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Horticulture in India: A focus for two decades from 1991

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ABSTRACT: The study covers area, production and productivity of horticulture in India during the selected period of the study. The findings would help to understand the trends and set future course of action with regard to development of horticulture in India. In India, demand of horticultural crops and their export opportunities have been continuously increasing. It is felt that the significance of the crops which are becoming highly remunerative due to its price, especially horticultural crops. The study finds that the focus will be needed on the interstate variations of production of horticultural crops.

KEYWORDS: area, production, productivity, growth rate, crop.

1 INTRODUCTION

Horticulture is one form of diversification. Horticultural crops have been referred to as "garden crops". This classification are those grown under any of the fields of horticulture such as floriculture or vegetable crops production, pomology or fruit crops production, and ornamental horticulture (floriculture and landscape horticulture), as well as spices and medicinal plants. Horticulture literally means garden culture or culture of garden crop. The horticulture sector encompasses a wide range of crops e.g., fruit crops, vegetables crops, potato and tuber crops, ornamental crops, medicinal and aromatic crops, spices and plantation crops.

The importance of horticulture in improving the productivity of land and also providing ample opportunities for sustaining large number of agro-industries which generate substantial employment opportunities, improving economic conditions of the farmers and entrepreneurs, enhancing exports and, providing nutritional security to the people, is widely acknowledged. Horticultural products are generally utilized with high moisture content and are therefore highly perishable. These crops can be defined as "intensively cultured plants directly used by man for food, for medicinal purposes, or for esthetic gratification". Intensive culture means a large input of capital, labor and technology per unit area of land (Janick, 1972).

Diversification of agriculture has been taking place in several forms in India. Horticulture is one form of diversification. However, horticultural development had not been a priority in India until recent years. In the period 1948-80, the main focus of the country was on cereals.

much planned efforts had not been made for horticultural development, except for some technical support and development efforts for specific commodities like spices, coconut and potato. During 1980-92 there was consolidation of institutional support and a planned process for the development of horticulture. It was in the post-1993 period that a focused attention was given to horticulture development through an enhancement of plan allocation and knowledge-based technology (NHB, 2005).

Horticulture, has gained commercial tone in recent years and is an important component of Agriculture, having significant share in the economy of the country. India has the advantage of diverse agro-climatic conditions which enables it to produce a wide range of horticultural crops round the year. Horticulture contributes nearly 28 per cent of GDP in agriculture and 54 per cent of export share in agriculture. In past one decade, the change in cropping pattern is more towards the horticulture

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sector and commercial crops. In India, demand of horticultural crops and their export opportunities have been continuously increasing. It is felt that the relative significance of the crops which are becoming highly remunerative due to price factor, especially horticultural crops, should be increased in the cropping pattern mix, as there is a positive nexus between increases. Fruits and vegetables are the largest sub-sector of horticultural crops in the relevance of such crops and growth in overall output (Joshi et a1. 2006 and Birthal et a1., 2007). This study would be proceeded with the following objective like to analyze the trends in area, production and productivity of horticultural crops in India. In order to accomplish the objective the study makes use of secondary data. The data were collected from various reports of Horticulture Data Base published by National Horticulture Board, Ministry of Agriculture, and Government of India, reports published by Directorate of Economics & Statistics and Directorate General of commerce Intelligence and Statistics. Data were also gathered from publications of Economic & Political Weekly Research Foundation. The data used for analysis are year wise data started from the period of introducing Globalization period that is 1991-92 to 2009-10. The data on area, production, productivity and exports of horticulture for India are used. Data on area, production and productivity of select crops were also used in the analysis. To understand states' share, data pertaining to each state of India on a particular point (recent year) were used. The statistical tool like annual growth rate is used to portray trends in the variables under study. The data (including computed) are tabulated and tabular analysis is carried out.

2 ANALYSIS AND DISCUSSIONS

2.1 AREA UNDER HORTICULTURAL CROPS: CROP WISE

In this section the trends in area under select horticultural crops in India are analyzed. The data with growth rate for select crops viz., fruits, vegetables, plantation, and spices are given in Table 1.

Table 1
Area Under Horticultural Crops: Crop Wise Growth Rate In India From 1991-92 To 2009-10

(Area in 000' hec)

YEAR	FURITS	VEGETABLES	PLANTATION CROPS	SPICES
1991-92	2874	5593	2298	2005
1992-93	3206 **(12)**	5045 **(-9.87)**	2337 **(2)**	2315 **(13.4)**
1993-94	3184 **(-1)**	4876 **(-3.3)**	2448 **(5)**	2472 **(6.3)**
1994-95	3246 **(2)**	5013 **(3)**	2546 **(4)**	2215 **(-12)**
1995-96	3357 **(3.4)**	5335 **(3)**	2733 **(7.3)**	2216 **(0.05)**
1996-97	3580 **(7)**	5515 **(3.4)**	2824 **(3.3)**	2372 **(7.04)**
1997-98	3702 **(3.4)**	5607 **(2)**	2847 **(1)**	2524 **(6)**
1998-99	3729 **(1)**	5873 **(5)**	2905 **(2)**	2531 **(0.27)**
1999-00	3797 **(2)**	5191 **(-12)**	2753 **(5.2)**	2500 **(-1.2)**
2000-01	3869 **(2)**	6250 **(20.4)**	2862 **(4)**	3200 **(22)**
2001-02	4010 **(4)**	6156 **(-1.5)**	2984 **(4)**	3220 **(1)**
2002-03	3788 **(-6)**	6092 **(-1)**	2584 **(0)**	3220 **(0)**
2003-04	4661 **(23)**	6082 **(-0.2)**	3102 **(4)**	5755 **(78.73)**
2004-05	5049 **(8.3)**	6744 **(11)**	3147 **(4)**	5909 **(2.68)**
2005-06	5324 **(5.4)**	7213 **(7)**	3283 **(4.3)**	2366 **(-59.96)**
2006-07	5554 **(4.3)**	7579 **(7)**	3207 **(-2.3)**	2448 **(3.3)**
2007-08	5857 **(5.4)**	7849 **(4.0)**	3190 **(-1)**	2617 **(6.4)**
2008-09	6101 **(4.2)**	7976 **(1.6)**	3217 **(1)**	2629 **(0.4)**
2009-10	6329 **(4.0)**	7985 **(0.1)**	3265 **(1.4)**	2464 **(-7)**

Source: National Horticulture Board, Ministry of Agriculture, Government of India

Figures in brackets are growth rates.

As far as fruits are concerned the area under fruits has increased over the study period. The growth rate of area under fruits posted only slow growth rate with fluctuations after 1992-93 (which registered 12 percent growth rate). But after 2000-01 the growth rate gained except during the year 2002-03. There is a decline in the growth rate after 2003-04. The growth

rate stood at 4.0 percent during the ending period of the study. It may be inferred that the growth rate of area under fruits showed fluctuations during the study period. But, the growth was slow during the first half of the study period and it was a little faster in the next half of the study period. The area under fruits increased from 2874 thousand hectares in 1991-92 to 6329 thousand hectares in 2009-10.

With regard to vegetables, it may be noted from the table that the area under vegetables was 5393 thousand hectares during the initial years of study i.e., 1991-92. It posted a slow growth rate after 1994-95 till 2003-04. But after the period the growth rate was positive. It may be concluded that the area under vegetables though registered slow growth rate and negative in a few years of study, in terms of absolute figures it has increased over the study period. The area under vegetables was 5393 thousand hectares during 1991-92 and it was 7985 thousand hectares in 2009-10.

As far as plantation crops are concerned, it may be noted that the growth rate was positive and considerable till 2005-06 (excluding 2002-03). Then it recorded a negative rate during 2006-07 and 2007-08. In the last two years of study it gained back**.** By and large it may be stated that the area under plantation has increased in absolute figures from 2298 thousand hectares during 1991-92 to 3265 thousand hectares during 2009-10. However the growth rate has been slow only.

It may be noted from the table that the area under spices was 2005 thousand hectares during 1991-92. It recorded a considerable growth rate till 1997-98. It gained back during 2000-01 and in 2003-04 the growth rate was noticeable by 3.8 percent. But after that with a little fluctuation the area under horticulture was reducing. The growth rate of area under spices dropped steeply as – 78.7 in 2003-04. It may be stated that the area under spices through has increased over the study period in absolute terms it posted negative figure in some periods. In the last six years of the study period it is declining.

2.2 TRENDS IN PRODUCTION OF HORTICULTURAL CROPS

The data on production of select horticultural crops in India for the period along with the growth rate are given in Table 2.

It may be noted from the table that the production of fruits was 28632 thousand tonnes during 1991-92. The growth rate of production of fruits was notable till 1995-96 (4 percent to 15 per cent). In the year 1996-97, the growth rate declined to -3 percent. It recorded an increase in 1997-98 and maintained positive growth till 1999-2000. In the years 2000-01 and 2001-02, the growth rate was negative as -5.1 and -0.3 respectively. Since 2002-03 the growth rate had been positive and notable. It may be concluded that the production of fruits in India was 28632 thousand tonnes in 1991-92 and it increased nearly by two and half times as 71516 thousand tonnes in 2009-10.

However the growth rate was fluctuating in between and especially in the middle years of study period it showed a negative growth rate.

The data regarding production of vegetables could be seen from the table. At the outset, it may be noted that the production of vegetables (in thousand tonnes) has increased from 58532 thousand tonnes in 1991-92 to 133738 thousand tonnes in 2009-10 thus recording a 2.28 fold increase over a period of 19 years. The growth rate of production was as high as 20.4 per cent during 2002-03. Like in the case of fruits the growth rate of vegetables was sluggish in the years 2001-02 and 2002-03. The growth rate of production however recovered and it was considerable in the remaining years.

It may be concluded that except a few years the production of vegetables showed positive growth with fluctuations in it. The production of vegetables was 58532 thousand tonnes in 1991-92 and it increased 2.28 fold as 133738 thousand tonnes in 2009-10.

With regard to plantation crops, it may be noted from the table that the quantity of production of plantation crops was 7498 thousand tonnes during 1991-92 and it increased to 11063 thousand tonnes during 2009-10 posting more than one and half a fold increase over 19 years. The growth rate of production increased in the initial three years of study period, but showed a stagnation till 2004-05 except the year 2003-04. Then the growth rate recorded and stood as 5.2 during the ending period of study 2009-10.

Table 2
Crop wise Growth rate of Production of Horticulture Crops in India from 1991-92 to 2009-10

(Production in 000 tonnes)

YEAR	FURITS	VEGE	PLANTATION	SPICES
1991-92	28632 (-)	58532 (-)	7498 (-)	1900 (-)
1992-93	32955 **(15)**	63806 **(9.1)**	8347 **(11.3)**	2291 **(21)**
1993-94	37255 **(13)**	65787 **(3.1)**	8666 **(6.2)**	2515 **(9.78)**
1994-95	38603 **(4)**	67286. **(3)**	9763 **(10.1)**	2477 **(1.51)**
1995-96	41507 **(8)**	71594 **(6.4)**	9360 **(-1.4)**	2410 **(-3)**
1996-97	40458 **(-3)**	75074 **(5)**	9730 **(1)**	2805 **(16)**
1997-98	43263 **(7)**	72683 **(-3.2)**	9449 **(-3)**	2801 **(-0.1)**
1998-99	44042 **(2)**	87536 **(20.4)**	11063 **(17)**	3091 **(10.3)**
1999-00	45496 **(3.3)**	90823 **(4)**	9204 **(-17)**	3023 **(-2.1)**
2000-01	43138 **(-5.1)**	93849 **(3.3)**	9458 **(3)**	3023 **(0)**
2001-02	43001 **(-0.3)**	88622 **(-6)**	9697 **(3)**	3765 **(25.4)**
2002-03	45203 **(5.1)**	84815 **(-4.2)**	9697 **(0)**	3765 **(0)**
2003-04	45942 **(3)**	88334 **(4.1)**	13161 **(36)**	5113 **(36)**
2004-05	50867 **(11)**	101246 **(15)**	9835 **(-25.2)**	8051 **(57.5)**
2005-06	55366 **(9)**	111399 **(10)**	11263 **(15)**	3705 **(-54)**
2006-07	59563 **(8)**	114993 **(3.2)**	12007 **(7)**	3953 **(7)**
2007-08	655557 **(10.1)**	128449 **(12)**	11300 **(-6)**	4357 **(10.2)**
2008-09	68466 **(4.3)**	129077 **(0.4)**	11336 **(0.3)**	4145 **(-5)**
2009-10	71516 **(4.4)**	133738 **(4)**	11928 **(5.2)**	4016 **(-3.12)**

Source: Economic Political Weekly Research Foundation, 2011

Figures in brackets are growth rates.

It may be concluded that the growth rate of quantity of production showed fluctuations. But by and large the production of plantation crops increased from 7498 thousand tonnes during 1991-92 to 11928 thousand tonnes during 2009-10 (1.6 fold increase).

The table 2 provides data on quantity of production of spices in India and its growth rate for the study period. It may be noted from the table that the production of spices was 1900 thousand tonnes during 1991-92 and it increased to 3091 thousand tonnes during 1998-99. In between there was remarkable increase to 5113 thousand tonnes during 2003-04 and to 8051 thousand tonnes during 2004-05. But in the subsequent two years it declined and in 2007-08 it regained. It stood at 4016 thousand tonnes in 2009-10. But it may be seen that in the last five years of the study production of spices shows a declining trend. It may be concluded that the production of spices was 1900 thousand tonnes during 1991-92 and it stood as 4016 thousand tonnes during 2009-10 (more than double fold). The production of spices was high during the years 2003-04 and 2004-05. But in the subsequent years it recorded a declining trend.

2.3 TRENDS IN PRODUCTIVITY OF HORTICULTURAL CROPS

Production per hectare of land area is the measure of understanding efficiency of any crop. As such in this section the productivity of horticultural crops in India is analyzed.

In this section, the productivity trends of select horticultural crops are analyzed viz., fruits, vegetables, plantation and spices. The details on productivity and its growth rate are shown in Table 3.

It may be noted from the table that the productivity per hectare of fruits was 10 metric tonnes per hectare in 1991-92. It showed an increasing trend with fluctuations up to 1999-2000. Then it declined a little in the subsequent two years. It recovered in the year 2002-03. It dropped in 2003-04 and gained in the subsequent years.

It may be concluded that the production of fruits (metric tonnes per hectare) has recorded an increase, though not steady, over the study period. The productivity of fruits was 10 metric tonnes per hectare in 1991-92 and it was 11.3 metric tonnes per hectare in 2009-10.

TABLE 3
Productivity of Select Horticultural Crops in India from 1991-92 to 2009-10

(Productivity in M.T/HEC)

YEAR	FURITS	VEGETA	PLAN	SPICES
1991-92	10 (-)	10.5 (-)	3.3 (-)	1 (-)
1992-93	10.3 **(3)**	12.6 **(20)**	3.6 **(9.1)**	1 **(0)**
1993-94	11.7 **(14)**	13.5 **(7.14)**	3.6 **(0)**	1.1 **(10)**
1994-95	11.9 **(12)**	13.4 **(-0.74)**	3.8 **(6)**	1.1 **(0)**
1995-96	12.4 **(4.2)**	13.4 **(0)**	3.5 **(-8)**	1.2 **(9.1)**
1996-97	11.3 **(-9)**	13.6 **(1.5)**	3.4 **(-3)**	1.1 **(-8.3)**
1997-98	11.7 **(4)**	13.0 **(-4.41)**	3.3 **(-3)**	1.2 **(9.1)**
1998-99	11.8 **(0.85)**	14.9 **(15)**	3.8 **(16)**	1.2 **(0)**
1999-00	12.0 **(2)**	15.2 **(2.01)**	3.3 **(-13.1)**	1.2 **(0)**
2000-01	11.1 **(-8)**	15.0 **(-1.31)**	3.3 **(0)**	1.2 **(0)**
2001-2002	10.7 **(-4)**	14.4 **(-4)**	3.3 **(0)**	1.2 **(0)**
2002-03	11.9 **(11.2)**	13.9 **(-3.4)**	3.3 **(0)**	1 **(-17)**
2003-04	9.9 **(-17)**	14.5 **(4.3)**	4.2 **(27.2)**	1.4 **(40)**
2004-05	10.1 **(32.02)**	15.0 **(3.4)**	3.1 **(-26.1)**	1.6 **(14.2)**
2005-06	10.4 **(3)**	15.4 **(2.6)**	3.4 **(10)**	1.6 **(0)**
2006-07	10.7 **(3)**	15.2 **(-1.2)**	3.7 **(9)**	1.7 **(6.3)**
2007-08	11.2 **(5)**	15.9 **(5)**	3.9 **(5.4)**	1.1 **(-35.2)**
2008-09	11.2 **(0)**	16.2 **(2)**	3.5 **(-10.2)**	1.6 **(45.4)**
2009-10	11.3 **(0.8)**	16.7 **(3.1)**	3.7 **(6)**	1.6 **(0)**

Source: National Horticulture Board, Ministry of Agriculture, Government of India

Figures in brackets are growth rate.

As far as vegetables are concerned, the productivity showed an increasing trend (though fall in between) between 1991-92 and 1999-2000. It showed a decline during 2000-01 to 2002-03. Then it regained and of course with fluctuations it recorded an increasing trend. It may be concluded that the productivity per hectare of fruits in India showed an increasing trend over the years except in a few years at the middle of the study period. Productivity of vegetables was 10.5 metric tonnes per hectare and it increased to 16.7 (ever high) during the end of the study period, 2009-10.

With regard to productivity of plantation crops, the data did not show any marked increase over the study period. During 2003-04, however, it was 4.2 metric tonnes per hectare. It may be concluded that the productivity of plantation crops did not show any significant increasing trend. It has remained stagnant in some of the years. The productivity was 3.3 metric tonnes per hectare during 1991-92 and it was 3.7 metric tonnes per hectare during 2009-10.

The data on spices can also be seen from table 4.8. The productivity of spices was 1 metric tonne per hectare during 1991-92 and it was 1.2 metric tonnes per hectare during 1997-98 and remained same for the consecutive years. Since 2003-04 it picked up a little as 1.4 metric tonnes per hectare and to 1.7 metric tonnes per hectare during 2006-07. It stood at 1.6 metric tonnes per hectare during 2009-10.

It may be concluded that the productivity of spices did not show significant increasing trend and it was stable in the middle years of study period. However, the productivity of spices has increased from 1 metric tonne per hectare during 1991-92 and it has increased to 1.6 metric tonnes per hectare during 2009-10.

3 FINDINGS

3.1 TRENDS IN AREA

- The growth rate of area under fruits showed fluctuations during the study period. But the growth was slow during the first half of the study period and it was little faster in the next half of the study period. The area under fruits increased from 2874 thousand hectares in 1991-92 to 6329 thousand hectares in 2009-10.

- The area under vegetables though registered slow growth rate and negative in a few years of study, in terms of absolute figures it has increased over the study period. The area under vegetables was 5393 thousand hectares during 1991-92 and it was 7985 thousand hectares in 2009-10.
- The area under plantation has increased in absolute figures from 2298 thousand hectares during 1991-92 to 3265 thousand hectares during 2009-10. However the growth rate has been slow only.
- The area under spices through has increased over the study period in absolute terms it posted negative figure in some periods. In the last six years of the study period it is declining.

3.2 TRENDS IN PRODUCTION

- The production of fruits in India was 28632 thousand tonnes in 1991-92 and it increased nearly by two and half times as 71516 thousand tonnes in 2009-10. However the growth rate was fluctuating in between and especially in the middle years of study period it showed a negative growth rate.
- Except a few years the production of vegetables showed positive growth with fluctuations in it. The production of vegetables was 58532 thousand tonnes in 1991-92 and it increased 2.28 fold as 133738 thousand tonnes in 2009-10.
- The growth rate of quantity of production of horticultural crops showed fluctuations. But by and large the production of plantation crops increased from 7498 thousand tonnes during 1991-92 to 11928 thousand tonnes during 2009-10 (1.6 fold increase).
- The production of spices was 1900 thousand tonnes during 1991-92 and it stood as 4016 thousand tonnes during 2009-10 (more than double fold). The production of spices was high during the years 2003-04 and 2004-05. But in the subsequent years it recorded a declining trend.

3.3 TRENDS IN PRODUCTIVITY

- The production of fruits (metric tonnes per hectare) has recorded an increase, though not steady, over the study period. The productivity of fruits was 10 metric tonnes per hectare in 1991-92 and it was 11.3 metric tonnes for hectare in 2009-10.
- The productivity per hectare of fruits in India showed an increasing trend over the years except in a few years at the middle of the study period. Productivity of vegetables was 10.5 metric tonnes per hectare and it increased to 16.7 (ever high) during the end of the study period, 2009-10.
- The productivity of plantation crops did not show any significant increasing trend. It has remained stagnant in some of the years. The productivity was 3.3 metric tonnes per hectare during 1991-92 and it was 3.7 metric tonnes per hectare during 2009-10.
- The productivity of spices did not show significant increasing trend and it was stable in the middle years of study period. However, the productivity of spices has increased from 1 metric tonne per hectare during 1991-92 to 1.6 metric tonnes per hectare during 2009-10.

4 CONCLUSION

The study reveals that the area under horticultural crops has increased over the study period from 1991-92 to 2009-10. With regard to fruits, vegetables and plantation the area has increased. Spices showed an increasing trend in the initial years but declining trend in the last six years of the study period. The quantity of production of horticultural crops has more than doubled during the study period. With regard to fruits it is nearly 2.5 fold, vegetables 2.28 fold, plantation 1.6 fold and spices a little more than double. The leading states in horticulture are Maharastra, West Bengal, Andhra Pradesh, Uttar Pradesh, Tamilnadu, Karnataka, Gujarat and Bihar. The productivity of horticultural crops has increased over the study period. It is much in case of fruits and vegetables. The study also reveals that in terms of quantity, exports of horticultural produces has increased 55 times over the study period of 19 years. In terms of value, the export of horticulture has achieved a phenomenal growth. The study has revealed that there are interstate variations in production of horticultural crops which needs to be addressed. Special attention may be paid to increase the area under and production of horticultural crops particularly in North Eastern States and in Union Territories of India.

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