

Indian Horticultural Sector: Analysing The Growth Scenario

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Abstract- India among the emerging economies rely on agriculture for its economic and food survival. The post-independence era has observed a remarkable growth in the agriculture sector thereby providing food and income to more than half of the total population. The growth and development is obviously led by the science and technology implication measures along with the proper policy and planning strategies. This growth and development output more ever benefited the national level economy rather than the farmers or producers at smaller or marginal scale. It seems that most of farm dependent people for food and income in India are small or marginal farmers. The marginal agriculture land size limits them to cultivate the staple foods only rather than the commercial crops like fruits. However, due to the science and technology implications the productivity and production values of crops have favoured the farmers to experience the agricultural diversification thereby lessening the income vulnerability. The transition from agricultural to horticultural practices have led the economic growth much higher due to the high profit value cropping of fruits and vegetables. This paper attempts to understand the scenario of horticultural growth in India. It will analyse the production and productivity values from time to time thereby understanding the growth status of horticulture sector. The study argues that the increase in area and production in the horticulture sector is due to the high profit value of fruits and vegetables as compared to the agricultural commodities. The horticulture sector also relies more on labour and technology, thereby showing that the innovations and technologies in the sector also motivates the farmers to cultivate such crops.

Keywords- agriculture, horticulture, production and productivity.

I. INTRODUCTION

Horticulture is the science or art of cultivating fruits, vegetables, flowers, or ornamental plants. Etymologically, "horticulture" can be broken down into two Latin words: *hortus* (garden) and *cultus* (tilling). As William L. George explains in his definition of horticulture: "Horticulture involves five areas of study. These areas are floriculture

(includes production and marketing of floral crops), landscape horticulture (includes production, marketing and maintenance of landscape plants), floriculture (includes production and marketing of vegetables), pomology (includes production and marketing of fruits), and postharvest physiology which involves maintaining quality and preventing spoilage of horticultural crops." Horticulture is the cultivation of garden plants, fruits, berries, nuts, vegetables, flowers, trees, shrubs and turf. Horticulturists work for plant propagation, crop production, plant breeding, genetic engineering, plant biochemistry, plant physiology, storage, processing and transportation. They work to better crop yield, quality, nutritional value and resistance to insects, diseases, and environmental pollution. Horticulturalists use modern nurseries for the production of seedlings and mother plants. These plants propagated through different methods such as seeds, inarching, budding, veneer grafting, and patch budding and soft wood grafting.

II. LITERATURE OUTLOOK

Universal food demand is expected to be doubled by 2050, while production environment and natural resources are continuously shrinking and deteriorating. India as one of the major populous country which is becoming to take top rank in population should focus seriously on this issue, Across the larger part of the world, inadequate attention to agriculture has led to steep rise in food prices and increased food riots; and that has pushed an estimated 100 million more people into poverty. More than one billion people in the world already are earning less than one dollar a day, and more than 800 million are suffering from hunger. Majority of them live in rural areas, and are largely dependent on agriculture. Food crisis has aggravated further because of climate change and diversion of arable lands to urbanization, industrialization and also for producing bio-fuel. About 30% global emissions leading to climate change are attributed to agricultural activities, including land-use changes such as deforestation etc. (IAASTD, 2009).

Earlier, the World Development Report had also very clearly emphasized for attention on agriculture as "agriculture

has effectively served as a basis for growth and reduced poverty in many countries, but many more countries could benefit, if governments and donors were to reverse years of policy neglect and remedy their underinvestment and disinvestment in agriculture” (The World Bank, 2007). The experience from BRICS countries indicates that a one percentage growth in agriculture is at least two to three times more effective in reducing poverty than the same growth emanating from non-agriculture sectors.

The increasing divergence between the growth trends of the total economy and that of agriculture & allied sectors suggests an under performance by agriculture (Fig 1). It is also significant that unlike the overall economic growth pattern, agricultural performance in India has been quite volatile during 2000-01 to 2010-11 was 1.6 compared to 1.1 during 1992-93 to 1999-2000).

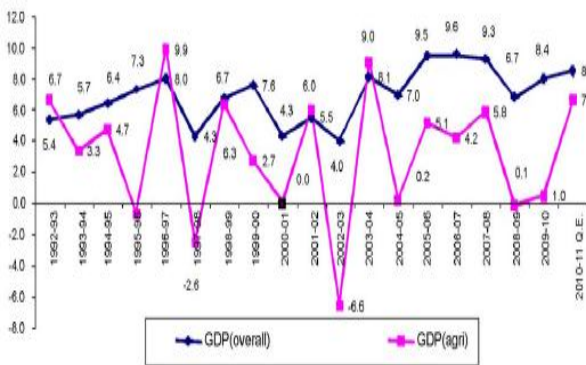
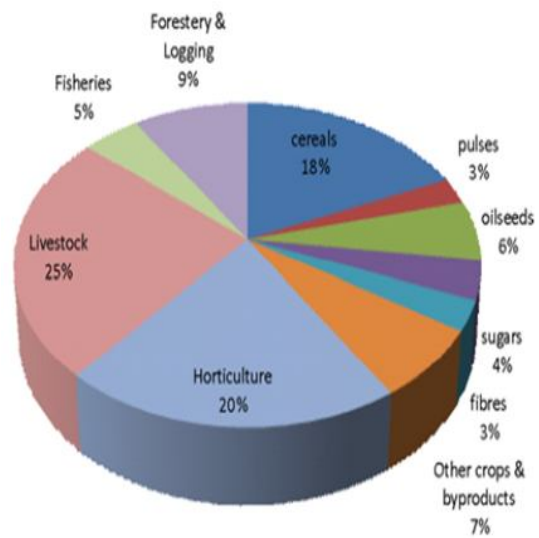
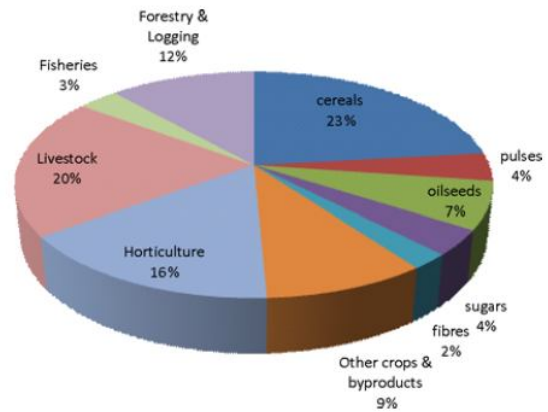


Figure 1: Comparative Performance of Growth of GDP and Agri-GDP

Source: Central Statistics Organisation (2011).

Structural change in the composition of agriculture leading to a diversification of Indian agriculture into horticulture, livestock and fisheries since the 1990s is a landmark development with great challenges and unlimited opportunities. The share of livestock in total output from the agriculture and allied sectors has increased from 20% in Triennium Ending (T.E.) 1990-91 to 25% in T.E. 2009-10 (at 2004-05 prices). Currently foodgrains constitute about one fifth of the total value of output from the agriculture & allied sector which is less than the contribution from the livestock sector and almost equal to that of the horticulture sector (Fig.2). The shares of fruits & vegetables and livestock have shown an increasing trend in recent years implying that they have been growing at a much faster rate than the traditional crops sector.



2 (a) 1990-1991
2 (b) 2009-2010

Figure 2: Composition (%) of Output of Agriculture & Allied Sectors for 1990-91 and 2009-2010

Source: Central Statistics Organisation (2011).

Percentage Share of Horticulture Output in Agriculture is more than 33%. Over the Last Decade, The Area Under Horticulture grew by about 2.7 % Per Annum and Annual Production Increased by 7% Production of Horticulture Crops have Outpaced the Production of Food Grain Since 2012-13. The Economic Survey 2015-16 emphasized that the scenario of horticulture crops in India has become very encouraging. The percentage share of horticulture output in agriculture is more than 33 per cent. Under the purview of agriculture and allied activities, the share of plan outlay for horticulture, which was 3.9 per cent during Ninth Plan, has increased to 4.6 per cent during the Twelfth Plan. India has witnessed voluminous increase in horticulture production over the last few years. Significant progress has been made in area expansion resulting in higher production.

Over the last decade, the area under horticulture grew by about 2.7 per cent per annum and annual production increased by 7.0 per cent. During 2013-14, the production of horticulture crops was about 283.5 million tonnes from an area of 24.2 million hectares. Out of the six categories e.g., Fruits, Vegetables, Flowers, Aromatic plants, Spices and Plantation Crops, the highest annual growth of 9.5 per cent is seen in fruit production during 2013-14. The production of vegetables has increased from 58,532 thousand tonnes to 1,67,058 thousand tonnes since 1991-92 to 2014-15(3rd AE). India witnessed sharper increase in acreage in horticulture crops compared to food grains over the last five years (from 2010-11 to 2014-15) the area under horticulture crops increased around 18 per cent compared to an expansion of area under food grains by 5 per cent during the stipulated period. The production of horticulture crops have outpaced the production of food grain since 2012-13. The main factors responsible for significant growth in area under fruits and vegetables include higher return relative to other crop groups, higher demand for fruits and vegetables, big push from the government through National Horticulture Mission and Horticulture Mission for North-East and Himalayan States (Sharma and Jain, 2011).

III. PRODUCTION AND GROWTH ANALYSIS

India has witnessed voluminous increase in horticulture production over the last few years. Significant progress has been made in area expansion resulting in higher production. Over the last decade, the area under horticulture grew by about 2.7% per annum and annual production increased by 7.0%. During 2013-14, the production of horticultural crops was about 283.5 million tonnes from an area of 24.2 million hectares (ha) (see figure 3). Out of the six categories, that is, fruits, vegetables, flowers, aromatic, spices and plantation crops, the highest annual growth of 9.5% is seen in fruit production during 2013-14 (see figure 4). The production of vegetables has increased from 58,532 thousand tonnes to 168,300 thousand tonnes since 1991-92 to 2014-15 (2nd advance estimates) as depicted in figure 3 below.

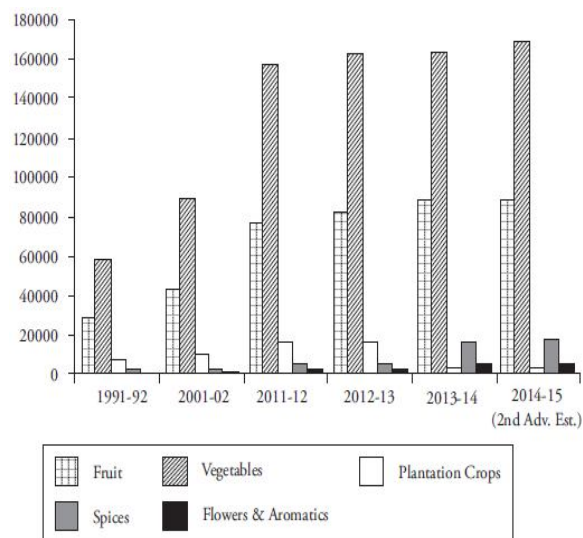


Figure 3: production of various horticultural crops (000 Tonnes)

Source: Indian Horticulture Database, National Horticulture Board (NHB) and Horticulture Statistics Division, Department of Agri. & Cooperation (2015).

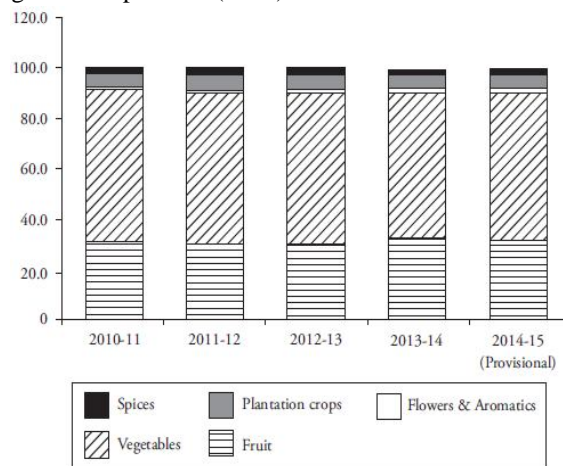


Figure 4: production share of various horticultural crops million tonnes

Source: Sources: (1) Horticulture: Indian Horticulture Database, NHB for 2001-02 to 2009-10 and Horticulture Statistics Division, DAC&FW for 2010-11 to 2014-15 (Prov.) (2) Foodgrains: Directorate of Economics and Statistics.

The post-independence era made a great development in the sector especially by science and technology implications, when it was carved as separate sector from the agriculture. The five year plans have strategically and systematically focused on the various factors to be incorporated to gain promotion in the sector. The R&D efforts, huge fund allocation, policies etc. in the form of schemes and projects have led the positive sign of growth in the sector.

Such efforts made India capable to stay among top 5 countries in production of horticultural products. The overall area, production and productivity of fruits and vegetables in India from 1991 to 2015 is given in the table 1 below indicating a positive growth in such sectors especially the vegetables.

Table 1: All India Area, Production and Productivity of fruits and vegetables

Year	Fruits			Vegetables		
	A	P	Pdy.	A	P	Pdy.
1991-92	2874	28632	9.96	5593	58532	10.47
2001-02	4010	43001	10.72	6156	88622	14.40
2002-03	3788	45203	11.93	6092	84815	13.92
2003-04	4661	45942	9.86	6082	88334	14.52
2004-05	5049	50867	10.07	6744	101246	15.01
2005-06	5324	55356	10.40	7213	111399	15.44
2006-07	5554	59563	10.72	7581	114993	15.17
2007-08	5857	65587	11.20	7848	128449	16.37
2008-09	6101	68466	11.22	7981	129077	16.17
2009-10	6329	71516	11.30	7985	133738	16.75
2010-11	6383	74878	11.73	8495	146554	17.25
2011-12	6705	76424	11.40	8989	156325	17.39
2012-13	6982	81285	11.64	9205	162187	17.62
2013-14	7216	88977	12.33	9396	162897	17.34
2014-15 (2nd Adv. Est)	6358	88819	13.97	9541	168300	17.64

Source: (1) Indian Horticulture Database, National Horticulture Board (NHB); (2) Horticulture Statistics Division, Department of Agri. & Cooperation. (**Note:** A = Area in '000 ha, P = Production in '000 Tonne and Pdy. = Productivity in Tonne/ha)

The Indian horticulture is bestowed with diverse kinds of fruits and vegetables. Table 2 shows the crop-wise Area and Production of fruits, 2012-13 to 2014-15 (Area in '000 ha and Production in '000 tonne). Among the fruits mango and banana are produced at the major share. As most of the agricultural land in India is suitable for mango and banana production.

Table 2: Crop-wise Area and Production of fruits, 2012-13 to 2014-15 (Area in '000 ha and Production in '000 tonne)

Crops	2012-13		2013-14		2014-15 (2nd Adv. Est.)	
	Area	Production	Area	Production	Area	Production
Fruits						
Almond	21	9	21	13	21	18
Amla/Gooseberry	108	1266	104	1225	107	1319
Apple	311	1915	313	2498	320	1885
Banana	776	26509	803	29725	880	30008
Ber	41	438	48	663	56	584
Citrus:						
(i) Lime/Lemon	255	2524	286	2835	269	3020
(ii) Mandarin	311	2906	330	3431	310	3704
(iii) Sweet Orange (Mosambi)	323	3520	335	3886	278	4526
(iv) Others	153	1140	126	994	130	931
Citrus Total (i to iv)	1042	10090	1078	11147	987	12181
Custard Apple	20	136	22	165	22	174
Grapes	118	2483	119	2585	88	2454
Guava	236	3198	268	3668	251	4083
Jackfruit	67	1176	158	1573	149	2037
Kiwi	4	7	5	8	5	9
Litchi	83	580	84	585	90	564
Mango	2500	18002	2516	18431	2217	18506
Papaya	132	5382	133	5639	126	5508
Passion Fruit	18	101	19	124	19	126
Peach	19	98	18	94	19	95
Pear	42	295	42	317	44	308
Picanur	-	-	1	0	2	0
Pineapple	105	1571	110	1737	113	1892
Plum	24	74	23	76	25	73
Pomegranate	113	745	131	1346	143	1774
Sapota	164	1495	177	1744	121	1457
Strawberry	-	-	0	2	1	5
Walnut	123	233	122	241	125	206
Others	915	5482	901	5372	429	3553
Total Fruits	6982	81285	7216	88977	6358	88819

Source: Horticulture Statistics Division, DAC&FW.

Among the vegetables, production and productivity are mostly concerned. As the population increase directly influences the agricultural production. The production of different types of vegetables is given as in the table 3 below.

Table 3: Crop-wise Area and Production of vegetables, 2012-13 to 2014-15 (Area in '000 ha and Production in '000 tonne)

Crops	2012-13		2013-14		2014-15 (2nd Adv. Est.)	
	Area	Production	Area	Production	Area	Production
Vegetables						
Beans	124	1269	138	1370	134	1165
Bitter Gourd	83	940	79	807	122	1204
Bottle Gourd	114	2090	103	1819	111	1836
Brihjal	722	13444	711	13558	680	12706
Cabbage	372	8534	400	9039	379	8597
Capsicum	29	153	30	167	30	172
Carrot	64	1145	62	1074	68	1093
Cauliflower	402	7887	434	8573	414	7897
Cucumber	41	641	43	678	44	685
Chillies (Green)	-	-	140	1687	170	1983
Elephant Foot Yam	-	-	5	222	10	266
Muskmelon	42	868	37	761	39	825
Mushroom	-	-	-	17	0	20
Okra/Lady's Finger	531	6350	533	6346	507	5853
Onion	1052	16813	1204	19402	1181	18924
Parwal/Pointed Gourd	-	-	13	169	14	187
Peas	421	4006	434	3869	459	4328
Potato	1992	45344	1973	41555	2060	44893
Radish	170	2411	173	2485	183	2490
Pumpkin/Sitaphal/Kaddu	16	373	20	416	47	1031
Sweet Potato	112	1132	106	1088	111	1138
Tapioca	207	7237	228	8139	253	8542
Tomato	880	18227	882	18736	791	17398
Watermelon	81	1789	75	1810	82	2038
Others	1751	21535	1574	19108	1654	22829
Total Vegetables	9205	162187	9396	162897	9541	168300

Source: Horticulture Statistics Division, DAC&FW.

The overall production of fruits and vegetables in India is given in the figure 5 and figure 6 below. From both the production sectors, it is seen that there is an increasing trend in both the area and production of fruits and vegetables.

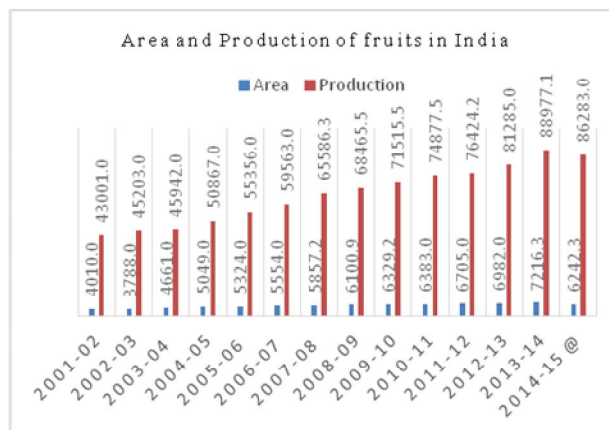


Figure 5: Area and Production of fruits in India

Source: Horticulture Statistics Division, Department of Agriculture, Cooperation and Farmers Welfare. Ministry of Agriculture

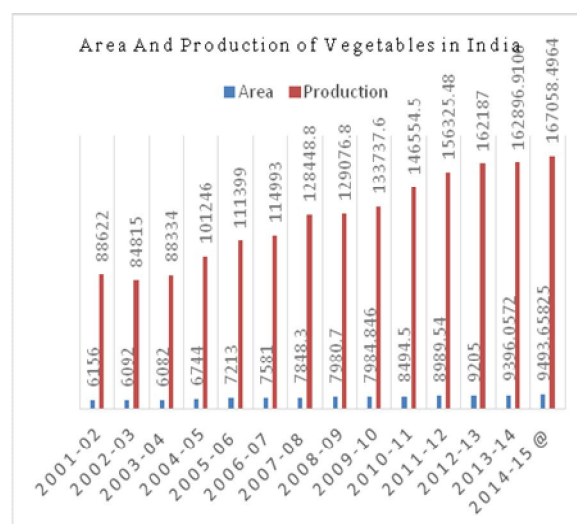


Figure 6: Area and Production of vegetables in India

Source: Horticulture Statistics Division, Department of Agriculture, Cooperation and Farmers Welfare. Ministry of Agriculture.

IV. CONCLUSION

The horticulture as a diverse sector encompasses the cultivation of diverse range of crops especially fruits, vegetables, flowers, aromatic and medicinal plants. In India most of the states as per their geographical conditions are favourable to produce region specific crops. The sector has received a worthy focus and support from the government policy, which is reflected from its prominent growth. It has helped various farmers to support their socio-economic livelihood strategies. The horticulture sector has shown a great positive trend in growth. However, it needs more

implementation of innovations, science and technology to attain more economy and provide food and income to rural populations. The farmers practising horticulture need proper access to markets, facilities like warehouses and cold storages to avoid post-harvest loss, and credit to manage price risks and avoid distress sales.

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