

# Development of Horticultural crops in Tamil Nadu

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**Abstract:** Agriculture is the primary occupation of the country as it provides large scale employment and livelihood to the people. The cultivation of horticulture crops got significance in the recent years than the cereals crops like paddy and wheat mainly due to remunerative prices and assured market. The cultivation of fruits, vegetables, flowers and spices have witnessed significant growth in India and Tamil nadu by the introduction of various schemes. The increased health conscious of the people towards the consumption of fruits and vegetables in their daily intake of food contributed to the development of horticultural sector. Moreover, the favourable climatic condition supports the cultivation of these crops in large quantity. The export sector also plays an important role in the development of horticulture. The production of spices, nuts and fruits not only fulfills the domestic demand but also cater to the demand of the international community. The present study highlights the production, yield rate and area under cultivation of horticulture crops in Tamil nadu, its trend since 2000 A.D and the future prospects of this sector to the growth of farmer's income and standard of living. It also strives to focus the issues in the cultivation of horticulture crops.

**Key words:** High value crops, Yield rate, Plantation crops, Spices crops and Time series data.

## Introduction

The horticulture sector is receiving a high priority in rural economy. It comprises of a wide varieties of crops from fruits, vegetables, nuts, spices, medicinal plants, flowers to plantation crops. It provides value addition, employment opportunities, nutritional security, raw materials to agro- based industries and also potential for export earning. The changing consumption pattern of the people towards superior agricultural commodities such as fruits and vegetables due to raising real per capita income, swelling urbanization and opening up of the economy to the global market, etc. creates demand for horticultural products.

Globally India is the second largest producer of fruits and vegetables; the largest producer of mango, banana, coconut, cashew, papaya and pomegranate and the largest producer and exporter of spices. In the year 2018-19, the horticulture production was 314.87 million tonnes and the area under cultivation was 25.6 million hectare. The production of fruits was estimated to be around 97.38 million tonnes and vegetable production was 187.36 million tonnes. Among vegetables, onion production was around 23.28 million tonnes, potato production was 52.96 million tonnes, and spices production was 8.61million tonnes (The Hindu, Business Line, May 31, 2019). This sector has contributed 30.4 percent of agricultural GDP in the year 2012-13.

## National Horticulture Mission (NHM)

The national horticulture mission (NHM) was launched in 2005-06 for the holistic development of horticulture crops. It aimed at enhancing horticulture production through area based regionally differentiated strategies in order to improve nutritional security and income support to the households and to promote and disseminate technologies. The implementation of the comprehensive watershed programme focuses on promoting perennial horticulture crops in the private sector on a large scale

During the twelfth five year plan, the Mission for Integrated Development of Horticulture (MIDH) was launched by subsumed the erstwhile schemes viz, National Horticulture Mission (NHM), Horticulture Mission for North East and Himalayas (HMNEH), National Horticulture Board (NHB), Coconut Development Board (CDB), Central Institute for Horticulture and National Bamboo Mission which has increased the potential for the development of horticulture sector in India.

### Significance of the study

Tamil nadu is endowed with diversified agro- climatic conditions which are conducive for growing a wide range of horticulture crops. It has vast potential for successful cultivation of crops like mango, banana, tapioca, medicinal plants and flowers which are being exploited intensively under the horticulture mission. The sector contributes 5.4 per cent in terms of area and 7.6 per cent in terms of production of horticulture crop at the national level. The big farmers can afford to spare the land for the cultivation of these crops. Because these crops take a longer gestation period to yield benefits, the farmers have to wait more to realize income. So, the opportunity cost of cultivating horticultural crops is very high.

Horticulture crops in Tamil nadu accounted for nearly 17% of the total cropped area. The total area covered under horticulture crops has moved from 10.01 lakh hectares in 2011-12 to 10.81 lakh hectares in 2012- 13 and would further increased to 11.46 lakh hectares in 2013 -14. Fruits, vegetables, spices and condiments and plantation crops together claimed a share of 96% of the total area covered under horticultural crops.

### Objectives of the study

1. To present the growth of output of horticulture crop in Tamil nadu
2. To highlight the relative contribution of fruits and vegetables in the total production of horticulture crops, and
3. To suggest the measures to increase the production of horticulture crops in Tamil nadu.

### Methodology

The study is based on secondary data which are primarily collected from the records of the horticulture department, government of Tamil nadu. Various issues of the Economic Appraisal have been used to gather data related to different horticulture crops and other relevant information which are very important for understanding and interpreting the concept. Statistical techniques such as, averages, ratios, were used to interpret the data. In addition to the above, method of least square has been used to estimate the future production of horticulture crops in Tamil nadu.

### Production of horticulture crops in India

The production of horticulture crop occupies pivotal role in the growth of agricultural sector and livelihood of the farmers in terms of income and employment. The production and area under cultivation of these crops have recorded a significant increase during the plan period in general and the study period 2001-02 to 2103-14 in particular in India and Tamil nadu. The Table 1 highlights the production of horticulture crop and the area under cultivation during the study period. The production has increased from 1, 45,785 thousand million tonnes in 2001-02 to 2, 68,847 thousand million tonnes in 2012-13 registered more than 55 percent increase in the growth of horticulture crop in India. The area under the cultivation of these crops also registered a spectacular increase from 16,592 thousand hectares to 23,694 thousand hectares during the study period 2001-02 to 2012-13 which implies the increase in demand for these products in India and the export potential in the international market.

Table 1 Horticulture production in India

year	Area under cultivation (000 ha)	Production (000 million tonnes)
2001-02	16592	145785
2002-03	16270	144380
2003-04	19208	153302
2004-05	18445	166939
2005-06	18707	182816
2006-07	19389	191813
2007-08	20207	211235
2008-09	20662	214716
2009-10	20876	223089
2010-11	21825	240531
2011-12	23242	257277
2012-13	23694	268847

Source: Director of Horticulture, Indian horticulture database, 2013

### Growth of horticulture sector in Tamil nadu

The horticulture sector has shown a spectacular growth in Tamil nadu since independence. The total production of horticulture crops was 44.79 lakh tonnes in 1980-81 which was increased to 70.86 lakh tonnes in 1990-91 and further increase in production from 127.56 lakh tonnes in 1999-2000 to 187.99 lakh tonnes in 2010-11. The area under the cultivation of these crops have increased from 5.61 lakh hectares in 1980-81 to 6.04 lakh hectares in 1990-91 and further increased to 8.50 lakh hectares in 2000-01 to 10.67 lakh hectares in 2010-11. This implies that the area under cultivation of horticulture crop registered one hundred percent increase in the past three decades whereas the production has recorded four fold increases in this period.

The production, yield and area under the cultivation of horticulture crops in Tamil nadu between the study periods 2000-01 to 2010-11 is presented in the Table 2. The production shows a steady growth from 115.25 lakh tonnes to 187.99 lakh tonnes. The increase in production does not fluctuate during the study period except two years namely 2002-03 and 2003-04. In these two years, the net production has declined due to fall in the average rainfall in the state. In this period, the production of horticulture crops has recorded 61.30 percent increase in absolute terms.

**Table-2 Growth of Horticultural production in Tamil nadu**

Year	Production(lakh tonnes)	Yield (tonnes per hectare)	Area under cultivation (lakh hectares)
2000-01	115.25	13.56	8.50
2001-02	117.13	13.75	8.52
2002-03	91.68	11.80	7.77
2003-04	99.46	12.06	8.25
2004-05	126.20	14.70	8.79
2005-06	141.26	15.89	8.90
2006-07	160.49	17.31	9.27
2007-08	174.14	17.33	10.05
2008-09	161.13	16.34	9.86
2009-10	174.02	16.96	10.26
2010-11	187.99	17.62	10.67
2011-12	152.62	15.24	10.01
2012-13	173.99	16.09	10.81
2013-14	191.31	16.69	11.46

Source: Economic Appraisal, Govt. of Tamil Nadu, Various issues.

The data reveals that though the production of these crops have registered steady growth, the yield of these crops have fluctuated widely ranging from 13.56 tonnes per hectare to 17.62 tonnes per hectare. The changing pattern of rainfall, temperature, extreme weather events viz, drought and flood have adversely influenced the yield of these crops. The area under cultivation of horticulture crops are measured in terms of lakh hectares. The lowest level of 7.7 lakh hectares was recorded in the year 2002-03 and the highest area of 10.67 lakh hectares was in 2010 -11. It is inferred from the above data that even though the area under cultivation and yield rate of different crops have highly fluctuated, the production has shown a steady growth in the study period.

#### Testing of Hypothesis:

**Null hypothesis:** There is no significant increase in the production of horticultural crops during the study period 2000-01 to 2013-14 in Tamil Nadu.

**Alternative hypothesis:** There is significant increase in the production of horticultural crops during the study period 2000-01 to 2013-14 in Tamil Nadu.

#### One sample test

variable	N	Mean	Std. Deviation	t	P- value
Total production of horticulture crops	14	1.4762E2	32.73759	16.872	0.000

The calculated t value 16.872 is higher than the table value, since the p value is less than 0.01 the null hypothesis is rejected at 1 percent level. Hence it is concluded that there is significant increase in the production of horticulture crops in Tamil nadu during the study period.

### Proportion of fruits and vegetables in the total production of horticulture crops

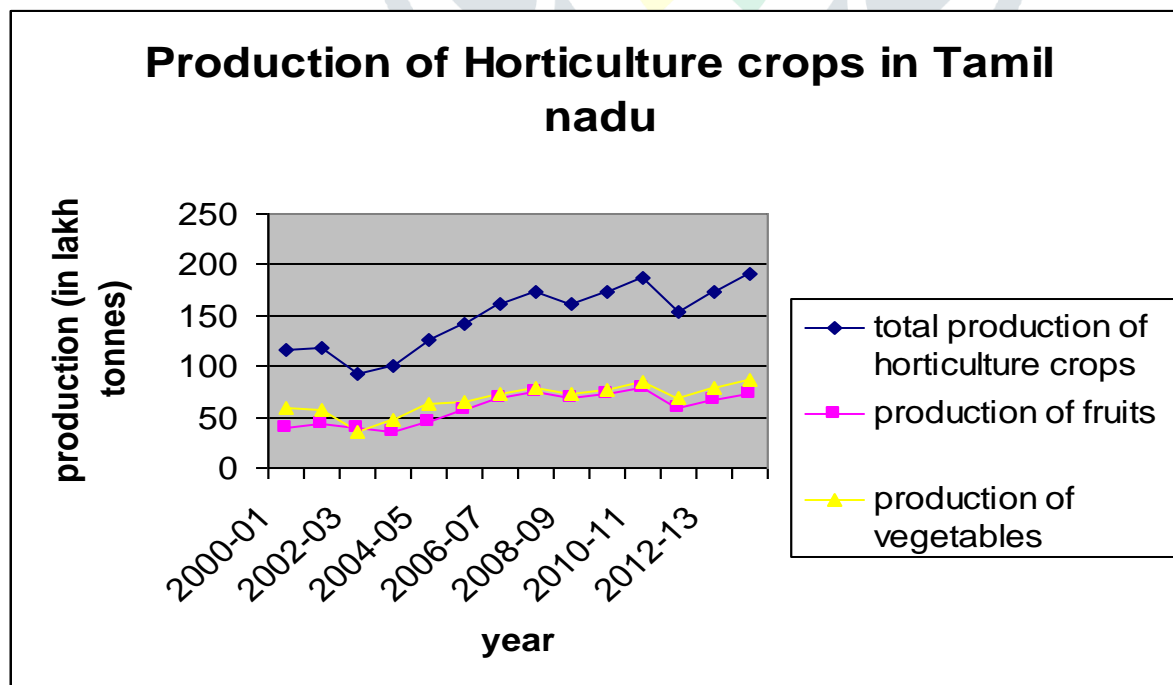
The production of fruits and vegetables forms the major share of horticulture crops grown in Tamil nadu. These two crops accounted for 86.39 percent of the total production which implies that other crops are quantitatively negligible in production.

**Table-3 proportion of fruits and vegetables in total production**

Year	Total production(lakh tonnes)	Production of fruits and vegetables (lakh tonnes)	Percentage
2000-01	115.25	99.45	86.29
2001-02	117.13	101.28	86.46
2002-03	91.68	76.13	83.03
2003-04	99.46	82.82	83.26
2004-05	126.20	108.06	85.62
2005-06	141.26	123.26	87.25
2006-07	160.49	142.46	88.76
2007-08	174.14	154.57	88.76
2008-09	161.13	140.18	86.99
2009-10	174.02	151.40	87.00
2010-11	187.99	163.51	86.97
2011-12	152.62	128.04	83.89
2012-13	173.99	145.96	83.88
2013-14	191.31	160.49	83.89
Average	147.619	126.972	86.39

Source:EconomicAppraisal,Govt.ofTamilNadu,Variousissues.

It was ranging from 83.03 percent in 2002-03 to 88.76 percent in 2007-08. The production of fruits and vegetables have shown steady increase during the study period except three years of declining output , ie., 2002-03, 2003-04 and 2008-09.



### Production of fruits and vegetables

The fruits and vegetables account for more than 86 percent of the total production of horticulture crops in Tamil nadu. This implies that these crops are very significant and consumption of these commodities provides essential nutritional requirements to the people.

**Table-4 Production of fruits and vegetables**

Year	Fruits			vegetables		
	Production (lakh tonnes)	Yield (tonnes per hectare)	Area under cultivation (lakh hectares)	Production (lakh tonnes)	Yield (tonnes per hectare)	Area under cultivation (lakh hectares)
2000-01	40.06	17.98	2.23	59.39	26.97	2.20
2001-02	43.74	19.10	2.29	57.54	29.39	2.18
2002-03	40.14	17.96	2.23	35.99	22.25	1.62
2003-04	36.09	16.33	2.21	46.73	24.47	1.91
2004-05	44.98	19.07	2.36	63.08	29.29	2.15
2005-06	57.79	22.40	2.58	65.47	28.12	2.34
2006-07	69.40	25.79	2.69	73.06	30.32	2.41
2007-08	75.30	25.80	2.92	79.27	30.37	2.61
2008-09	68.28	23.08	2.96	71.90	28.42	2.53
2009-10	73.75	24.02	3.07	77.65	29.52	2.63
2010-11	79.64	24.89	3.20	83.87	30.72	2.73
2011-12	58.77	20.48	2.87	69.27	27.25	2.54
2012-13	67.00	21.62	3.10	78.96	28.77	2.74
2013-14	73.70	22.43	3.29	86.79	29.95	2.90

Source: Economic Appraisal, Govt. of Tamil Nadu, Various issues.

The production of fruits have recorded significant growth from 40.06 lakh tonnes in 2000-01 to 79.64 lakh tonnes in 2010-11 which accounted for nearly one hundred per cent increase in output. Similarly the vegetables production has increased from 59.39 lakh tonnes in 2000-01 to 83.87 lakh tonnes in 2010-2011. The declining production in some years is closely associated with the decline in the area under the cultivation and yield rate of various crops. But in 2008-09 there was an increase in area under cultivation but the yield had declined. Hence the total output has declined from 75.30 lakh tonnes to 68.28 lakh tonnes. Similarly the vegetable production also declined due to fall in the area under cultivation and yield rate of crops.

### Production of flowers

Tamil nadu is one of the states which produce variety of flowers which are of both native and imported breeds. Some of the native breeds of flowers are jasmine, marry gold, rose, lotus, lilly etc., and possesses national and international significance. Flowers are also grown under different climatic conditions, some of which are high water intensity crops and some others are less water intensity crops.

**Table-5 Production of flowers**

Year	Production (lakh tonnes)	Yield (tonnes per hectare)	Area under cultivation (lakh hectares)
2000-01	1.45	7.75	0.19
2001-02	1.47	7.74	0.19
2002-03	1.35	7.65	0.18
2003-04	1.62	7.75	0.20
2004-05	1.87	8.06	0.23
2005-06	2.02	8.16	0.25
2006-07	2.01	8.37	0.24
2007-08	2.18	8.38	0.26
2008-09	2.58	8.90	0.29

2009-10	2.78	9.27	0.30
2010-11	3.01	9.71	0.31
2011-12	2.74	10.35	0.26
2012-13	3.12	10.92	0.29
2013-14	3.43	11.12	0.31

Source: Economic Appraisal, Govt. of Tamil Nadu, Various issues.

The production of flowers have increased from 1.45 lakh tonnes in 2000-01 to 3.01 lakh tonnes in 2010-11 which implies that the output has increased more than one hundred percent during the study period. The flowers production have declined in the year 2002-03 which was in accordance with the decline in area under cultivation and yield of various flowers.

### Production of spices and plantation crops

India is one of the leading producers of spices and plantation crops in the world, right from the ancient period. The Western Ghats and Eastern Ghats are the homeland for the production of spices and plantation crops namely, pepper, cardamom, tea, coffee etc., which are demanded all over the world.

The production of spices and plantation crops has registered positive growth during the study period. The spices production have increased from 6.62 lakh tonnes in 2000-01 to 9.36 lakh tonnes in 2010-11 which accounted for 70.72 percent increase in production. Likewise, the production of plantation crops have also grown from 7.73 lakh tonnes in 2000-01 to 11.47 lakh tonnes in 2010-11 which is 67.39 percent increase in output during the study period .

**Table -6 Production of spices and plantation crops**

Year	Spices			Plantation crops		
	Production(lakh tonnes)	Yield (tonnes per hectare)	Area under cultivation (lakh hectares)	Production(lakh tonnes)	Yield (tonnes per hectare)	Area under cultivation (lakh hectares)
2000-01	6.62	3.94	1.68	7.73	3.51	2.20
2001-02	6.37	3.96	1.61	8.01	3.56	2.25
2002-03	6.25	4.27	1.46	7.95	3.49	2.28
2003-04	6.93	4.49	1.54	8.02	3.43	2.34
2004-05	8.13	3.43	1.13	8.13	3.43	2.57
2005-06	7.84	6.02	1.31	8.06	3.40	2.37
2006-07	8.02	5.17	1.55	7.92	3.40	2.33
2007-08	8.70	5.18	1.68	8.60	3.41	2.53
2008-09	8.05	5.26	1.53	9.84	4.00	2.46
2009-10	8.70	5.44	1.60	10.63	4.15	2.56
2010-11	9.36	5.66	1.66	11.47	4.31	2.66
2011-12	10.05	6.11	1.65	10.50	4.12	2.55
2012-13	11.46	6.44	1.78	11.97	4.34	2.75
2013-14	12.61	6.69	1.88	13.16	4.51	2.92

Source: Economic Appraisal, Govt. of Tamil Nadu, Various issues.

The above discussion clearly indicates that there is a direct relationship between the precipitation of rainfall and the production of these crops. The years 2002-03 and 2008-09 have experienced less than the normal rainfall in Tamil nadu which results in the decline in production apart from other factors influencing the production of these crops.

### Measures to increase the horticulture production

The government of India and the government of Tamil nadu have introduced many novel schemes to increase the horticulture output over the years. There is an increased demand for the horticulture products over other products due to its rich vitamin contents, fibers, minerals etc, which acts as a life support materials. The demand for these products in the international market also contributed positively to the development of this sector. In addition, the climate change effect influenced the increase in the area under cultivation and production of horticulture crops in Tamil nadu. The decline in the net irrigated area in the

state due to irregular rainfall and the falling ground water table in the state forced the farmers to cultivate the less water intensity horticulture products like vegetables and fruits. The recently announced schemes like e-NAM by the government of India will be an incentive to the farmers to cultivate the horticulture crops in Tamil nadu.

### Conclusion

Tamil nadu is endowed with variety of horticulture crops whose production has shown steady growth over the years and more specifically during the study period. The fruits and vegetables are the most significant component of horticulture crops in the state, which does not mean that other crops are less significant. The flower production and spices and plantation crops have also shown significant growth in Tamil nadu. The marketing potential in the urban and semi urban areas and the higher prices accorded to these crops have encouraged the farmers to go in favour of these crops. Cultivation of horticulture crops gives assured income to the farmers which help them to improve their income and standard of living.

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