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TRENDS AND SCOPE OF INDIAN HORTICULTURE: AN EMPIRICAL STUDY

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Abstract

The horticulture comprises of study of vegetable, fruits, flowers, medicinal and aromatic plants, plantation crops and spices. Out of which vegetables occupied first position in both area and production. The collective area and production of horticulture crops were 16.48 mha and 145.62 mt, respectively in 2002 which have considerably increased to 25.43 mha and 311.61 mt, respectively. The share of area by vegetables, fruits, plantation crops, spices and flowers, aromatic and medicinal plants were 40%, 26%, 15%, 15% and 4%, respectively in 2018. the share of production of vegetables, fruits, plantation crops, spices and flowers, aromatic and medicinal plants were 59%, 31%, 6%, 3% and 1%, respectively in 2018.Horticulture crops have more potential to generate revenue to the farmers as well as enhance the agriculture GDP to the national GDP. The compound annual growth rate of area covered by different horticulture crops were observed highest in flower, aromatic & medicinal plants and lowest in spices. The overall CAGR of area covered by horticulture crops were 2.70% during the mentioned period. The CAGR of production of different horticulture crops were reported highest in flower, aromatic & medicinal plants, and lowest in plantation. The CAGR of total production of horticulture crops were 4.86% during the mentioned period.
***Keywords*:** Horticulture, CAGR, area, production, GDP

Introduction

Horticulture is the most diverse branch of agriculture dealing with the cultivation of fruits, vegetables, ornamental, spices, medicinal, aromatic and plantation crops. The word is derived from the Latin *hortus*, "garden," and *colere*, "to cultivate". The horticulture shares 33% to the agriculture GDP (Anonymous, 2018). National Horticulture Mission was launched during the year 2005–06 by the Government of India in the tenth five year plan to enhance the growth and production of the horticultural sector. As per Indian Horticulture Database (2017-18), an area of 6.5 mha and 10.25 mha are covered by fruit and vegetables crops producing 97.3 mt of fruits and 184.39 mt of vegetables annually. To meet the estimated demand of the increasing population by 2020, still 50 mt of fruits and 143 mt of vegetables would be required to be produced. Floriculture is being observed as sunrise industry includes florist trade, potted plants, nursery plants, bulb and seed products under an area of 0.3 mha with a production of 2.78 mt. In almost all the metropolitan cities, there is a soaring business of flowers. These flowers are mostly grown for cut flowers (0.82 mt) and loose flower (1.96 mt). Plantation crops occupying an area of 3.7 mha with a production of 18.08 mt are other potential sector with scope of employment generation, foreign exchange earnings and overall supporting livelihood for the sustenance of mankind. These crops form the mainstay of lives especially in coastal areas of the country where predominating stands of plantation crops are found. Another most emerging industry is that of medicinal and aromatic plants. Plants have bioactive constituents like alkaloids, glycosides, steroids, phenols, tannin, antioxidants, etc. Of nearly 4, 50,000 species of higher plants available, only a small fraction have been investigated for medicinal properties under an area of 0.72 mha with a production of 0.87 mt. India known as the home of spices is also an integral part of horticulture covering an area of 3.88 mha and 8.12 mt of production (Anonymous, 2018). Though India is sufficient in horticultural crop production but there is further scope and opportunity to increase the production for the projected future demand. With this view, the present study is conducted to analyze the trends and prospects of horticulture in India.

Materials and Methods

The data have been collected from different institutional sources and major of the data are collected from National Horticulture Board reports. To analyze the trends of area and production of different horticultural crops the percentage change and Compound Annual Growth Rate (CAGR) have been calculated through the following formulae;

% change = [(Final value-Initial value)/Initial value]*100

CAGR = {(Final value/Initial value)^(1/n)}-1 and

CAGR (%) = [{(Final value/Initial value)^(1/n)}-1]*100

Where, n is number of year

Results and Discussion

The horticulture comprises of study of vegetable, fruits, flowers, medicinal and aromatic plants, plantation crops and spices. Out of which vegetables occupied first position in both area and production. Horticulture crops have more potential to generate revenue to the farmers as well as enhance the agriculture GDP to the national GDP.

Trends and present scenario of Horticulture crops

The perusal of Table 1 implies that the area covered by fruits, vegetables, flowers, aromatic and medicinal plants, plantation crops and spices were 4.01 mha, 6.16 mha, 0.11 mha, 2.98 mha and 3.22 mha respectively in 2002 which have noticeably increased to 6.51 mha, 10.26 mha, 1.04 mha, 3.74 mha and 3.88 mha, respectively in 2018. The collective area and production of horticulture crops were 16.48 mha and 145.62 mt, respectively in 2002 which have considerably increased to 25.43 mha and 311.61 mt, respectively.

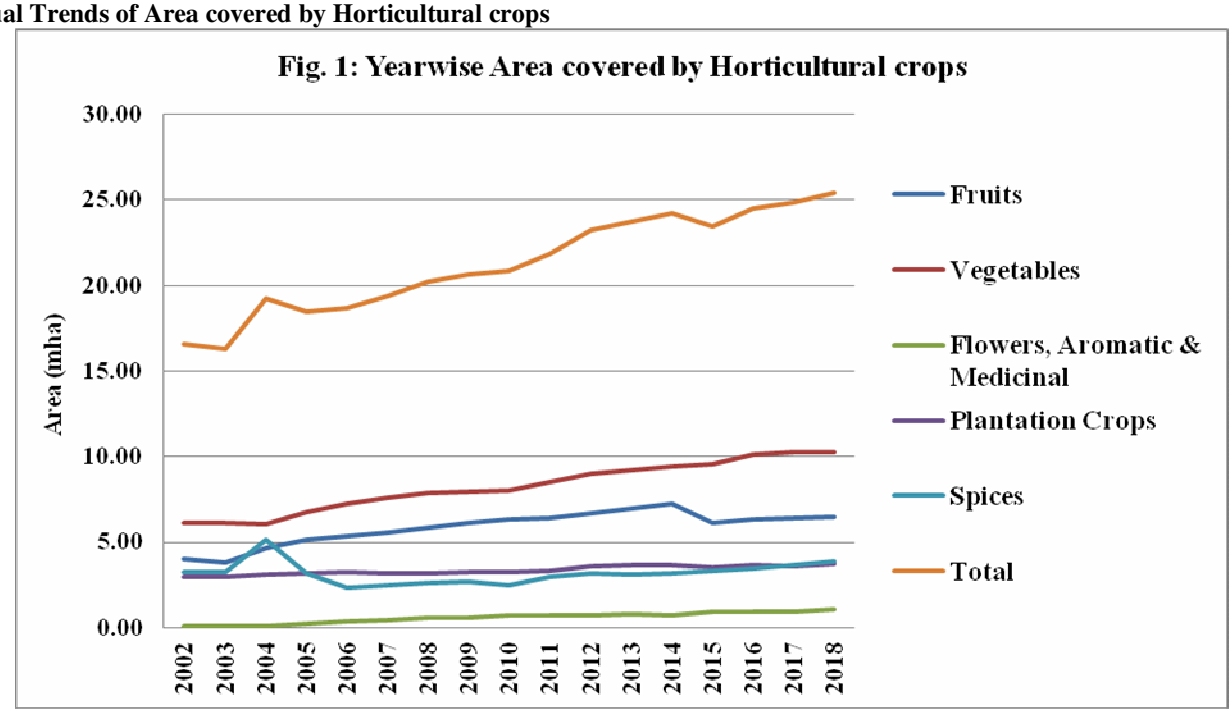
Table 1: Area and Production of Horticulture Crops – All India

Area in million hectare (mha)
Production in million tones (mt)

Year	Fruits		Vegetables		Flowers, Aromatic & Medicinal		Plantation Crops		Spices		Total	
	A	P	A	P	A	P	A	P	A	P	A	P
2002	**4.01**	**43.00**	**6.16**	**88.62**	**0.11**	**0.54**	**2.98**	**9.70**	**3.22**	**3.77**	**16.48**	**145.62**
2003	3.79	45.20	6.09	84.19	0.07	0.74	2.98	9.70	3.22	3.77	16.15	143.59
2004	4.66	45.94	6.08	88.33	0.10	0.58	3.10	13.16	5.16	5.11	19.10	153.13
2005	5.16	50.99	6.74	101.25	0.25	0.82	3.15	9.84	3.15	4.00	18.45	166.89
2006	5.32	55.36	7.21	111.40	0.39	0.86	3.28	11.26	2.37	3.71	18.58	182.58
2007	5.55	59.65	7.58	114.99	0.47	1.06	3.21	12.01	2.45	3.95	19.26	191.66
2008	5.86	65.59	7.85	128.45	0.56	1.26	3.19	11.30	2.62	4.36	20.08	210.96
2009	6.10	68.47	7.98	129.08	0.60	1.42	3.22	11.34	2.70	4.15	20.59	214.44
2010	6.33	71.52	7.99	133.74	0.69	1.59	3.27	11.93	2.46	4.02	20.74	222.79
2011	6.38	74.88	8.50	146.55	0.70	1.64	3.31	12.01	2.94	5.35	21.83	240.43
2012	6.71	76.42	8.99	156.33	0.76	2.22	3.58	16.36	3.21	5.95	23.24	257.28
2013	6.98	81.29	9.21	162.19	0.79	2.65	3.64	16.99	3.08	5.74	23.69	268.85
2014	7.22	88.98	9.40	162.90	0.75	3.19	3.68	16.30	3.16	5.91	24.20	277.28
2015	6.11	86.60	9.54	169.48	0.91	3.14	3.53	15.58	3.32	6.11	23.41	280.91
2016	6.30	90.18	10.11	169.06	0.91	3.21	3.68	16.66	3.47	6.99	24.47	286.10
2017	6.37	92.92	10.24	178.17	0.97	3.36	3.60	17.97	3.67	8.12	24.85	300.55
2018	**6.51**	**97.36**	**10.26**	**184.39**	**1.04**	**3.65**	**3.74**	**18.08**	**3.88**	**8.12**	**25.43**	**311.61**
CAGR (%)	**3.07**	**5.24**	**3.24**	**4.69**	**15.37**	**12.75**	**1.43**	**3.97**	**1.17**	**4.92**	**2.70**	**4.86**

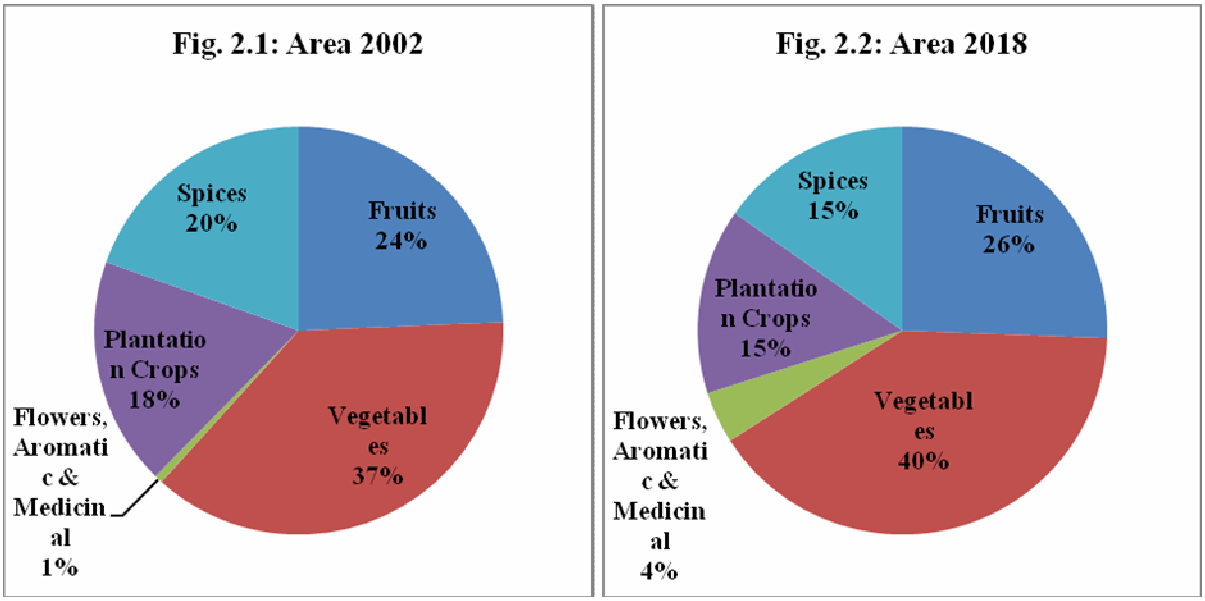
Note: A and P imply that Area and Production respectively and CAGR is Compound Annual Growth Rate

Annual Trends of Area covered by Horticultural crops



The annual trends of area covered under horticulture were observed from Fig. 1 which reported that the continuous increase about one and half times. The trends of area covered by fruits and vegetable also increased sharply. Whereas, the area under aromatic & medicinal plants, flowers, plantation crops and spices were slightly increased. The compound annual growth rates of area covered by different horticulture crops were observed which was highest in flower, aromatic & medicinal plants (15.37%) and lowest in spices (1.17%). The CAGR of area under fruits, vegetables and plantation were 3.07%, 3.24% and 1.43% respectively. The overall CAGR of area covered by horticulture crops were 2.70% during the mentioned period.

Fig. 2 : Area covered by Horticultural crops in the year 2018 as compared to year 2002



The Fig. 2 shows that the per cent changes in area covered by different horticulture crops from year 2002 to year 2018. The Fig. 2.1 and Fig. 2.2 indicate the share of various horticultural crops in 2002 and 2018 respectively. The perusal of above figure shows that amongst all horticulture crops highest area covered by vegetables (37%) followed by fruits (24%), spices (20%), plantation (18%) and flowers, aromatic and medicinal (1%) in 2002. Similarly the share of area by vegetables, fruits, plantation crops, spices and flowers, aromatic and medicinal plants were 40%, 26%, 15%, 15% and 4% respectively in 2018. The share of area under vegetables, fruits and flower, aromatic & medicinal were increased by 3%, 2% and 3% respectively. Whereas, the area shared by spices and plantation crops were considerably decreased by 5% and 3% respectively.

Annual Trends of Production of Horticultural crops

The CAGR of production of different horticulture crops were reported highest in flower, aromatic & medicinal plants (12.75%) and lowest in plantation (3.97%). The CAGR of production of fruits, vegetables and spices were 5.24%, 4.69% and 4.92% respectively. The CAGR of total production of horticulture crops were 4.86% during the mentioned period (Fig. 3).

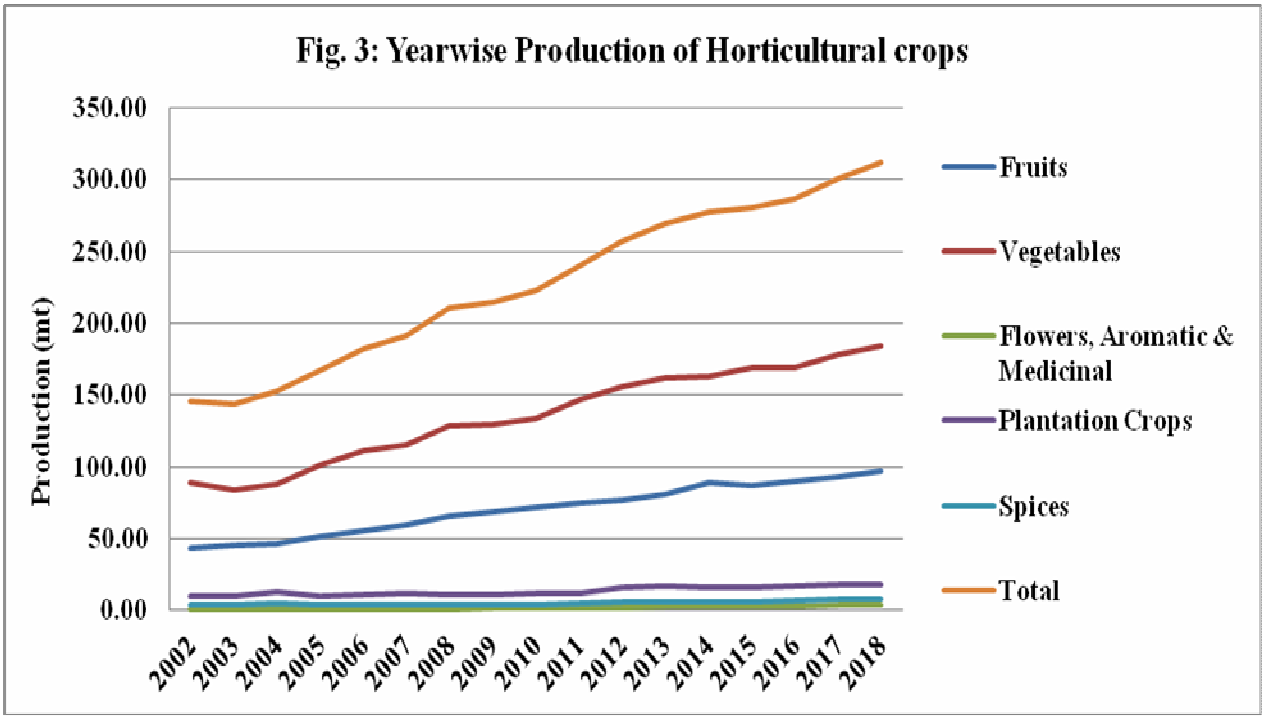
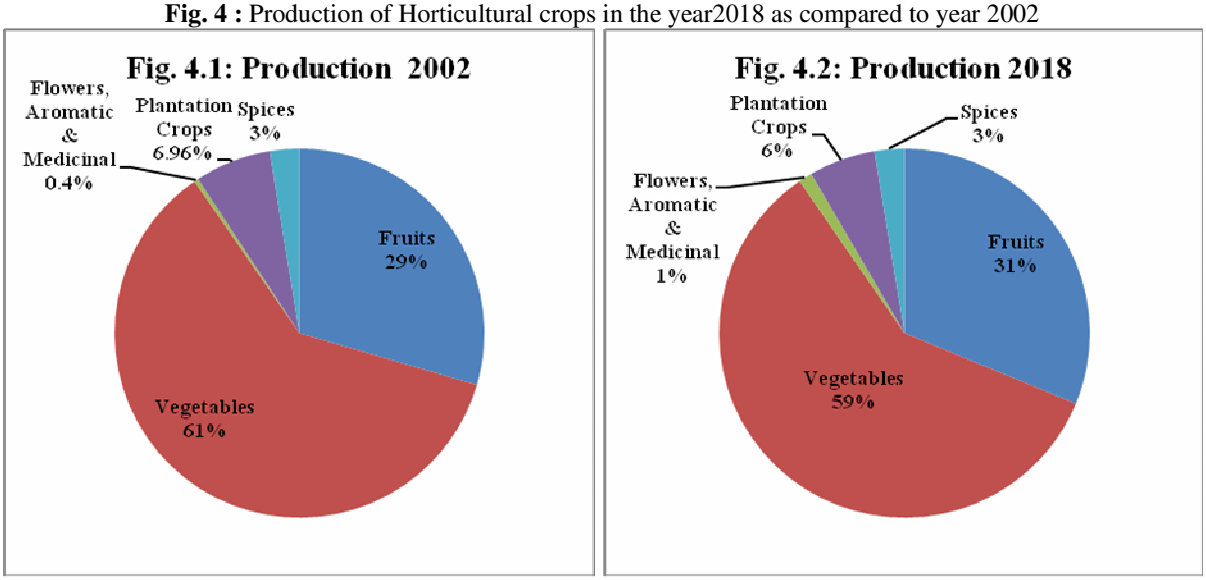


Fig. 4 : Production of Horticultural crops in the year2018 as compared to year 2002



The Fig. 4 shows that the per cent changes in production of different horticulture crops from year 2002 to year 2018. The Fig 4.1 and Fig. 4.2 indicate the share of production of different horticulture crops in 2002 and 2018 respectively. The perusal of above figure shows that amongst all horticulture crops highest production was observed of vegetables (61%) followed by fruits (29%), plantation (6.96%), spices (3%) and flowers, aromatic and medicinal (0.4%) in 2002. Similarly, the share of vegetables, fruits, plantation crops, spices and flowers, aromatic and medicinal plants production were 59%, 31%, 6%, 3% and 1%, respectively in 2018. The share in production of fruits and flower, aromatic & medicinal were increased by 2% and 0.6% respectively. Whereas, the production share of vegetables and plantation crops were decreased by 2% and almost 1% respectively. And, the share of production almost remained constant for spices (3%).

Conclusion

The share of horticulture crops in agriculture GDP increased considerably during last two decades. The growth of production is slightly higher than the growth of area covered; therefore the productivity has been increased during last two decades because of advancement in production technology. The compound annual growth rate of area covered by different horticulture crops were observed highest in flower, aromatic & medicinal plants and lowest in spices. The overall CAGR of area covered by horticulture crops were 2.70% during the mentioned period. The CAGR of production of different horticulture crops were reported highest in flower, aromatic & medicinal plants, and lowest in plantation. The CAGR of total production of horticulture crops were 4.86% during the specified time. Therefore, the experiment suggests that the growth of productivity is still slow and has to adopt the improved production technologies. It also observed that there is need to give more emphasis on flower, aromatic & medicinal plants being high remunerative crops and futuristic crops.

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