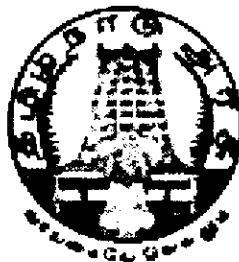
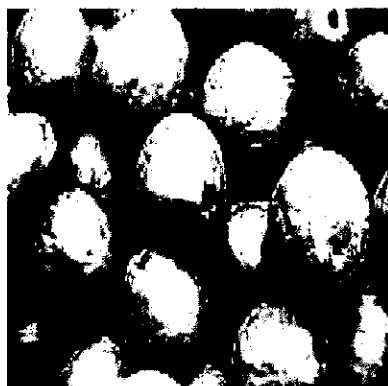


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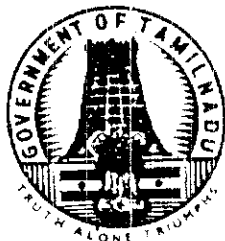
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**REPORT ON FRUITS AND  
VEGETABLES  
FASLI – 1421  
(2011-12)**



**DIRECTOR  
DEPARTMENT OF ECONOMICS AND STATISTICS  
CHENNAI – 600 006.**



**REPORT**  
**ON**  
**FRUITS AND VEGETABLES**

**TAMIL NADU**  
**Fasli 1421 (2011-12)**

**DIRECTOR**  
**DEPARTMENT OF ECONOMICS AND STATISTICS**  
**CHENNAI - 600 006**

# PREFACE

Fruits and Vegetables play an important role in the agricultural economy in terms of its value addition and employment generation. The Crop Estimation Survey on Fruits, Vegetables and other Minor Crops is being implemented in Tamilnadu as a Centrally Sponsored Scheme with 100 percent funding by GOI from 1982-83 onwards to estimate the area and yield of selected crops. The results of the survey carried out during 2011-12 have been presented in this report.

During the year 2011-12, the survey covered eight fruit crops viz Mango, Jack, Guava, Lemon, Orange, Banana, Grapes and Pine-apple and five vegetable crops viz Brinjal, Lady's Finger, Tomato, Cabbage and Sweet- Potato.

This report consists of six parts. Part-I highlights the objectives of the Survey, Part-II explains Concept and Definition, Part-III presents the Estimation Procedure, Part-IV reveals the survey results, Part-V presents Findings of the survey and Part-VI contains Comparative Statement for 10 years data on fruits and vegetables crops.

It is earnestly hoped that this report will be useful to administrators, policy-makers in Government, Research scholars, Programme officials of Agriculture and Horticulture Departments and to those interested in the development of horticulture in Tamil Nadu.

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DIRECTOR(F.A.C.)

Place: Chennai-6.

Date: 13.08.2013

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## **PART -- I**

### **INTRODUCTION**

Fruits and Vegetables are high value addition crops which are labour intensive, generating employment. It is an essential item of human diet and also an important source of nutrition. They are sources of carbohydrates, next only to cereals. These crops are generally commercial in nature fetching lucrative incomes and having large export potential. Despite the fact that crops occupy a pre-eminent position among horticultural crops, reliable data and information of area, production and yield of these crops are found to be inadequate for planning purposes both at micro and macro level. Government of India have extended a scheme for the conduct of Crop Estimation Survey on Fruits and Vegetables to gauge the area and average yield of each crop as in the case of principal crops.

The Crop Estimation Survey on Fruits and Vegetables is being implemented in Tamil Nadu from 1982-83 as a Centrally-Sponsored Scheme with 100 percent financial assistance by the Government of India.

### **COVERAGE**

Currently the following eight fruit and five vegetable crops are covered under this survey.

#### **A. Fruits**

1. Mango, 2. Banana, 3. Guava, 4. Lemon, 5. Orange, 6. Jack, 7. Grapes and 8. Pineapple

#### **B. Vegetables**

1. Tomato, 2. Brinjal, 3. Lady's Finger, 4. Cabbage and 5. Sweet Potato

### **OBJECTIVES**

The main objectives of the survey are:

1. To arrive at reliable estimates of average yield per hectare and production estimates of each crop both at district and state level and
2. Collection of ancillary information on cultivation practices of selected fruits and vegetables.

In addition, it also covers the following aspects pertaining to tree crops.

- i. Estimation of number of bearing and non-bearing trees.
- ii. Estimation of average yield per bearing tree.

## **SAMPLING DESIGN**

The sampling technique adopted for the survey is a multistage stratified random sampling. Taluk within a district constitutes the stratum. The three stages of sampling are as follows:

- i. The selected village is the first stage sampling unit.
- ii. The field / orchard within the selected village is the second stage unit.
- iii. The experimental plot within the selected field is the third and ultimate sampling unit.

The villages are selected in proportion to the area under each crop in the taluk covered under the survey. In each selected village, two experimental plots were chosen for the crop.

In case of fruit tree crops viz. mango, guava, jack, lemon and orange, the revenue villages growing the above tree crops constitute the sampling unit. In each of the village selected, two gardens growing the specified tree crop are selected randomly for tree enumeration. From 1998-99 onwards, it has been decided to conduct the survey on garden only. For yield estimation, all the bearing trees in the selected garden are taken in to account.

## **SAMPLE SIZE**

During the year 2011-12, 1100 experiments were planned in 550 villages. The following table shows the details of crop wise experiments planned.

<b>Crop</b>	<b>No. of villages selected</b>
<b>A. Fruits</b>	
1. Mango	95
2. Banana	95
3. Guava	35
4. Lemon	30
5. Jack	35
6. Orange	20
7. Grapes	35
8. Pineapple	10
<b>Total</b>	<b>355</b>
<b>B. Vegetables</b>	
1. Tomato	60
2. Brinjal	55
3. Lady's Finger	30
4. Cabbage	25
5. Sweet Potato	25
<b>Total</b>	<b>195</b>
<b>Fruits and Vegetables Total</b>	<b>550</b>

## **PLOT SIZE**

The experimental plot size for the conduct of crop cutting experiments for each of the fruits and vegetable crops (excluding tree crops) is given below:

<b>A. FRUITS</b>	<b>PLOT SIZE</b>
1. Banana	5m X 5m
2. Grapes	5m X 5m
3. Pineapple	5m X 1m
<b>B. VEGETABLES</b>	
1. Brinjal	5m X 5m
2. Lady's Finger	5m X 5m
3. Tomato	5m X 5m
4. Cabbage	10m X 2m
5. Sweet Potato	2m X 2m

## **PERIODICITY OF THE SURVEY**

The period of the Survey is one full Fasli year starting from July to June.

## **COLLECTION OF DATA**

The Statistical Inspectors were entrusted with the task of field work exclusively engaged for this Scheme in 28 districts of the State. The field work such as selection of garden, recording of yield etc., in the case of fruit tree crops and selection of field, plot, recording of yield with regard to other crops are carried out by the Statistical Inspectors appointed exclusively for this scheme. The village Administrative Officers of the selected villages rendered necessary assistance in the selection of field and collection of information from the cultivators.

## **SUPERVISION**

In order to ensure accuracy at every stage, the field work of Statistical Inspector was supervised by the respective Divisional Statistical Officers, Assistant Directors of Statistics and Regional Deputy Directors.

## **RESPONSE**

Survey was conducted in all the 1100 experiments planned for the year 2011-12.



The following table shows the number of experiments planned and conducted during 2011-12.

### NUMBER OF EXPERIMENTS PLANNED AND CONDUCTED

Crop	No. of Experiments	
	Planned	Conducted
<b>A. FRUITS</b>		
1. Mango	190	190
2. Banana	190	190
3. Guava	70	70
4. Lemon	60	60
5. Jack	70	70
6. Orange	40	40
7. Grapes	70	70
8. Pineapple	20	20
<b>Sub Total</b>	<b>710</b>	<b>710</b>
<b>B. VEGETABLES</b>		
1. Tomato	120	120
2. Brinjal	110	110
3. Lady's Finger	60	60
4. Cabbage	50	50
5. Sweet Potato	50	50
<b>Sub Total</b>	<b>390</b>	<b>390</b>
<b>GRAND TOTAL (A+B)</b>	<b>1100</b>	<b>1100</b>

## **PART II**

### **CONCEPT AND DEFINITION**

The concept and definition used in this survey are detailed below:

#### **BEARING TREE**

Bearing tree is defined as a tree of fruit bearing age, which had either borne fruits any time in the past or during the season.

#### **NON BEARING TREE**

Young tree which does not show flower or has not attained bearing age at the time of enumeration (or) tree which has reached the bearing age, but not found bearing fruit during the season, due to disease, old age, etc., are classified as non-bearing tree.

#### **GARDEN**

A garden is defined as a piece of land with a minimum number of 9 fruit trees planted in an order.

#### **PURE GARDEN**

A pure garden is defined as one which has 100% of the selected fruit crop trees.

#### **MIXED GARDEN**

It is the garden where more than 10 percent but less than 90 percent of the selected fruit trees are grown with other crops including perennial crops in the same garden.

#### **REPORTING AND NON-REPORTING VILLAGES**

Reporting villages are the villages having recorded area in the Adangal for the crop selected for the Survey. Non reporting villages are those where no area is recorded in the Adangal for the crop selected for the survey.

**PART III**  
**ESTIMATION PROCEDURE OF FRUIT TREE CROPS**  
(Crops: Mango, Jack, Guava and Citrus Fruits)

**Estimation of Number of Trees**

- If  $N_i$  - Total No. of villages growing the crop in the  $i^{th}$  stratum
- $n_i$  - No. of villages selected for tree enumeration in the  $i^{th}$  stratum
- $A_i$  - Total area under the crop in the  $i^{th}$  stratum as per "G" Return
- $a_{ij}$  - Area under the crop in the  $j^{th}$  selected village of  $i^{th}$  stratum
- $t_{ij}$  - No. of trees enumerated in the  $j^{th}$  selected village of  $i^{th}$  stratum
- $b_{ij}$  - No. of bearing trees enumerated in the  $j^{th}$  selected village of  $i^{th}$  stratum

- $R_{ni}$  - Average No. of trees per hectare in the  $i^{th}$  stratum

$$= \frac{\sum_{j=1}^{n_i} t_{ij}}{\sum_{j=1}^{n_i} a_{ij}}$$

Estimated Total no of trees for the  $i^{th}$  stratum ( $T_g$ ) =  $R_{ni} \cdot A_i$

Ratio of bearing trees in the  $i^{th}$  stratum =  $\frac{\sum_{j=1}^{n_i} b_{ij}}{\sum_{j=1}^{n_i} t_{ij}}$

Estimated total no. of bearing trees in the  $i^{th}$  stratum

$$(Bg) = \left[ \frac{\sum_{j=1}^{n_i} b_{ij}}{\sum_{j=1}^{n_i} t_{ij}} \right] \times T_g$$

## Estimation of Average yield per bearing tree

If  $m_{gi}$  = No. of Villages selected for yield estimation

$B_{gj}$  = Total No. of bearing trees in the " $j^{\text{th}}$ " selected village of " $i^{\text{th}}$ " stratum.

$Y_{gj}$  = Total yield of all the trees in the " $j^{\text{th}}$ " selected village of " $i^{\text{th}}$ " stratum

Estimated Average yield per bearing tree for the " $i^{\text{th}}$ " stratum ( $R_{mgi}$ ) =

$$\frac{\sum_{j=1}^{m_{gi}} Y_{gj}}{\sum_{j=1}^{m_{gi}} B_{gj}}$$

Its variance is  $V(G_{gi}) =$

$$\left\{ \frac{N_i - m_{gi}}{(N_i) \times (m_{gi})} - \frac{1}{(B_{gi})^2} \right\} \times \frac{1}{m_{gi} - 1} \times \sum_{j=1}^{m_{gi}} (Y_{gj} - R_{mgi} \times B_{gi})^2$$

$$\text{Percentage of sampling error} = \frac{\sigma}{R_{mgi}} \times 100$$

$$\text{Where } \sigma = \frac{\sqrt{V(G_{gi})}}{m_{gi}}$$

## Estimation procedure of average yield of vegetable and other food crops (General Crop Estimation method)

If  $n_{ij}$  = No. of plots selected in the " $j^{\text{th}}$ " village of " $i^{\text{th}}$ " stratum

$m_i$  = No. of villages selected in the " $i^{\text{th}}$ " stratum

$a_i$  = Area under the crop as per revenue record in the " $i^{\text{th}}$ " stratum

$n_i$  = Total No. of plots selected in the " $i^{\text{th}}$ " stratum and considered for analysis

$Y_{ijk}$  = Yield of " $k^{\text{th}}$ " plot of " $j^{\text{th}}$ " village in the " $i^{\text{th}}$ " stratum

$L$  = No. of districts selected

Average yield per plot for " $i^{\text{th}}$ " stratum is  $\bar{Y}_i = \frac{\sum_{k=1}^{n_i} Y_{ijk}}{\sum_{j=1}^{m_i} n_{ij}}$

Estimation of average yield per plot for all the stratum covered =

$$\bar{Y} = \sum_{i=1}^L W_i \times \bar{Y}_i \quad \text{Where } W_i = \frac{a_i}{\sum_{i=1}^L a_i}$$

Sampling error of the estimate

$E$  = Mean SSBV / DF

(i.e.) the estimate of the mean square between villages

$F$  = Mean SSWV / DF

(i.e.) the estimate of the mean square within villages

$$V[\bar{Y}] = \frac{E \sim F \times \frac{\sum_{i=1}^L a_i^2}{n_i}}{\sum_{i=1}^L a_i^2} \quad E \sim F \text{ whichever is greater}$$

**PART IV**  
**RESULT OF THE SURVEY**  
**SECTION-A**

**FRUITS**

Estimates of number of Trees, Average Yield, and Production as per the survey are furnished below:

**ESTIMATED NUMBER OF TREES, AREA, AVERAGE YIELD AND PRODUCTION**

**2011-2012**

Crop	Estimated no. of trees			Area as per Season and Crop Report (in ha.)	Estimated Average yield (kg./ha.)	Estimated Production (Tones)
	Bearing	Non-Bearing	Total			
Mango	16243329	533733	16777062	141140	4438	626392
Banana	-	-	-	103112	43695	4505435
Guava	1294716	33879	1328595	7718	5244	40471
Lemon	2013505	562960	2576465	7794	2266	17663
Jack	203677	36335	240012	2868	4930	14139
Orange	233479	38983	272462	1847	1777	3282
Grapes	-	-	-	2484	15321	38057
Pineapple	-	-	-	603	30291	18265

**MANGO**

Mango is one of the most important fruit crops of the State and it is predominantly grown in Krishnagiri, Dharmapuri, Dindigul, Vellore and Tiruvallur Districts. During the year 2011-12 under mango, 95 villages were selected for conducting experiments. The district wise number of experiments planned / conducted estimated total number of trees and production estimates for 2011-12 are furnished below.

**NUMBER OF EXPERIMENTS PLANNED, CONDUCTED,  
BEARING AND NON- BEARING TREES( MANGO)**

Sl. No.	District	No. of Experiments		Estimated no. of Trees		
		Planned	Conducted	Bearing	Non Bearing	Total
1	Kancheepuram	10	10	458708	106202	564910
2	Thiruvallur	20	20	1218720	27037	1245757
3	Vellore	20	20	1372877	6247461	1435352
4	Salem	10	10	518875	15792	534668
5	Dharmapuri	20	20	1655908	998	1656905
6	Coimbatore	10	10	518684	15456	534140
7	Thiruchirappalli	10	10	297978	695	298672
8	Madurai	10	10	601904	48367	650271
9	Theni	20	20	996165	123432	1119597
10	Dindigul	10	10	1700886	39060	1739946
11	Virudhunagar	10	10	223193	30574	253767
12	Thirunelveli	10	10	555195	43065	598260
13	Krishnagiri	30	10	6124236	20581	6144816
<b>STATE</b>		<b>190</b>	<b>190</b>	<b>16243329</b>	533733	16777062

The estimated total number of mango trees for the State during 2011-12 was 167.77 lakhs of which 96.82 percent were bearing trees. Out of 167.77 lakhs trees in the State Krishnagiri district stood first with 61.45 lakh trees, followed by 17.40 lakh trees in Dindigul district, 16.57 lakh trees in Dharmapuri district and 14.35 lakh trees in Vellore district.

### ESTIMATED PRODUCTION AND YIELD OF MANGO CROP

Sl. No.	District	Area as per Season and Crop Report ( in ha.)		Estimated Average Yield (kg./ha)		Estimated production (in tonnes)	
		2011-12	2010-11	2011-12	2010-11	2011-12	2010-11
1	Kancheepuram	3428	3247	5607	4786	19221	15540
2	Thiruvallur	10612	10523	3305	3056	35070	32157
3	Vellore	12409	12456	3352	7309	41589	91044
4	Salem	4856	4352	1557	4854	7561	21124
5	Dharmapuri	11332	13058	6949	5638	78746	73622
6	Krishnagiri	34164	33298	3997	7331	136539	244109
7	Coimbatore	2606	2574	5593	4433	14576	11411
8	Thiruchirapalli	2438	2421	8166	2473	19908	5987
9	Madurai	7067	6891	1383	4778	9772	32925
10	Theni	9405	9298	4372	4458	45823	41448
11	Dindugul	15624	14992	7313	13235	114253	198413
12	Virudhunagar	2791	2729	3139	2137	8762	5832
13	Thirunelveli	6099	5916	2183	9883	13315	58465
14	Ariyalur	-	500	-	7871	-	3935
15	Erode	-	869	-	10146	-	8817
16	Tirupur	-	1734	-	8461	-	14671
17	Kanyakumari	-	1401	-	5408	-	7576
<b>STATE</b>		<b>141140</b>	<b>139496</b>	<b>4438</b>	<b>6867</b>	<b>626392</b>	<b>957982</b>

The area under mango crop as per Season and Crop Report for the year 2011-12 was at 141140 hectare as against 139496 hectare in 2010-11 with an increase of 1.78 percent over the year 2010-11.

The estimated average yield per hectare for the State came to 4438 kg during 2011-12 as against 6867 kg. in 2010-11, the decrease in yield rate being 35.37 percent.

The total production of mango during 2011-12 was 626392 tonnes as against 957982 tonnes in 2010-11. There was an decrease of 34.61 percent due to decrease in yield.



## BANANA

District wise number of experiments planned, conducted and yield estimates are given in the table below:

### NUMBER OF EXPERIMENTS, AND YIELD ESTIMATES

Sl. No.	District	No. of Experiments		Area as per Season and Crop Report (in ha)		Estimation Average Yield (kg./ha)		Estimated production (in tonnes)	
		Planned	Conducted	2011-12	2010-11	2011-12	2010-11	2011-12	2010-11
1	Cuddalore	10	10	4133	5016	23572	49638	97421	248983
2	Vellore	10	10	6179	6837	48156	40980	297556	280177
3	Coimbatore	20	20	8634	8118	39367	50550	339894	410368
4	Erode	30	30	5246	10127	30377	38594	159356	390842
5	Thiruchirappalli	20	20	8767	8233	55149	50579	483495	416415
6	Karur	10	10	4812	-	44101	-	212215	-
7	Thanjavur	10	10	3212	3470	37758	49324	121277	171154
8	Pudukottai	10	10	3123	2955	66217	54324	206796	160527
9	Theni	10	10	5767	5965	78681	75665	453756	451345
10	Dindugul	10	10	5307	4897	24669	36258	130919	177554
11	Thirunelveli	10	10	8854	9157	23939	25458	211954	233123
12	Thoothukudi	20	20	9586	10016	64852	45257	621672	453295
13	Kanyakumari	10	10	5982	5451	27255	37293	163039	203285
14	Tiruppur	10	10	3057	2853	36768	44721	112400	127588
15	Ariyalur	-	-	-	120	-	36740	-	4409
<b>STATE</b>		<b>190</b>	<b>190</b>	<b>103112</b>	<b>107394</b>	<b>43695</b>	<b>44700</b>	<b>4505435</b>	<b>4800473</b>

Thoothukudi, Theni, Thiruchirapalli, Coimbatore, Erode, Vellore and Tirunelveli are the main banana producing districts in the State. The area covered under banana as per Season and Crop Report for the year 2011-12 stood at 103112 hectare as against 107394 hectare in 2010-11 the decrease being of 3.99 percent.

The estimated average yield rate per hectare worked out to 43695 kg. in 2011-12 as against 44700 kg. in 2010-11. The decrease in the yield rate was 2.25 percent.

The estimated production for the year 2011-12 was put at 4505435 tonnes as against 4800473 tonnes in 2010-11 the decrease being 6.15 percent.

## GUAVA

### ESTIMATED PRODUCTION AND YIELD OF GUAVA CROP

Sl. No.	District	Area as per Season and Crop Report ( in ha.)		Estimated Average Yield (kg./ha)		Estimated production (in tonnes)	
		2011-12	2010-11	2011-12	2010-11	2011-12	2010-11
1	Cuddalore	611	624	659	9396	403	5863
2	Villupuram	451	458	4059	17024	1830	7797
3	Vellore	523	531	4867	8974	2546	4765
4	Madurai	885	878	1895	3688	1677	3238
5	Dindigul	1249	1141	9901	11868	12366	13542
6	Virudhunagar	694	580	6374	7731	4424	4484
7	Tirunelveli	374	411	4964	5890	1857	2421
	<b>STATE</b>	<b>7718</b>	<b>7498</b>	<b>5244</b>	<b>9109</b>	<b>40471</b>	<b>68299</b>

Guava crop is mainly grown in the districts of Dindigul, Virudhunagar, Cuddalore, Madurai, Vellore and Tirunelveli and Villupuram. The estimated total number of trees for 2011-12 stood at 1328595 out of which 97.45 percent trees are bearing trees.

The area under guava for 2011-12 was at 7718 hectares as against 7498 hectares in 2010-11 which shows an increase of 2.93 percent.

The estimated average yield per hectare was put at 5244 kg. in 2011-12 as against 9109 kg in 2010-11, the yield decreased by 42.43 percent.

The estimated production for the year 2011-12 was at 40471 tonnes as against 68299 tonnes in 2010-11 recording a decrease of 40.74 percent.

Sl. No.	District	Estimated no. of Trees - Orange		
		Bearing	Non Bearing	Total
1	Cuddalore	197992	0	197992
2	Villupuram	135818	0	135818
3	Vellore	118525	5263	123788
4	Madurai	157333	4286	161620
5	Dindigul	493822	14994	508816
6	Virudhunagar	137766	7678	145445
7	Tirunelveli	53458	1658	55116
	<b>STATE</b>	<b>1294716</b>	<b>33879</b>	<b>1328595</b>

## LEMON

### ESTIMATED PRODUCTION AND YIELD OF LEMON CROP

Sl. No.	District	Area as per Season and Crop Report ( in ha.)		Estimated Average Yield (kg./ha)		Estimated production (in tonnes)	
		2011-12	2010-11	2011-12	2010-11	2011-12	2010-11
1	Tiruchy	895	857	4967	4521	4445	3874
2	Perambalur	308	261	1549	2222	477	580
3	Dindigul	2348	2351	2302	5673	5405	13338
4	Virudhunagar	296	295	1333	1356	396	400
5	Tirunelveli	2235	2245	1546	3911	3454	8779
6	Theni	336	-	1092	-	367	-
	<b>STATE</b>	<b>7794</b>	<b>7484</b>	<b>2266</b>	<b>4488</b>	<b>17664</b>	<b>33592</b>

The main lemon growing districts in the State are Dindugul, Thirunelveli and Thiruchirappalli. The estimated number of trees for 2011-12 was put at 25.76 lakhs, out of which 78.15 percent are bearing trees.

Sl. No.	District	Estirnated no. of Trees - Lemon		
		Bearing	Non Bearing	Total
1	Tiruchirapalli	370484	59538	430022
2	Perambalur	125977	3787	129764
3	Theni	64035	2191	66226
4	Dindigul	822992	320019	1143011
5	Virudhunagar	<b>40484</b>	1154	41638
6	Tirunelveli	589534	176270	765804
	<b>STATE</b>	<b>2013505</b>	<b>562960</b>	<b>2576465</b>

The area for 2011-12 was at 7794 hectare as against 7484 hectare in 2010-11 which showed an increase of 4.12%.

The estimated yield rate per hectare worked out to is 2266 kg. in 2011-12 as against 4488 kg. 2010-11 showing an decrease of 49.51 percent .

The estimated production for the State during the year 2011-12 was at 17663 tonnes as against 33592 tonnes in 2010-11 the decrease being 47.42 percent.

## JACK FRUIT

### ESTIMATED PRODUCTION AND YIELD OF JACKFRUIT CROP

Sl. No.	District	Area as per Season and Crop Report ( in ha.)		Estimated Average Yield (kg./ha)		Estimated production (in tonnes)	
		2011-12	2010-11	2011-12	2010-11	2011-12	2010-11
1	Cuddalore	850	909	0	17940	0	16307
2	Namakkal	119	213	9889	11159	1177	2377
3	Pudukottai	144	131	17718	8098	2551	1061
4	Kanyakumari	656	674	4137	15931	2714	10738
5	Ariyalur	104	101	1586	1736	165	175
6	Dindigul	356	-	12307	-	4381	-
	<b>STATE</b>	<b>2868</b>	<b>3058</b>	<b>4930</b>	<b>15117</b>	<b>14139</b>	<b>46229</b>

Districts such as Namakkal, Dindugul and Kanniyakumari are the main Jackfruit growing districts in the State. Due to Thane cyclone there was no yield in the district of Cuddalore. The total number of trees estimated for 2011-12 was at 2.40 lakhs and the percentage of bearing trees worked out to 84.86%.

The area as per the Season and Crop Report was put at 2868 hectares in 2011-12 as against 3058 hectares in 2010-11, showing an decrease of 6.21 percent.

The estimated yield rate per hectare was calculated at 4930 kg. in 2011-12 as against 15117 kg in 2010-11. It showed an decrease of 67.39 percent.

The estimated production for 2011-12 stood at 14139 tonnes as against 46229 tonnes in 2010-11. There was an decrease of 69.42 percent due to the decrease in area and yield rate.

Sl. No.	District	Estimated no. of Trees- Jackfruit		
		Bearing	Non Bearing	Total
1	Cuddalore	78899	26029	104928
2	Namakkal	24820	227	25047
3	Pudukottai	13500	6943	20443
4	Dindigul	39935	0	39935
5	Kanyakumari	37729	1699	39428
6	Ariyalur	8794	1437	10231
	<b>STATE</b>	<b>203677</b>	<b>36335</b>	<b>240012</b>

## ORANGE

### ESTIMATED PRODUCTION AND YIELD OF ORANGE CROP

Sl. No.	District	Area as per Season and Crop Report (in ha.)		Estimated Average Yield (kg./ha)		Estimated production (in tonnes)	
		2011-12	2010-11	2011-12	2010-11	2011-12	2010-11
1	Salem	24	204	10878	6525	261	1331
2	Dindigul	1652	1694	1653	1186	2731	2009
3	Nilgiris	44	47	1473	545	65	26
	<b>STATE</b>	<b>1847</b>	<b>2067</b>	<b>1777</b>	<b>1730</b>	<b>3282</b>	<b>3577</b>

Salem, Dindugul and The Nilgiris are major Orange growing districts in the State. The total number of trees was estimated at 2.72 lakhs for 2011-12 and the percentage of bearing trees worked out to 85.59 percent.

The area as per the Season and Crop Report was at 1847 hectares for 2011-12 as against 2067 hectares in 2010-11, which showed an decrease of 10.64 percent.

The estimated yield rate per hectare was put at 1777 kg. in 2011-12 was as against 1730 kg. in 2010-11, which showed a increase of 2.72 percent in the yield rate.

The State production for 2011-12 was estimated at 3282 tonnes as against 3577 tonnes in 2010-11. The decrease in the production of orange was 8.25 percent.

Sl. No.	District	Estimated no. of Trees – Orange		
		Bearing	Non Bearing	Total
1	Salem	4713	383	5096
2	Dindigul	205775	27050	232825
3	The Nilgiris	22990	11550	34540
	<b>STATE</b>	<b>233479</b>	<b>38983</b>	<b>272462</b>

## GRAPES

### ESTIMATED PRODUCTION AND YIELD OF GRAPES CROP

Sl. No.	District	Area as per Season and Crop Report ( in ha.)		Estimated Average Yield (kg./ha)		Estimated production (in tonnes)	
		2011-12	2010-11	2011-12	2010-11	2011-12	2010-11
1	Coimbatore	217	223	15773	23917	3423	5333
2	Theni	1921	1960	14863	15269	28553	29927
3	Dindigul	211	143	19020	19103	4013	2732
	<b>STATE</b>	<b>2484</b>	<b>2463</b>	<b>15321</b>	<b>16334</b>	<b>38057</b>	<b>40230</b>

Grapes are mainly cultivated in Then , Coimbatore and. Dindigul districts. The area as per Season and Crop Report worked out to is 2484 hectares in 2011-12 as against 2463 hectares in 2010-11, the increase being 0.85 percent.

The estimated yield rate per hectare was put at 15321 kg. in 2011-12 as against 16334 kg in 2010-11, a decrease of 6.20 percent.

The estimated production was 38057 tonnes in 2011-12 as against 40230 tonnes in 2010-11, the decrease being 5.40 percent due to shortfall in yield rate.

## PINEAPPLE

### ESTIMATED PRODUCTION AND YIELD OF PINEAPPLE CROP

Sl. No.	District	Area as per Season and Crop Report ( in ha.)		Estimated Average Yield (kg./ha)		Estimated production (in tonnes)	
		2011-12	2010-11	2011-12	2010-11	2011-12	2010-11
1	Namakkal	501	767	30291	41965	15176	32187
	<b>STATE</b>	<b>603</b>	<b>809</b>	<b>30291</b>	<b>41965</b>	<b>18265</b>	<b>33949</b>

Namakkal is the major Pineapple growing district in the State. The area as per the Season and Crop Report was at 603 hectares in 2011-12 as against 809 hectares in 2010-11 showing an decrease of 25.46 percent.

The estimated yield rate per hectare stood at 30291 kg. in 2011-12 as against 41965 kg. in 2010-11 the increase being 27.82 percent.

The estimated production was at 18265 tonnes in 2011-12 as against 33949 tonnes in 2010-11 the decrease being 46.20 percent. The decrease was due to the decrease in area and yield rate.



## SECTION – B

### VEGETABLES

Area as per Season and Crop Report, estimated average yield and Production of Vegetables in Tamil Nadu during the year 2011-12 are furnished below :-

#### AREA, ESTIMATED AVERAGE YIELD AND PRODUCTION

Sl. No.	Crop	Area as per Season and Crop Report (in Ha.)	Estimated Average Yield (Kg./Ha.)	Estimated Production (Tonnes)
1	Cabbage	1888	60597	114406
2	Brinjal	9462	10638	100654
3	Lady's Finger	7662	8700	66656
4	Sweet Potato	390	20491	7991
5	Tomato	21972	12068	265153

### CABBAGE

#### ESTIMATED PRODUCTION AND YIELD OF CABBAGE CROP

Sl. No.	District	Area as per Season and Crop Report ( in ha.)		Estimated Average Yield (kg./ha)		Estimated production (in tonnes)	
		2011-12	2010-11	2011-12	2010-11	2011-12	2010-11
1	Theni	158	102	44937	39867	7100	4066
2	Nilgiris	640	1381	55202	45206	35329	62429
3	Krishnagiri	843	612	67627	68795	57010	42102
	<b>STATE</b>	<b>1888</b>	<b>2222</b>	<b>60597</b>	<b>51837</b>	<b>114406</b>	<b>115181</b>

Cabbage is mostly being cultivated in The Nilgiris, Krishnagiri and Theni District of Tamil Nadu. The area under this crop as per Season and Crop Report is 1888 hectares in 2011-12 as against 2222 hectares in 2010-11. There was an decrease of 15.03 percent.

The estimated average yield per hectare worked out to 60597 kg. in 2011-12 as against 51837 kg. in 2010-11, increase being 16.90 percent.

The estimated production for the year 2011-12 was worked out at 114406 tonnes as against 115181 tonnes in 2010-11, with meagre decrease being 0.67 percent due to decrease in yield.

## BRINJAL

### ESTIMATED PRODUCTION AND YIELD OF BRINJAL CROP

Sl. No.	District	Area as per Season and Crop Report (in ha.)		Estimated Average Yield (kg./ha)		Estimated production (in tonnes)	
		2011-12	2010-11	2011-12	2010-11	2011-12	2010-11
1	Cuddalore	-	531	-	5393	-	2864
2	Vellore	965	572	6369	12839	6146	7344
3	Salem	1599	936	7263	7604	11614	7117
4	Coimbatore	341	355	10399	11621	3716	4125
5	Erode	-	156	-	11580	-	1806
6	Madurai	412	390	12427	11074	5120	4319
7	Theni	-	284	-	8918	-	2533
8	Dindigul	-	739	-	8765	-	6477
9	Tirunelveli	389	278	13053	13455	5078	3740
10	Krishnagiri	469	564	13347	13667	6260	7708
11	Dharmapur	848	-	16333	-	14274	-
12	Tirupur	291	-	14350	-	4321	-
	<b>STATE</b>	<b>9462</b>	<b>7871</b>	<b>10638</b>	<b>9997</b>	<b>100654</b>	<b>78685</b>

Brinjal is mainly cultivated in Vellore, Salem, Coimbatore, Madurai Tirupur, Tirunelveli, Dharmapuri and Krishnagiri districts. As per the Season and Crop Report the area under Brinjal worked out to 9462 hectares in 2011-12 as against 7871 hectares in 2010-11, there being an increase of 20.21 percent.

The estimated average yield rate per hectare stood at 10638 kg in 2011-12 as against 9997 kg. in 2010-11 showing an increase of 6.41 percent.

The estimated production was put at 100654 tonnes in 2011-12 as against 78685 tonnes in 2010-11. Due to increase in yield rate and production had increased by 27.92 percent.

## **LADY'S FINGER**

### **ESTIMATED PRODUCTION AND YIELD OF LADY'S FINGER CROP**

Sl. No.	District	Area as per Season and Crop Report (in ha.)		Estimated Average Yield (kg./ha)		Estimated production (in tonnes)	
		2011-12	2010-11	2011-12	2010-11	2011-12	2010-11
1	Vellore	822	527	7452	7157	6126	3772
2	Salem	1730	1230	6903	6665	11943	8198
3	Dharmapuri	719	233	13675	14647	9832	3413
4	Coimbatore	372	316	11703	10616	4354	3355
5	Dindigul	541	520	7397	8708	4002	4528
6	Tirunelveli	286	233	9200	10384	2631	2419
	<b>STATE</b>	<b>7662</b>	<b>6229</b>	<b>8700</b>	<b>8397</b>	<b>66656</b>	<b>52302</b>

Lady'sfinger crop is mainly cultivated in Vellore, Salem, Dharmapuri, Coimbatore, Dindigul and Tirunelveli Districts. The area under this crop as per Season and Crop Report was at 7662 hectares in 2011-12 as against 6229 hectares in 2010-11 exhibiting an increase of 23 percent.

The estimated yield per hectare was put at 8700 kg. in 2011-12 as against 8397 kg. in 2010-11 the increase being 3.61 percent. Sufficient water, proper maintenance of crop and using the high yield variety of seeds are principal factors for increased yield.

The estimated production was at 66656 tonnes in 2011-12 as against 52302 tonnes in 2010-11, the increase being 27.44 percent. The increase in area and yield rate reflects the increase in production.

## **SWEET POTATO**

### **ESTIMATED PRODUCTION AND YIELD OF SWEET POTATO CROP**

Sl. No.	District	Area as per Season and Crop Report (in ha.)		Estimated Average Yield (kg./ha)		Estimated production (in tonnes)	
		2011-12	2010-11	2011-12	2010-11	2011-12	2010-11
1	Villupuram	30	108	12550	10938	377	1181
2	Dharmapuri	13	48	22748	20104	296	965
3	Karur	67	152	20325	21822	1395	3317
4	Madurai	-	14	-	25805	-	361
5	Tirunelveli	-	39	-	22364	-	872
6	Virudhunagar	22	-	28369	-	637	-
	<b>STATE</b>	<b>390</b>	<b>496</b>	<b>20491</b>	<b>18550</b>	<b>7991</b>	<b>9201</b>

The Sweet Potato crop is mainly grown in Dharmapuri, Villupuram, Karur, Madurai, Virudhunagar and Tirunelveli Districts in the State. The area under this crop as per the Season and Crop Report was put at 390 hectares in 2011-12 as against 496 hectares in 2010-11, which displayed a decrease of 21.37 percent.

The estimated yield per hectare worked out to 20491 kg. in 2011-12 as against 18550 kg in 2010-11 which depicted an increase of 10.46 percent.

The estimated production for the year 2011-12 stood at 7991 tonnes as against 9201 tonnes in 2010-11. A decrease of 13.15 percent was due to decrease in area.

## **TOMATO**

### **ESTIMATED PRODUCTION AND YIELD OF TOMATO CROP**

Sl. No.	District	Area as per Season and Crop Report ( in ha.)		Estimated Average Yield (kg./ha)		Estimated production (in tonnes)	
		2011-12	2010-11	2011-12	2010-11	2011-12	2010-11
1	Vellore	1008	790	6087	15500	6136	12245
2	Salem	3603	2734	9165	9332	33021	25514
3	Dharmapur.	3137	3142	17035	19172	53439	60237
4	Coimbatore	2341	2488	12790	11253	29942	27998
5	Erode	-	218	-	23836	-	5196
6	Theni	2073	2500	9236	9388	19145	23470
7	Dindigul	1644	1969	8946	13963	14708	27493
8	Tirunelveli	-	421	-	7492	-	3154
9	Krishnagiri	4168	4432	15566	16045	64880	71112
10	Tirupur	1638	1650	9403	11123	15402	18353
	<b>STATE</b>	<b>21972</b>	<b>22087</b>	<b>12068</b>	<b>13506</b>	<b>265153</b>	<b>298315</b>

Tomato crop is mainly cultivated in Krishnagiri, Dharmapuri, Coimbatore, Salem, Dindugul and Theni districts in Tamil Nadu. The area under this crop as per the Season & Crop Report worked out to is 21972 hectares in 2011-12 as against 22087 hectares in 2010-11, with meagre decrease being 0.52 percent.

The estimated yield per hectare worked out to 12068 kg. in 2011-12 as against 13506 kg. in 2010-11, showing a decrease of 10.65 percent.

The estimated total production was put at 265153 tonnes in 2011-12 as against 298315 tonnes in 2010-11, showing a decrease of 11.12 percent. Decrease in area pulled down the total production.

**PART - V**  
**5.1 AREA, YIELD AND PRODUCTION – A COMPARISON**

CROP	Area (ha.)			Average Yield (tonnes/ha.)			Production (tonnes)		
	2011-12	2010-11	% Vari- tion	2011-12	2010-11	% Vari- tion	2011-12	2010-11	% Vari- tion
<b>Fruits</b>									
Mango	141140	139496	1.179	4.438	6.867	-35.372	626392	957982	-34.613
Banana	103112	107394	-3.987	43.695	44.700	-2.248	4505435	4800473	-6.146
Guava	7718	7498	2.934	5.244	9.109	-42.431	40471	68299	-40.744
Lemon	7794	7484	4.142	2.266	4.488	-49.510	17663	33592	-47.419
Jackfruit	2868	3058	6.213	4.930	15.117	-67.388	14139	46229	-69.415
Orange	1847	2067	-10.643	1.777	1.730	2.717	3282	3577	-8.247
Grapes	2484	2463	0.853	15.321	16.334	-6.202	38057	40230	-5.401
Pineapple	603	809	-25.463	30.291	41.965	-27.818	18265	33949	-46.198
<b>Vegetables</b>									
Tomato	21972	22067	-0.521	12.068	13.506	-10.647	265153	298315	-11.116
Brinjal	9462	7871	20.213	10.638	9.997	6.412	100654	78685	27.920
Lady's Finger	7662	6229	23.00	8.700	8.397	3.608	66656	52302	27.444
Cabbage	1888	2222	15.03	60.597	51.837	16.899	114406	115181	-0.672
Sweet Potato	390	496	21.37	20.491	18.550	10.464	7991	9201	-13.150

The results of the survey reveals that the average yields of mango, banana, guava, lemon, jack, grapes and pineapple have shown a negative trend whereas orange alone has shown a positive trend during 2011-12. In respect of vegetable crops like brinjal, lady'sfinger, cabbage and sweet potato have shown an increase of average yield whereas tomato only showed a decreasing trend.

All the fruit items of production, viz. mango, banana, guava, lemon, jack, orange, grapes and pineapple showed a negative trend whereas the vegetable items like brinjal and lady'sfinger have shown a positive trend. Tomato, cabbage and sweet potato showed a negative trend.



## PART VI

Time Series data on Area, Estimated Average yield and Production of fruits and vegetables

### AREA OF FRUITS AND VEGETABLE CROPS FROM 2002-2003 TO 2011-12

(in ha.)

CROP		2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
<b>A FRUITS</b>											
1	Mango	111958	114926	118444	125104	125856	128221	130012	132697	139496	141140
2	Banana	76771	71088	81498	94648	105206	112793	115804	113681	107394	103112
3	Guava	9479	8274	8066	8453	7792	7141	7050	7017	7498	7718
4	Lemon	7722	7932	8124	8146	7964	7767	7409	7463	7484	7794
5	Jack	2744	2687	2773	2911	2919	2955	2910	2926	3058	2868
6	Orange	2565	2718	2580	2151	2139	2004	2089	2039	2067	1847
7	Grapes	2444	2484	2475	2611	2581	2607	2532	2546	2463	2484
8	Pineapple	1240	735	446	653	634	692	581	500	809	603
<b>B VEGETABLES</b>											
1	Tomato	23096	22214	25306	21995	22433	22924	22751	23792	22087	21972
2	Brinjal	7791	9034	7958	7107	6059	6331	7275	6912	7871	9462
3	Lady's Finger	5302	5465	4949	4778	3578	3853	5054	5224	6229	7662
4	Cabbage	2151	1181	1393	1619	2313	2240	1250	2154	2222	1888
5	Sweet Potato	814	1039	1397	1417	1127	1088	658	778	496	390

# ESTIMATED AVERAGE YIELD OF FRUITS AND VEGETABLE CROPS FROM 2002-2003 TO 2011-12

(in tonnes/ha.)

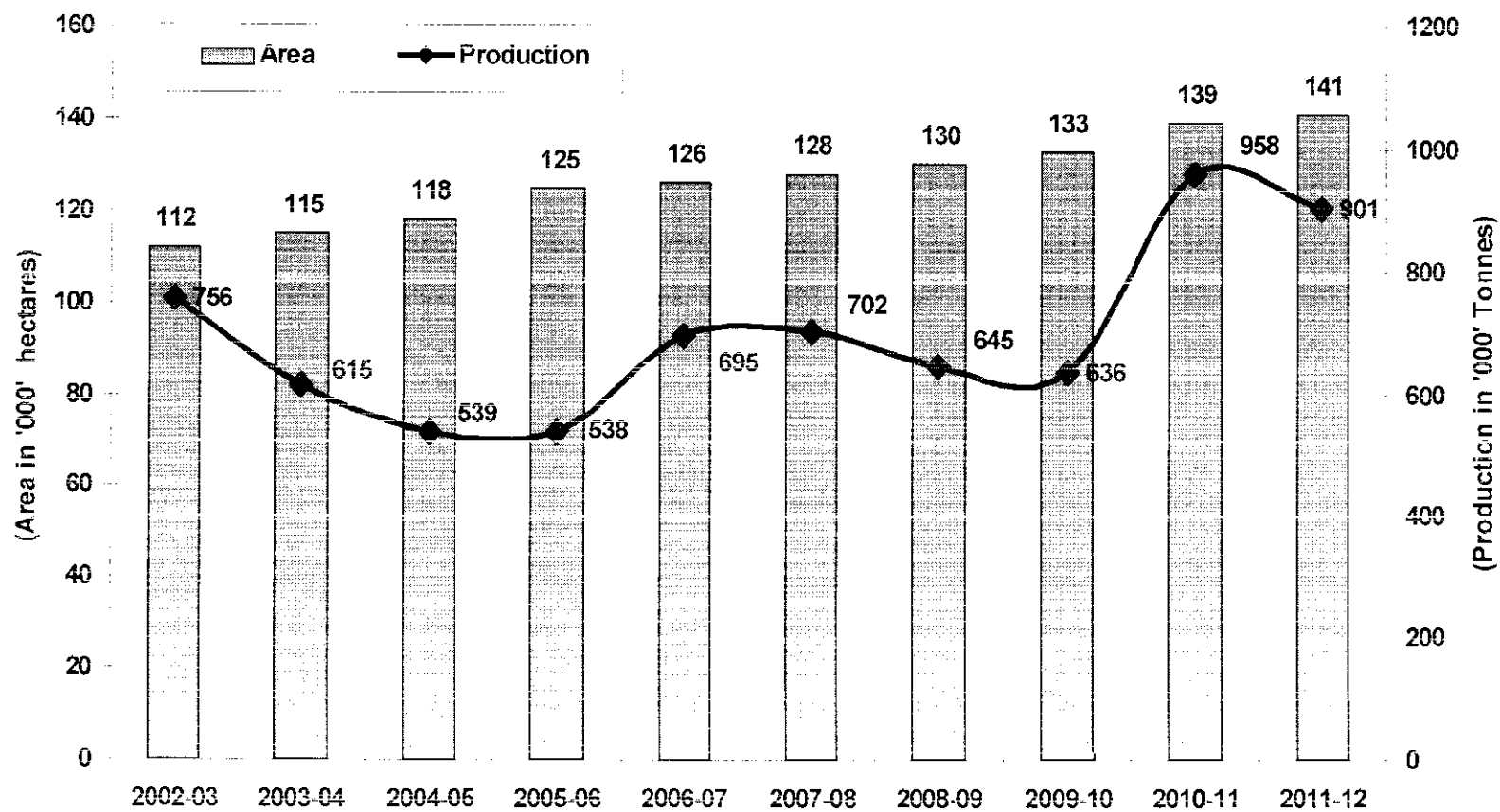
CROP		2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
<b>A FRUITS</b>											
1	Mango	6.757	5.354	4.554	4.299	5.519	5.477	4.958	4.795	6.867	4.438
2	Banana	36.953	35.375	42.477	49.104	48.965	47.741	44.453	42.996	44.700	43.695
3	Guava	5.232	7.021	7.995	10.904	11.031	13.603	12.074	13.186	9.109	5.244
4	Lemon	1.109	1.044	1.619	2.523	2.583	2.986	2.788	2.933	4.488	2.266
5	Jack	11.321	9.662	8.943	12.346	13.848	14.749	13.238	13.475	15.117	4.930
6	Orange	1.552	1.962	1.718	1.962	2.021	2.277	1.965	2.057	1.730	1.777
7	Grapes	14.593	24.112	28.176	32.486	29.815	28.921	17.938	17.338	16.333	15.321
8	Pineapple	30.947	31.371	32.922	33.156	33.076	37.866	36.993	36.052	41.965	30.291
<b>B VEGETABLES</b>											
1	Tomato	12.318	10.149	12.705	12.627	12.611	13.047	13.017	13.091	13.506	12.068
2	Brinjal	7.625	11.180	12.650	10.690	11.099	10.011	7.960	9.390	9.997	10.638
3	Lady's Finger	7.450	7.002	8.973	7.525	7.498	6.688	7.608	8.000	8.397	8.700
4	Cabbage	58.702	63.568	66.734	53.426	56.247	50.395	52.978	56.726	51.837	60.597
5	Sweet Potato	13.662	14.484	15.117	20.857	16.799	13.585	13.287	14.629	18.550	20.491

# ESTIMATED PRODUCTION OF FRUITS AND VEGETABLE CROPS FROM 2002-2003 TO 2011-12

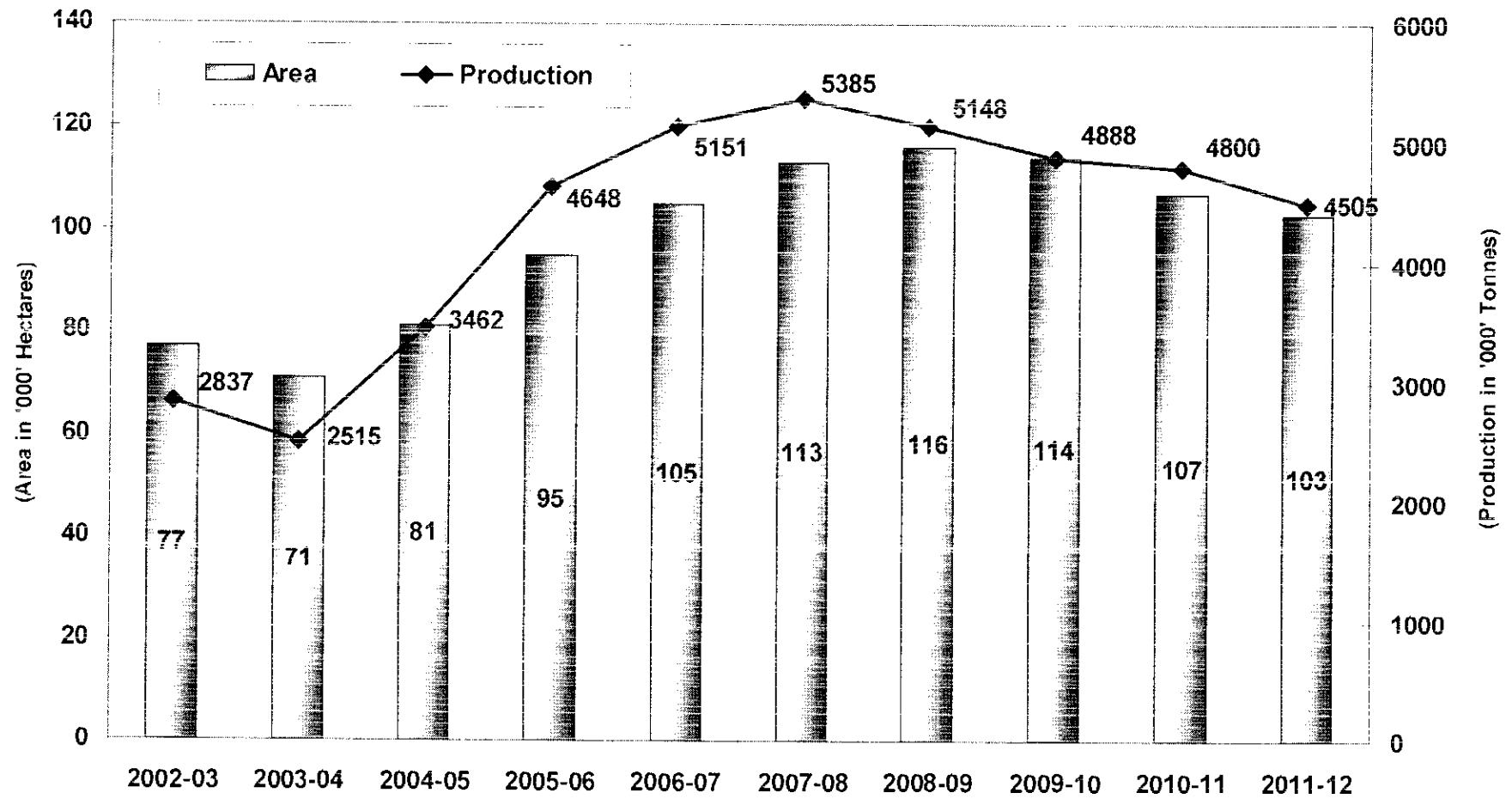
(in tonnes)

CROP		2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
<b>A FRUITS</b>											
1	Mango	756495	615370	539404	537780	694554	702260	644626	636330	957982	626392
2	Banana	2836916	2514729	3461788	4647637	5151394	5384825	5148134	4887841	4800473	4505435
3	Guava	49594	58093	64489	92168	85952	97137	85124	92523	68299	40471
4	Lemon	8561	8282	13155	20551	20569	23190	20658	21886	33592	17663
5	Jack	31064	25962	24798	35939	40424	43585	38522	39427	46229	14139
6	Orange	3980	5334	4432	4215	4323	4562	4105	4194	3577	3282
7	Grapes	35665	59893	69736	84820	76953	75398	45418	44144	40230	38057
8	Pineapple	38374	23057	14683	21652	20970	26203	21493	18026	33949	18265
<b>B VEGETABLES</b>											
1	Tomato	284499	225440	321519	277728	282912	299095	296142	311450	298315	265163
2	Brinjal	59404	100996	100673	75971	67247	63380	57917	64902	78685	100654
3	Lady's Finger	39500	38269	44410	35951	26829	25768	38449	41794	52302	66656
4	Cabbage	126268	75074	92961	86497	130099	112883	66223	122187	115181	114406
5	Sweet Potato	11121	15049	21118	29555	18933	14780	8743	11381	9201	7991

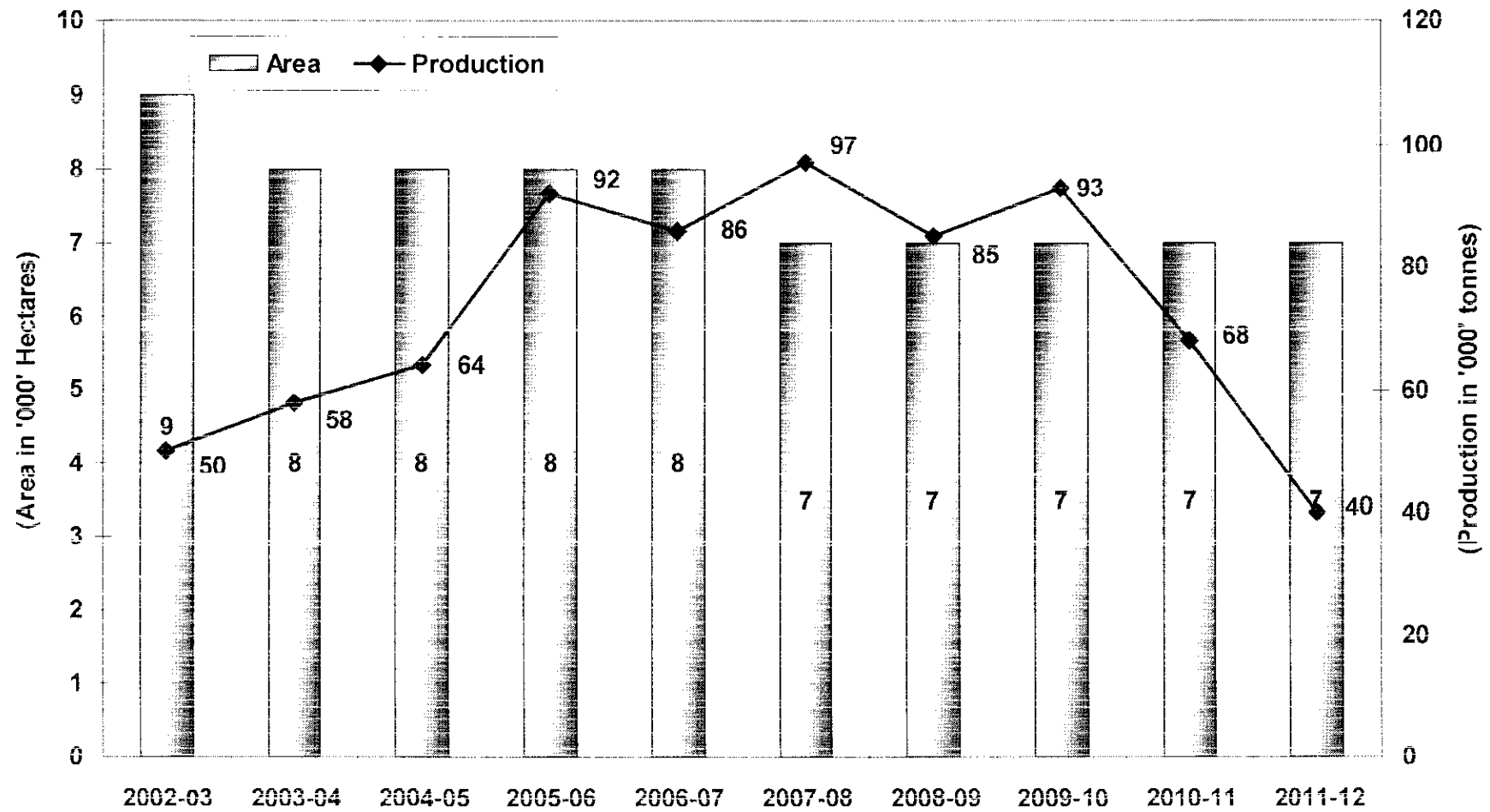
### AREA AND PRODUCTION OF MANGO 2002-03 TO 2011-12



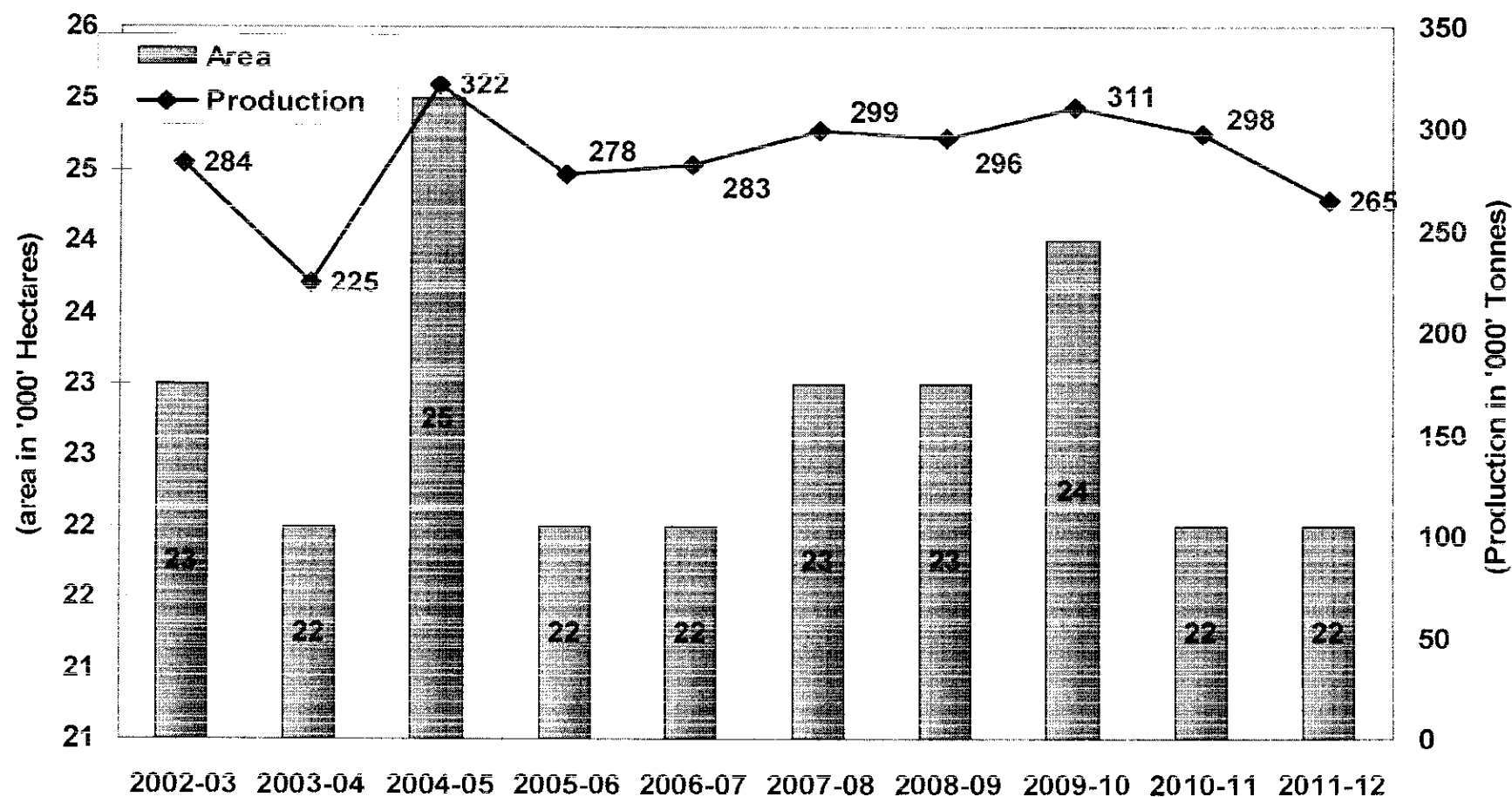
AREA AND PRODUCTION OF BANANA (2002-03 TO 2011-12)



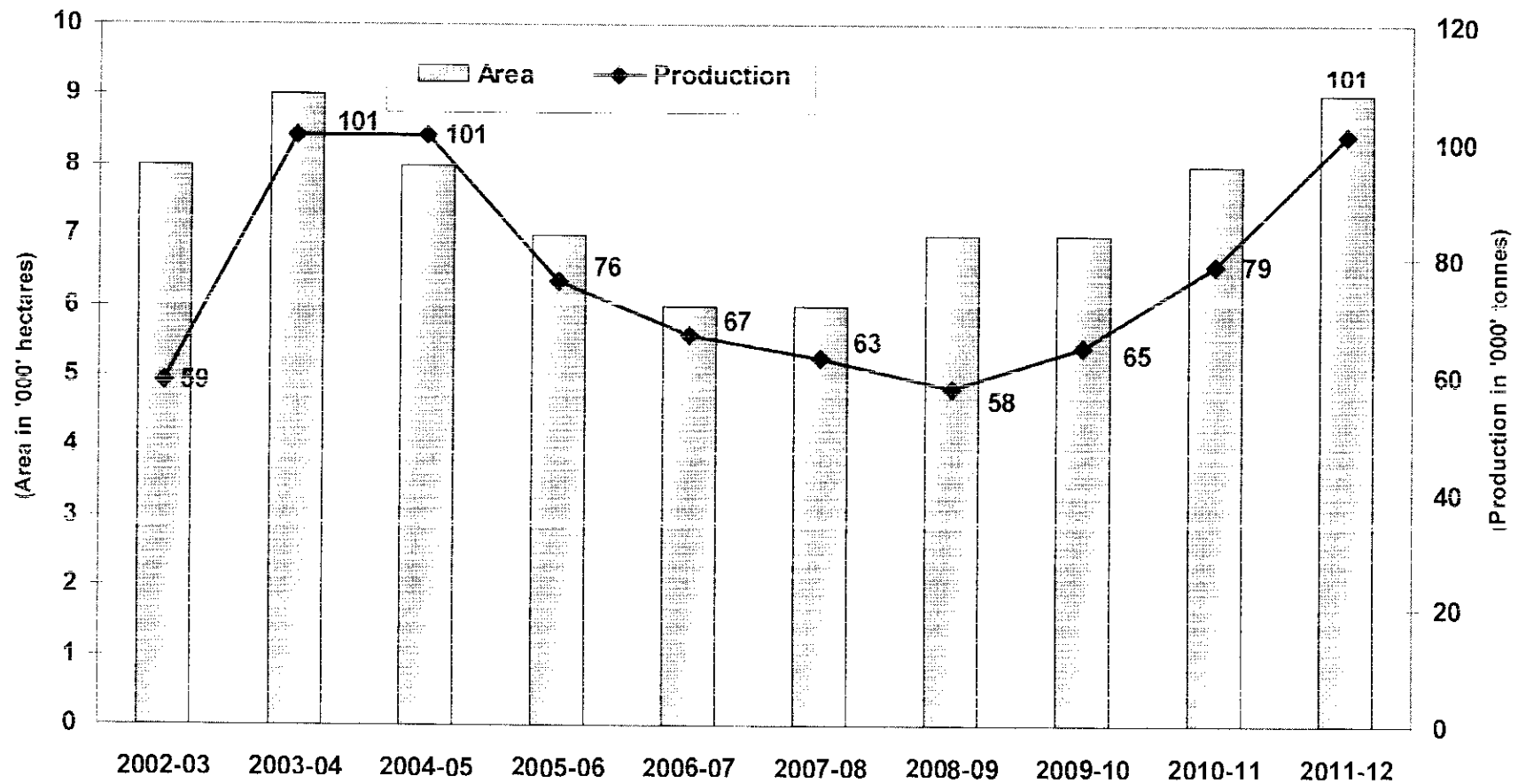
AREA AND PRODUCTION OF GUAVA (2002-03 TO 2011-12)



# AREA AND PRODUCTION OF TOMATO (2002-03 TO 2011-12)



AREA AND PRODUCTION OF BRINJAL (2002-03 TO 2011-12)





AREA AND PRODUCTION OF LADY'SFINGER (2002-03 TO 2011-12)

