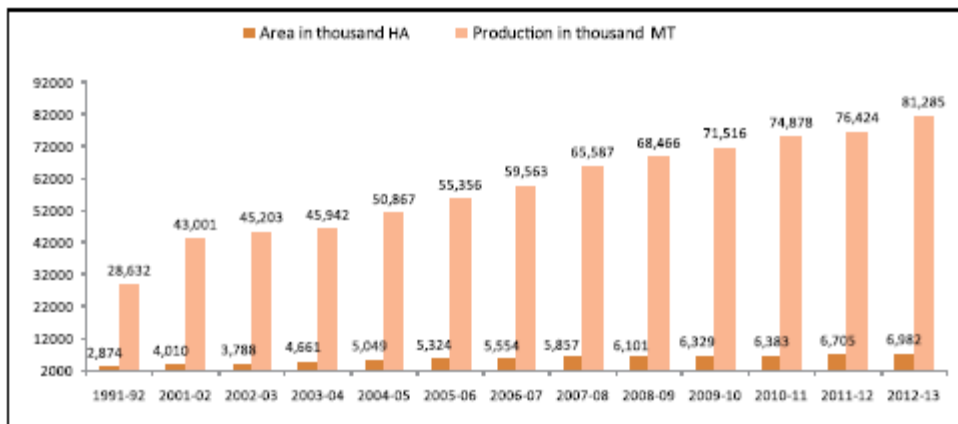
9.5 Trends in Horticulture Production & Present Status: During the last decade, area involved in production of horticultural crops has increased by about 55 % from 15,287 in 2002-03 to 23,684 thousand hectares in 2012-13 whereas the production has increased by about 86% from 144,380 thousand MT in 2002-03 to 268,847 thousand MT in 2012-13. Increase in production has far outpaced the increase in area. This is indicative of improved productivity. However there is still considerable scope of improvement in the same specially in case of vegetables where the productivity in case of India is significantly lower than the world average.

9.6 Among fruits, banana and mango accounted for more than half (55 %) of total fruit production during 2012-13, with production of banana alone accounting for about 33 %. Share of Citrus fruits was also significant and they accounted for about 12 % of overall food production. Among vegetables, potato production comprised the major share with 28 % of overall production & together with tomato(11%), onion(10%) and brinjal (8%), it accounted for about 57% of vegetable production. During 2012-13, the 3.7 % annual growth rate in production of vegetables was much less than 6.4 % growth rate in case of fruits. This was primarily on account of increased area under fruit crops. Overall annual growth rate in case of horticulture produce was 4.5 % aided by 1.9 % increase in area under horticulture crops. Coconut accounted for about 92 % of plantation crop production during 2012-13 and production of Plantation Crops saw about 4 % annual growth. Among spices, chillies and garlic (with about equal share in production) accounted for about 45 % of total spice production during 2012-13. Turmeric (17%), ginger (12%) and coriander (9%) also contributed significantly in total spice production. Major spices in aggregate saw a decrease of about 3.5 % in production on the count of decrease in acreage.

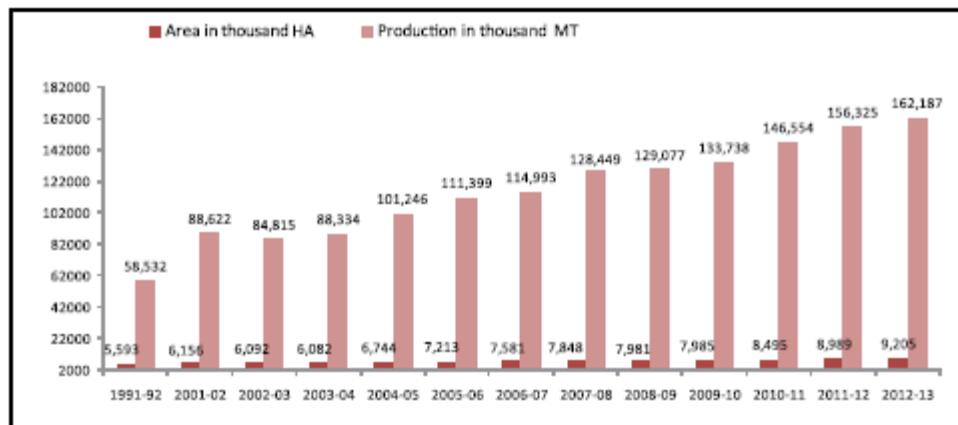
Area and Production Growth Trends for Horticulture Crops

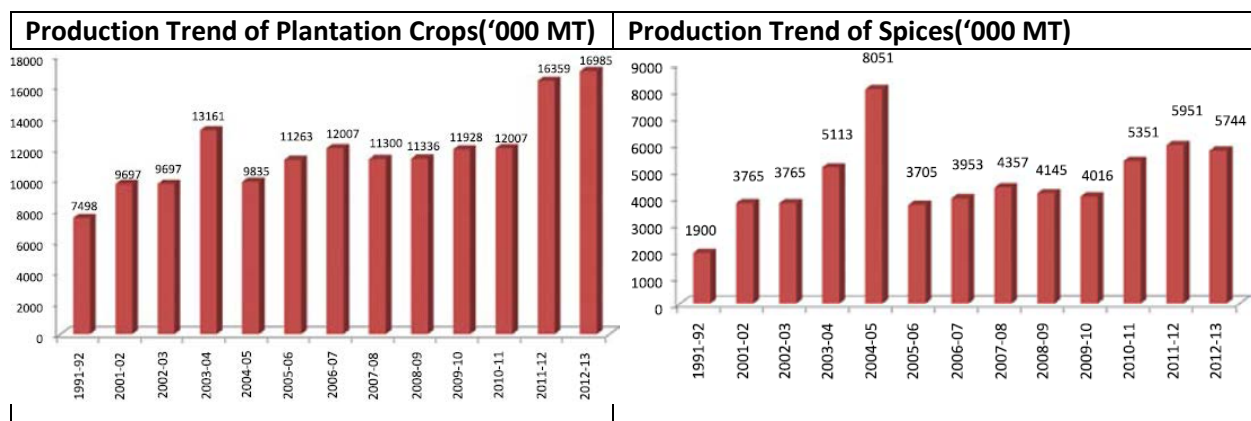


Area and Production Growth Trends for Fruit Crops



Area and Production Growth Trends for Vegetables Crops





9.7 State Wise Comparison: During 2012-13, Andhra Pradesh led in fruits production with a share of about 17 % followed by Maharashtra (12% share) and Gujrat (10 % share).Tamil Nadu , Karnataka, UP, MP each contributed more than 5 % in total fruit production whereas West Bengal & Kerala were also significant fruit producing states with each contributing about 3-4%.Whereas West Bengal led in case of vegetable production with about 16 % share , followed by UP (12 % share) and Bihar (10 % share) . Madhya Pradesh, Andhra, Gujarat & Odisha each contributed more than 5 % in total vegetable production with Maharashtra, Tamil Nadu & Karnataka also contributing about 5 % .West Bengal accounted for about a third of cut flower production whereas Tamil Nadu(18 % share) , Andhra (13% share) ,Karnataka (12 % share) & MP (11% share) led in production of loose flowers. Maharashtra accounted for about 30 % of cashewnut production, Karantaka led in Arecanut with 59 % share in production , Kerala produced 56 % of total cocoa while Tamil Nadu (30% share), Kerala(26 % share) and Karnataka (27 % share), all the three contributed significantly in coconut production during 2012-13 .Andhra Pradesh was the leading spice producing state during 2012-13 & also accounted for about 38 % in production of citrus fruits & 31 % of papaya production. J&K accounted for more than 70 % in apple production, Maharashtra for more than 80 % in production of grapes and Bihar contributed more than 44% in litchi production. UP & Andhra each accounted for about a quarter in mango production .West Bengal led in Brinjal production with 22 % share, 26 % share in cabbage & cauliflower each. In case of Onion, Maharashtra was the leading producer with 28% share in production followed by MP and Karnataka with share of 16 % & 14 % respectively whereas Andhra led in tomato production with 29 % share followed by Karnataka & MP, each , with share of about 10%.UP was the leading producer of potato accounting for about a third (32%) of total potato production. It was followed by West Bengal and Bihar which accounted for 26 % & 15 % share of potato production during 2012-13.

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 are 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 are included for area expansion whereas vegetables are covered through seed production cultivation, integrated Nutrient management, integrated pest management and organic farming.

9.9 All the states and the three Union Territories of Andaman and Nicobar islands, Lakshadweep and Puducherry are covered under the mission except the 8 North Eastern states including Sikkim and the States of Jammu & Kashmir, Himachal Pradesh and Uttarakhand. The latter are covered under the Horticulture Mission for the North East and Himalayan States. The scheme is being implemented in 372 districts in the country. During 2005-06 to 2009-10 an additional 16.57 lakh hectare of identified Horticulture crops have been covered. Apart from establishments of 2192 Nurseries for production of quality planting material 2.78 lakh hectare has been covered under rejuvenation of old orchards.

9.10 With the implementation of NHM and other schemes the productions of Horticulture crops have increased from 170.8 million tonnes in 2004-05 to 214.7 million tonnes in 2008-09. The per capita availability of fruits and vegetables has increased from 391 gram per day in 2004-05 to 466 gram per day in 2008-09.

9.11 Technology Mission for Integrated development of horticulture in North Eastern states, Sikkim, J&K, Himachal Pradesh and Uttarakhand

9.12 This scheme has launched in 2001-02 to address issues related to Production and productivity, marketing and processing of Horticulture crops in the North Eastern states. In 2003-04, the Mission was extended to 3 Himalayan states of Himachal Pradesh, Jammu & Kashmir and Uttarakhand. This scheme has now been renamed as **Horticulture Mission for North Eastern and Himalayan states**. Under this Mission 265435 persons including 53276 women have been trained so far.

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:** Directorate of Economic & Statistics (DES), Ministry of Agriculture, Government of India operates a Centrally Sponsored Scheme "Crop Estimation Survey on Fruits and Vegetables (CES-F&V)" for estimating area and production of horticulture crops. However, CES (F&V) covers only 7 fruits crops 5 vegetables crops and 2 spice crops from 11 states only.

- **The National Horticulture Board (NHB)** compiles and publishes annual data base for horticulture sector in respect of all the states and the crops.
- **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 : 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 recent 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 are available for just about 10 per cent of India's horticulture production. Of the total annual production, 30-40 per cent is wasted before consumption. During the peak production period, the gap between the demand and supply of cold storage capacity is a mind-boggling 25 million tonnes.

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 .

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- Indian Horticulture Database 2013