

Report on Minor Crops Tamil Nadu

FASIL 1424

(2014-15)



**Principal Secretary / Commissioner
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Chennai- 600 006**

PREFACE

The Minor crops Scheme is implemented in Tamilnadu with a view to capture the key information on certain characteristics viz, yield, types of seeds used, application of fertilizer and pesticides etc., pertaining to the crops like chillies, coriander, ginger, onion, potato, tapioca, turmeric and cashewnut. All these crops, except Cashewnut are used for culinary purposes. As these crops, play significant role in the agricultural economy, it is imperative to conduct Crop Estimation Surveys for these crops in order to get the exact picture of need based parameters to meet the data needs of the Stakeholders.

The Crop Estimation Survey on selected Minor crops like chillies, onion and potato was initiated in Tamil Nadu during 1971-72. Subsequently, the survey was extended to include the crop such as tapioca, turmeric, ginger, coriander and cashewnut. This report on Minor Crops presents the results of Crop Estimation Survey conducted for the above crops for the year 2014-15 together with time series data, which would be of immense use in the context of planning and research.

Chapter I of this report contains a brief Introduction to the Survey, Chapter II deals with the Estimation procedure, Chapter III highlights the Results of the survey, Chapter IV presents the Time series data for a period of ten-years upto 2013 and Chapter V comprise of diagrammatic representations.

It is hoped that this report will be a useful reference to the Administrators, Planners, Scholars, Statisticians, Economists and all those who are interested in the Socio-Economic planning of TamilNadu.

The Co-operation extended by the Officers and staff of the Department, both at State Head Quarters and Districts in the implementation of the scheme is acknowledged with due appreciation. Constructive feedback for improving the content is solicited.

(Sd/-) V.Iraianbu
PRINCIPAL SECRETARY / COMMISSIONER.

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Executive Summary

Crop Estimation Survey was conducted for the eight minor crops namely chillies, onion, potato, tapioca, turmeric, ginger, coriander and cashewnut. The main objective of this survey is to provide a complete range of information on area covered, average yield per hectare and production of minor crops at district and state level. During 2014-15, a total of 1250 experiments were planned and 1190 experiments were conducted in 29 districts for the above 8 crops. A mixed trend has emerged regarding changes in area, production and yield rate, as indicated below.

Findings of the Survey

Table - 1
CROPWISE AREA, AVERAGE YIELD AND PRODUCTION OF MINOR CROPS

Sl. N o.	Crops	Area (ha.)			Average Yield (Kg/Ha.)			Production(Tonnes)		
		2014-15	2013-14	% Variati on	2014-15	2013-14	% Variati on	2014-15	2013-14	% Variatio n
1	Chillies	44450	41401	7.36	661.20	272.81	142.37	29390	11294	160.23
2	Onion	28069	24987	12.33	8562.07	9619.92	-11.00	240329	240373	-0.02
3	Turmeric	26071	31968	-18.45	4027.65	3672.88	9.66	105005	117415	-10.57
4	Tapioca	87914	83526	5.25	32438.06	29922.17	8.41	2851759	2499279	14.10
5	Ginger	311	304	2.30	4236.17	6962.44	-39.16	1317	2117	-37.79
6	Potato	4736	5919	-19.99	23634.20	20736.19	13.98	111932	122738	-8.80
7	Coriander	9133	7527	21.34	881.08	347.61	153.47	8047	2616	207.61
8	Cashewnut	89021	92138	-3.38	410.73	285.17	44.03	36563	26274	39.16

A close look at the table above reveals that during 2014-15 the area covered under Potato has decreased substantially by 19.99 and such decrease in the area may be attributed to late start of cultivation during the sowing period. It may be significant to note that area under Turmeric has also decreased by 18.45 percent, the reason being the non-availability of sufficient rainfall during cultivation. The area in respect of cashewnut has come down by 3.38 percent. On the other hand the area under Coriander has shown an increase of 21.34 per cent as compared to that of previous year.

The average yield of Coriander has registered a tremendous increase of 153.47 percent and as a result, the production of coriander has also increased by 207.61 percent. This positive situation may be attributed to proper crop management and practice of timely preventive measures.

The area covered under Potato and Turmeric have decreased 19.99, 18.45 percent respectively as compared to previous year, and the average yield of Ginger shown drastic decline by 39.16 percent which eventually shown a decrease in the production of Ginger by 37.79 percent. During the course of harvest season, flowerings could be seen in chillies crop, which would ensure better harvest. The low production eventually led to the prevalence of increase in turmeric prices during 2014-15.

A Negative situation is noticed in the case of production of Turmeric, Potato and Ginger crops during 2014-15 over that of the previous year whereas the production of Coriander, Chillies, Tapioca and Cashewnut have shown a positive trend during 2014-15.

Chapter 1. The Survey of Minor Crops

Introduction

The Scheme for the conduct of Crop Estimation Survey on selected minor crops like Chillies, Onion and Potato was initiated in Tamil Nadu during 1971-72 (Fasli 1381) in order to estimate the yield rate and production in a scientific manner by conducting crop cutting experiments. Subsequently, the survey was extended to cover the following crops in a phased manner, as detailed below.

Tapioca	From 1975-76
Turmeric	From 1980-81
Ginger	From 1980-81
Coriander	From 1990-91
Cashewnut	From 1993-94

Objective of the Survey

The main objective of this survey is to obtain reliable estimates of average yield per hectare and production of certain minor crops at the district and State level with a reasonable degree of precision. In addition to this, certain additional information on manuring, high yielding varieties and other agricultural practices adopted in respect of these crops were also collected and analysed in the tables annexed.

Coverage

The survey was conducted in the districts, where these crops are grown more predominantly. During 2014-15, 29 districts were covered under this survey.

Sampling Design

The sampling design adopted for this survey is a stratified multi-stage random sampling technique. The taluk is taken as stratum and villages within the taluk form the primary sampling units. Selection of fields and selection of experimental plots on specified size in each selected field form the second and third stages of sampling units.

Sample Size

The following Table shows the number of experiments planned and conducted during the year 2014-15.

Table-1
Number of Experiments Planned and Conducted

Crop	No. of Experiments	
	Planned	Conducted
1. Chillies	210	202
2. Onion	180	174
3. Turmeric	200	200
4. Tapioca	210	204
5. Potato	60	46
	60	50
6. Ginger	20	20
7. Coriander	110	94
8. Cashewnut	200	200
Total	1250	1190

1250 experiments were planned and 1190 were conducted. 60 experiments were not conducted due to non availability of crop.

Plot Size

The size of the experimental plot is given below:

Chillies, Onion and Turmeric	:	5M	X	5M
Potato	:	10M	X	2M
Tapioca and coriander	:	2M	X	2M
Ginger	:	2M	X	1M
Cashewnut	:	Entire selected garden.		

Period of the Survey

The periodicity of the Survey extended over a full Fasli year starting from July 2014 to June 2015.

Collection & Supervision

At the district level, Block Statistical Inspectors are the primary workers of the survey for all crops except cashewnut and coriander for which the fieldwork is entrusted with the Assistant Horticulture Officers of the Department of Horticulture and Plantation Crops. In order to ensure maximum accuracy in yield estimation, the fieldwork is supervised by the respective Divisional Assistant Director of Statistics, District Deputy Director of Statistics and Regional Joint Director of Statistics at various stages.

Chapter 2. Estimation

Procedure

The following estimation procedure is adopted for finalising the estimates of average yield. The average yield of crops at Taluk level is calculated as a simple mean of individual plot yields. It can be denoted mathematically as follows:

$$\bar{Y}_i = \left\{ \sum_{j=1}^{m_i} \sum_{k=1}^2 Y_{jk} \right\} / n_i$$

Where

- \bar{Y}_i = average yield for 'i'th taluk.
 Y_{jk} = yield of 'k'th experiment in 'j'th village.
 n_i = number of experiments in 'i'th taluk.
 m_i = number of villages in 'i'th taluk.

The average yield for the district is calculated by combining the stratum means using the area under the respective crop in the stratum as weight. Mathematically,

$$\bar{Y}(d) = \left\{ \sum_{i=1}^{t_e} \bar{Y}_i \times a_i \right\} / \sum_{i=1}^{t_e} a_i$$

- Where $\bar{Y}(d)$ = average yield for the district
 a_i = area in the ith taluk.
 t_e = number of taluks in the districts.

The estimates of average yield for each category of crops are then pooled to arrive at the estimated average yield for the combined crop at district and State level by using the area under the respective category as weight.

The Sampling error which gives an indication of the limits within which the estimated average yield likely to vary is worked out by using the formula.

$$SE = \sqrt{\bar{Y}_i} = \frac{\left[F \sum_{i=1}^{t_e} (a_i^2 / n_i) + (E \sim F) \sum_{i=1}^{t_e} (a_i^2 / n_i) \sum_{i=1}^{t_e} n_i^2 / \lambda_i n_i \right]}{\left[\sum_{i=1}^{t_e} a_i \right]^2}$$

Where $Y(d)$ = Estimated district mean yield

n_{ij} = The number of fields with 'jth village of the 'ith taluk.

n_i = Number of experiments conducted in the taluk.

m_i = The number of selected villages in the 'ith taluk

t_e = Number of taluks in the districts.

a_i = Area of the crop in the 'ith taluk.

E = $\frac{SSBV}{DF}$ (i.e) the estimate of the mean square between the field within the village

F = $\frac{SSWV}{DF}$ (i.e) the estimate of the mean square within the village

λ_i = Correction factor

$$= \left[n_i^2 - \sum_{j=1}^{n_i} n_{ij} \right] / n_i (n_i - 1)$$

The district average is worked out separately for each category such as season of crops, for irrigated and unirrigated categories, as the case may be by making use of the above formula. The district average for the combined crop is arrived at by pooling the estimates for each category on the basis of the area under the respective category. The estimates for the State are obtained by using weighted average method. The district-wise area figures under the crops are used as weight.

In case where crops are grown as mixed crops, the plot yields are estimated in proportion to the percentage of the mixed crop in the experimental field.

Chapter 3 . Results

Chillies

It is significant to note that the districts of Ramanathapuram and Virudhunagar put together contribute a large chunk of 53.39 per cent to State aggregate production. According to the Season and Crop Report 2014-15 area under chillies has increased from 41401 ha. during 2013-14 to 44450 ha. during 2014-15. The increase being 7.36 percent. During the same period estimated average yield has gone up from 273 to 661 kg/ha., revealing an increase of 142.12 per cent. Estimated production has also increased from 11294 tonnes to 29390 tonnes, exhibiting an increase of 160.23 per cent. Relevant information is given below.

Table-2
District-wise Area, Average Yield and Production of Chillies during 2014-15

Sl. No.	District	No. of Experiments		Area as per Season and Crop Report (ha.)	Estimated Average Yield (kg./ha)	Estimated Production (tonnes)
		Planned	Analysed			
1	Thiruvallur	10	10	512	702.096	359
2	Villupuram	4	4	242	1454.100	352
3	Vellore	10	10	768	975.059	749
4	Thiruvannamalai	4	4	564	1584.188	893
5	Salem	10	6	773	858.745	664
6	Tiruchirappalli	10	10	645	629.664	406
7	Karur	4	4	366	483.000	177
8	Perambalur	4	4	189	1115.563	211
9	Madurai	4	4	397	906.446	360
10	Dindigul	16	12	1005	1039.835	1045
11	Ramanathapuram	50	50	17256	639.051	11027
12	Virudhunagar	16	16	1277	850.555	1086
13	Sivagangai	20	20	4786	328.218	1571
14	Tirunelveli	10	10	743	999.393	743
15	Thoothukudi	30	30	11402	607.789	6930
16	Krishnagiri	4	4	648	1369.313	887
17	Ariyalur	4	4	224	783.840	176
Total for the Districts Covered in the State		210	202	41797	661.197	27636
Total for the State		210	202	44450	661.197	29390

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Chilly crop is predominantly grown in Ramanathapuram District covering 17256 hectare and the estimated average yield of Chillies is 639 kg/hectare.

Table-3
District wise Area and Production of Chillies from 2010-11 to 2014-15

S.No	District	2010-11		2011-12		2012-13		2013-14		2014-15	
		Area	Estimated Production	Area	Estimated Production	Area	Estimated Production	Area	Estimated Production	Area	Estimated Production
1	Salem	1071	928	879	566	636	408	602	364	773	664
2	Thiruchirapalli	1421	1139	1540	840	937	498	843	477	645	406
3	Karur	499	255	770	491	0	0	295	184	366	177
4	Madurai	550	888	0	0	0	0	0	0	397	360
5	Dindugal	1369	1976	1674	1749	1401	973	943	523	1005	1045
6	Ramanathapuram	21569	5951	21217	7506	18995	7401	17152	4683	17256	11027
7	Virudhunagar	2020	2470	2662	2690	1786	1493	1416	1347	1277	1086
8	Sivagangai	4714	1315	4064	869	3830	496	3968	184	4786	1571
9	Tirunelveli	1608	2032	1591	2538	1181	1190	758	767	743	743
10	Toothukudi	11664	2058	14120	3583	11897	3060	9951	906	11402	6930
11	Ariyalur	1215	281	735	509	211	54	0	0	224	176
12	Thirupur	0	0	1028	609	0	0	0	0	0	0
13	Vellore	0	0	0	0	0	0	682	553	768	749
14	Thiruvallur	0	0	0	0	0	0	0	0	512	359
15	Villupuram	0	0	0	0	0	0	0	0	242	352
16	Thiruvannamalai	0	0	0	0	0	0	0	0	564	893
17	Perambalur	0	0	0	0	0	0	0	0	189	211
18	Krishnagiri	0	0	0	0	0	0	0	0	648	887
	Total of covered district	47700	19293	50280	21950	40874	15573	36610	9988	41797	27636
	State	53626	21691	56442	24640	47110	17950	41401	11294	44450	29390

Analyzing the area details of chilly crop for the last five years in Tamil Nadu, the range is identified as 41.4 to 56.4 thousand hectares. Maximum area coverage of 56442 hectares was witnessed in the year 2010-11 and it started shrinking gradually to reach the level of 41401 hectares in 2013-14, which was very much minimal as compared to other periods. However, it had a revival in the year 2014-15 with 44450 hectares.

The area and production potentiality could be noticed in the six southern districts of Dindigul, Ramanathapuram, Virudhunagr, Sivagangai, Tirunelveli and Thoothukudi. Among these districts Ramanathapuram tops the list with the area ranging from 17152 hectares to 21569 hectares and the range for production being 4683 to 11027 tonnes. The Second order in terms of area under production is secured by the Toothukudi district. The range for area for Toothukudi district is noticed as 9951 to 14120 hectares and for production it is 906 to 6930 tonnes. The districts of Thiruvallur, Villupuram, Thiruvannamalai, Perambalur and Krishnagiri together covered an area of 2155 hectares with the production of 2702 tonnes in the year of 2014-15. But these districts never contributed in terms of area and production for the years from 2010-11 to 2013-14.

Onion

Onion is widely used for seasoning the food items and for Medicinal use. Onion has anti-biotic, antiseptic, antimicrobial and carminative properties. Onion is rich in Sulphur, fibres, Potassium, Vitamin B, Vitamin C and it is low in fat cholesterol and Sodium. Onion can be used to prevent cancers. Consumption of onion increases insulin in the body and it is highly useful in treating diabetes as it controls the sugar level in the blood.

Area under onion went up from 24987 ha. during 2013-14 to 28069 ha. during 2014-15, and the increase is 12.33 in terms of percentage. Average yield has decreased from 9620 kg/ha to 8562 kg./ha., registering a substantial decrease of 11.00 percent. Hence, the production also decreased from 240373 tonnes to

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240329 tonnes, recording the slight decrease of 0.02 per cent. Relevant details are presented in the table below.

Table-4
District-wise Area, Average Yield and Production of Onion

Year: 2014-15

Sl. No.	District	No. of Experiments		Area as per Season and Crop Report (ha.)	Estimated Average Yield (kg./ha)	Estimated Production (tonnes)
		Planned	Analysed			
1.	Salem	10	10	1067	6930	7394
2.	Namakkal	14	14	1869	8584	16045
3.	Coimbatore	10	10	1088	11024	11995
4.	Erode	10	4	1317	7861	10354
5.	Tiruchirappalli	18	18	3294	8804	29004
6.	Perambalur	36	36	6425	7573	48657
7.	Theni	6	6	1112	10427	11595
8.	Dindigul	22	22	2418	8326	20133
9.	Virudhunagar	10	10	1242	3337	4145
10.	Tirunelveli	14	14	1901	10577	20108
11.	Thoothukudi	10	10	1310	9242	12107
12.	Tiruppur	20	20	2970	10511	31218
	Total for the districts covered in the state	180	174			
	Total for the entire state	180	174	28069	8562	240329

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As born out in table above, Perambalur district stands first in the case of area sown, with 6425 hectares, followed by Tiruchirappalli (3294 ha.), Tiruppur (2970 ha) and Tirunelveli (1901 ha) districts. In respect of the yield, Coimbatore district tops the list with (11024 kg/ha), followed by Tirunelveli (10577kg/ha) Thiruppur (10511 kg/ha) and Theni(10427 kg/ha) .

Table-5
District Wise Area and Production of Onion from 2010-11 to 2014-15

S. No	District	2010-11		2011-12		2012-13		2013-14		2014-15	
		Area	Estimated Production	Area	Estimated Production	Area	Estimated Production	Area	Estimated Production	Area	Estimated Production
1	Nammakkal	1889	34966	2572	30438	1363	16577	2019	23632	1869	16045
2	Coimbatore	898	13800	0	0	907	10239	786	12697	1088	11995
3	Erode	1677	22883	1275	13003	686	5665	1139	12628	1317	10354
4	Thiruchirapalli	5589	60056	4710	46641	3274	31384	3958	33484	3294	29004
5	Perambalur	7795	43521	8160	61551	6513	45097	5621	52798	6425	48657
6	Madurai	1042	3860	0	0	341	1594	492	4348	0	0
7	Theni	523	4883	0	0	0	0	0	0	1112	11595
8	Dindugal	2881	29596	3803	32289	2580	19224	2336	15531	2418	20133
9	Virudhunagar	1343	7136	1395	9947	949	7758	1044	8008	1242	4145
10	Tirunelveli	1927	21411	1941	24035	1770	18873	888	11033	1901	20108
11	Thoothukudi	1156	3057	1786	20823	1507	4969	1081	2119	1310	12107
12	Thirupur	3209	34541	3857	76882	1592	17546	2540	31133	2970	31218
13	Salem	0	0	0	0	911	6618	1056	12081	1067	7394
	Total of covered district	29929	279710	29499	315609	22393	185544	22960	219492	26013	222755
	State	31959	299304	34912	376947	24031	199234	24987	240373	28069	240329

The time series data of onion crop reveals a better performance in the years 2010-11 and 2011-12 with the area coverage of 31959 hectares and 34912 hectares respectively. As compared to the area of 31959 hectares in 2010-11, the extent got inflated to 34912 hectares in 2011-12 and thereafter decline starts with moderate variations upto the year 2013-14. In the 2014-15, it could seen a significant upward movement in the area of with 28069 hectares.

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Considering the production parameter, it could be deduced that the periods of 2010-11 and 2011-12 are good years with comparatively high production of 299304 and 376974 tonnes respectively. Of all the periods, the year 2011-12 was much more favourable with the highest area of 34912 hectares and appreciable estimated production with 376947 tonnes. Despite a decline is witnessed in the production during 2012-13 with 199234 tonnes, it shot up in the years 2013-14 and 2014-15 with estimated production of more than 2.40 lakhs tonnes.

The districts of Perambalur and Trichirapalli appear to be prominent in the cultivation of onion crops with sizeable area range of 5621 to 8160 hectares and 3274 to 5589 hectares respectively. This district are succeeded by Tirupur district with fairly a good area range of 1592 to 3857 hectares.

As regards production of perambalur district, It is placed in top position with the highest range of estimated production with 43.5 to 61.6 thousand tonnes and this is followed by Trichirapalli with the estimated production range of 29.0 to 60.1 thousand tonnes.

Turmeric

Turmeric is a ten-month long crop usually sown during May-June and harvested during March-April every year. It is used as a culinary ingredient. The cropping potentiality in respect of turmeric can be noticed in the districts of Erode, Salem and Dharmapuri, because of the presence of enterprising farmers and assured water supply.

Total area under turmeric is accounted for 31968 ha. during 2013-14 and it is declined to 26071 ha. in 2014-15, showing a decrease of 18.45 percent . The total production has also decreased from 117415 tonnes to 105005 tonnes. The decline being 10.57 percent. Inspite of lower production the yield rate of turmeric has gone up to 4027 kg/ha during the year 2014-15 from 3673 kg/ha. in 2013-14, revealing an increase of 9.66 per cent. Relevant information is presented in Table-4.

Table-6
District-wise Area, Average Yield and Production of Turmeric for the year 2014-15

Sl. No.	District	No. of Experiments		Area as per Season and Crop Report (ha.)	Estimated Average Yield (kg./ha)	Estimated Production (tonnes)
		Planned	Analysed			
1	Villupuram	20	20	2138	2146.725	4590
2	Vellore	10	10	454	4744.691	2154
3	Thiruvannamalai	10	10	381	4455.181	1697
4	Salem	30	30	5172	3431.253	17746
5	Namakkal	10	10	2205	4384.676	9668
6	Dharmapuri	30	30	5098	2562.934	13066
7	Coimbatore	10	10	876	6924.303	6066
8	Erode	30	30	6293	5567.291	35035
9	Tiruchirappalli	10	10	460	3739.597	1720
10	Karur	10	10	291	12114.068	3525
11	Perambalur	10	10	761	3742.333	2848
12	Krishnagiri	10	10	880	3153.206	2775
13	Thiruppur	10	10	518	3712.991	1923
	Total for the districts covered in the state	200	200	25527	4027.651	102814
	Total for the entire state	200	200	26071	4027.651	105005

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Table-7
District Wise Area and Production of Turmeric from 2010-11 to 2014-15

Sl. No.	District	2010-11		2011-12		2012-13		2013-14		2014-15	
		Area	Estimated Production	Area	Estimated Production	Area	Estimated Production	Area	Estimated Production	Area	Estimated Production
1	Cuddalore	504	2741	0	0	0	0	0	0	0	0
2	Villupuram	2629	8448	3911	10276	2989	6481	2252	5040	2138	4590
3	Salem	9465	46085	13684	57580	8633	30283	6230	19849	5172	17746
4	Nammakkal	2946	25145	5724	49593	2508	12331	2054	11786	2205	9668
5	Dharmapuri	10879	44668	14009	80420	10685	30969	5759	10645	5098	13066
6	Coimbatore	1688	11084	2454	27932	1367	8271	1203	6472	876	6066
7	Erode	14299	92564	12857	65109	10929	46727	8179	40641	6293	35035
8	Tiruchirapalli	1408	9899	2329	9208	1544	6806	986	3190	460	1720
9	Perambalur	1248	5450	0	0	1314	4603	943	2703	761	2848
10	Krishnagiri	1313	4544	2127	9495	1436	5279	1188	3899	880	2775
11	Thiruvanamalai	0	0	0	0	956	8136	638	2559	381	1697
12	Karur	0	0	0	0	257	2247	267	1308	291	3525
13	Thirupur	0	0	0	0	1710	5337	1011	2704	518	1923
14	Vellore	0	0	0	0	1137	4709	739	4713	454	2154
	Total of covered district	46379	250628	57095	309613	45465	172179	31449	115509	25527	102813
	State	51446	277979	67246	368411	46151	174775	31968	117415	26071	105005

A total of 14 Specific districts in Tamil Nadu, where the turmeric is grown extensively have been taken for the purpose of assessing the area and production of the said crop. The relevant information are provided in the table no: 7.

The area under turmeric for the state was 51446 in 2010-11 and slided down drastically to 26071 hectares during the period under study. It is of important to note that in the year 2011-12, the area coverage of turmeric was all time high of 67246 hectares and started decreasing gradually over years.

Similarly, the estimated production of turmeric was 277979 tonnes in 2010-11 and it rose appreciably to 368411 tonnes during 2011-12 and there was a setback untill by 2014-15, as the production of turmeric had been decreasing gradually.

It is significant to observe that both in terms of area and production, Erode district tops the list. The area range for turmeric for the Erode district is observed as 6.3 to 14.3 thousand hectares and the production ranges from 35.0 to 92.5 thousand tonnes. Dharmapuri district is placed in the second order with the area ranging from 5 to 14 thousand hectares and the production ranging from 10.5 to 80.4 thousand tonnes. Salem district is also as good as Erode and Dharmapuri districts, as it recorded a better performance both in terms area and production . When compared to the three districts above, other districts registered a moderate performance. In the case of Thiruvannamalai , Karur, Tirupur and Vellore districts, the area coverage and the production estimates were identified as absolutely nil in the years of 2010-11 and 2011-12. It may also be observed that in Cuddalore district, the area recorded in the year 2010-11 was 504 hectares and the production was estimated at 2741 tonnes. After the year 2010-2011, the performance in respect of area and production of turmeric crop is assessed as nil.

Tapioca

Tapioca is an annual crop. It is used for many purposes. It can be used for consumption and production of starch. This crop is predominantly grown in the districts of Namakkal, Salem and Dharmapuri.

Total area has gone up from 83526 ha. during 2013-14 to 87914 ha. during 2014-15, showing a hike of 5.25 per cent. The yield rate has increased from 29922 kg/ha. to 32438 kg/ha., and the increase being 8.41 percent. Hence, total production has also increased to 2851759 tonnes from 2499279 tonnes. The increase being 14.10 per cent. Relevant information is presented below:

Table-8
District-wise Area, Average Yield and Production of Tapioca for the year 2014-15

Sl. No.	District	No. of Experiments		Area as per Season and Crop Report (ha.)	Estimated Average Yield (kg./ha)	Estimated Production (tonnes)
		Planned	Analysed			
1	Cuddalore	10	10	4530	16994.122	76983
2	Villupuram	20	20	14237	33490.169	476800
3	Thiruvannamalai	10	10	2455	73388.200	180168
4	Salem	30	30	15143	28235.003	427563
5	Namakkal	30	30	17685	27503.125	486393
6	Dharmapuri	30	30	13119	29062.748	381274
7	Erode	10	10	6581	32437.500	213471
8	Tiruchirappalli	10	10	5979	42837.500	256125
9	Karur	10	10	1252	42625	53367
10	Perambalur	10	10	2067	60050	124123
11	Theni	10	4	708	42875	30356
12	Kanyakumari	10	10	1172	31731.038	37189
13	Krishnagiri	10	10	384	67750	26016
14	Thiruppur	10	10	356	25494	9076
	Total for the districts covered in the state	210	204	85668	32438.056	2778903
	Total for the entire state	210	204	87914		2851759

* No crop - 6

Table-9
District Wise Area and Production of Tapioca from 2010-11 to 2014-15

Sl. No.	District	2010-11		2011-12		2012-13		2013-14		2014-15	
		Area	Estimated Production	Area	Estimated Production	Area	Estimated Production	Area	Estimated Production	Area	Estimated Production
1	Cuddalore	4282	109346	3404	101408	2654	76256	3252	124710	4530	76983
2	Villupuram	11525	365651	12264	264335	11517	377462	12705	328328	14237	476800
3	Thiruvannamalai	3506	140933	0	0	2970	130584	2404	89320	2455	180168
4	Salem	19551	596363	17084	865062	14269	410175	14419	317727	15143	427563
5	Nammakkal	21549	569893	27037	981818	14506	583911	16872	586088	17685	486393
6	Dharmapuri	29909	904040	18048	588414	18430	537900	17635	409393	13119	381274
7	Erode	8697	409780	5892	237160	4487	131647	4794	150844	6581	213471
8	Tiruchirapalli	5883	298221	5976	322363	5122	236321	4573	179833	5979	256125
9	Karur	3633	138363	2362	100938	951	33097	1113	33328	1252	53367
10	Perambalur	1744	44986	0	0	1298	90231	1369	89958	2067	124123
11	Kanniyakumari	3541	115713	2712	115400	942	31085	1038	36303	1172	37189
12	Thirupur	0	0	878	25823	235	5488	229	6524	356	9076
13	Krishnagiri	0	0	0	0	725	25475	429	9089	384	26016
14	Theni	0	0	0	0	0	0	899	54123	708	30356
	Total of covered district	113820	3693289	95657	3602721	78106	2669632	81731	2415568	85668	2778904
	State	119618	3881425	105349	3967751	81027	2769471	83526	2499279	87914	2851759

As regards tapioca crop, about 14 districts were identified to assess the performance in terms of area and production. The state total in the case of area under tapioca crop in the year 2010-11 was accounted as 1.20 lakhs hectares and there was a sudden slump in the succeeding two years. It could be noted that the decrease in the area reached to the level of 81.0 thousand hectares in the year 2012-2013 and it is started moving upward in the years 2013-14 and 2014-15 with fairly a good area coverage of 83.5 thousand hectares and 87.9 thousand hectares respectively.

An handsome coverage of area under tapioca and a better performance of production could be seen in the case of Villupuram, Salem, Namakkal and Dharmapuri districts. Of these four districts, Dharmapuri is captured as the best performing district for tapioca both in terms of area and production. The area under tapioca for the Dharmapuri district ranges from 13119 to 29909 hectares, while it was 14269 to 19551 hectares and 14506 to 27037 hectares for Salem and Namakkal districts respectively. The range for the Villupuram district is assessed as 11517 to 14237 hectares.

The table above shows that the estimated production range Dharmapuri district is comparatively appreciable with 381274 to 904040 tonnes. This is followed by Salem and Namakkal districts with the production range of 317727 to 865062 tonnes and 486393 to 981818 tonnes respectively.

The production range for the Villupuram district is assessed as 264335 to 476800 tonnes.

Potato

Potato is mainly grown in the districts of Dindigul and The Nilgiris. It is raised during two seasons viz. Summer and Winter. Summer crop is sown during May and June, whereas winter crop is raised during October and November.

Potato (Summer)

The area covered under the crop as per Season and Crop Report for 2014-15 was 3017 ha. as against 3875 ha. in 2013-14. The area under cultivation is substantially decreased by 22.14 per cent. The estimated yield per hectare stood at 22692 kg/ha. during 2014-15 as against 18118 kg/ha. in 2013-14. The yield rate has increased by 25.25 per cent. The estimated production for 2014-15 was at 68463 tonnes against 70207 tonnes in 2013-14 and being decrease of 2.48 per cent.

Potato (Winter)

The winter area as per Season and Crop Report for 2013-14 was put at 1719 ha. against 2044 ha. in the previous year. The area under cultivation has shot up by 15.90 per cent. The estimated yield per hectare was 25286 kg./ha. in 2014-15 against 25700 kg./ha in 2013-14, the decrease being 1.61 per cent. The estimated production for 2014-15 was at 43468 tonnes against 52531 tonnes in 2013-14 the decrease being 17.25 per cent.

Potato (Combined)

The area under potato in both seasons combined together for the State was at 4736 ha.during 2014-15 as against 5919 ha.in 2013-14,recording an decrease of 19.99 per cent. With respect to yield rate, it has increased by 13.98 per cent from 20736 kg/ha. to 23634 kg/ha. But estimated total production has decreased by 8.80 per- cent from 122738 tonnes to 111932 tonnes. Relevant information is in Table-11.

Table-10

District-wise Area, Average Yield and Production of Potato for the year2014-2015

Districts	No. of Experiments		Area as per Season & Crop Report (ha.)	Estimated Average Yield (kg/ha)	Estimated Production (tonnes)
	Planned	Analysed			
POTATO (Summer)					
Erode	10	10	377	16649.500	6277
Dindigul	30	16	1711	12803.125	21906
The Nilgiris	20	20	906	43883.524	39758
Total for the districts covered in the state	60	46	2994	22692.545	67941
Total for the entire state	60	46	3017	-	68463

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Districts	No. of Experiments		Area as per Season & Crop Report (ha.)	Estimated Average Yield (kg/ha)	Estimated Production (tonnes)
	Planned	Analysed			

POTATO (*winter*)

Dindigul	20	10	346	13220.000	4574
The Nilgiris	20	20	309	20971.922	6480
Krishnagiri	20	20	1062	30473.750	32363
Total for the districts covered in the state	60	50	1717	25286.876	43418
Total for the entire state	60	50	1719	-	43468

Potato (*combined*)

Erode	10	10	377	16649.500	6277
Dindigul	50	26	2057	12873.246	26480
The Nilgiris	40	40	1215	38056.623	46239
Krishnagiri	20	20	1080	30344.063	32772
Total for the districts covered in the state	120	96	4729	23634.492	111768
Total for the entire state	120	96	4736	23634.196	111932

- No crop –24

Table-11
District Wise Area and Production of Potato from 2010-2011 to 2014-2015

S. No	Districts	2010-11		2011-12		2012-13		2013-14		2014-15	
		Area	Estimated Production	Area	Estimated Production	Area	Estimated Production	Area	Estimated Production	Area	Estimated Production
1	Dindugal	2596	36136	2320	35508	2217	28785	2229	28818	2229	26480
2	Nilgiris	1270	33086	1786	45440	1197	27071	1547	41068	1215	46239
3	Krishnagiri	442	13879	0	0	467	15250	1729	46012	1080	32772
4	Erode	0	0	0	0	374	4867	411	6777	377	6277
	Total of covered district	4308	83101	4106	80948	4255	75973	5916	122675	4901	111768
	State	4624	88932	4673	92207	4268	76176	5919	122738	4736	111932

Dindugal, Nilgiris, Krishnagiri and Erode are the districts where the potato crop is raised extensively when compared to other districts in Tamilnadu. Hence these districts come under the purview of crop cutting experiments under Minor Crops Survey. The data on area and production of Potato are seen in Table No:11

Dindigul is the top most among other districts as its performance in terms of area coverage and production are appreciably higher over years.

During the period under study, the area for the state is 4736 hectares, registering an increase of 112 hectares when compared to the area 4624 hectares in 2010 - 11. But compared to the area of 5919 hectares in previous year, the decrease is calculated as 1183 hectares. From the table No. 11, it is understood that area ranges from 4.2 thousand to 5.9 thousand hectares for the state. The estimated production for the state was 88.9 thousand during 2010-11 and it is outstandingly high in the year 2014-15 with 1.12 lakh tonnes. It is seen from the data furnished in the table No: 10, that except Erode district, other districts prove as a good contributors over years, both in terms of area and production.

Ginger

The Ginger crop requires copious and well-distributed rainfall. The crop is predominantly raised in The Nilgiris District. Generally this crop is planted during April-May and harvested in January-February. The area under the crop as per Season and Crop Report stood at 311 ha. in 2014-15 as against 304 ha. in 2013-14. The increase in area was 2.30 per cent.

The estimated average yield per hectare went down to 4236 kg/ha. during 2014-15 from 6962 kg/ha. in 2013-14. The yield rate sharply fell by 39.16 per cent. The estimated production for 2014-15 was put at 1317 tonnes as against 2117 tonnes in 2013-14, the fall being 37.79 per cent. Relevant information is furnished below.

Table- 12
Area, Average Yield and Production of Ginger for the year : 2014-15

District	No. Of Experiments		Area as per Season & Crop Report (ha.)	Estimated Average Yield (kg/ha)	Estimated Production (tonnes)
	Planned	Analysed			
The Nilgiris	20	20	277	4236.166	1173
Total for the districts covered in the state	20	20	277	4236.166	1173
Total for the entire state	20	20	311		1317

Table-13
District Wise Area and Production of Ginger from 2010-11 to 2014-15

S. No	Districts	2010-11		2011-12		2012-13		2013-14		2014-15	
		Area	Estimated Production	Area	Estimated Production	Area	Estimated Production	Area	Estimated Production	Area	Estimated Production
1	Nilgiris	551	5425	407	4494	298	2608	283	1970	277	1173
2	Kanniyakumari	0	0	0	0	10	351	0	0	0	0
Total of covered district		551	5425	407	4494	308	2959	283	1970	277	1173
State		587	5779	635	7012	322	3093	304	2117	311	1317

Only two districts of Nilgiris and Kanniyakumari are identified under the Minor Crops scheme .Of these two districts the crop potentiality seems to be very much higher in Nilgiris with the area coverage range of 227 to 551 hectares and estimated production range of 1173 to 5425 tonnes.

As for Kanniyakumari district, the area was minimal with 10 hectares in 2012-2013, showing estimated production of 351 tonnes. It may be noted that excepting the year 2012-2013, other years showed nil performance in terms of area and production

Coriander

Coriander crop is mainly grown in the districts of Thoothukudi, Ramanathapuram and Virudhunagar. Coriander is mainly grown as an unirrigated crop and usually raised during the month of October-November, i.e. North East Monsoon period and the crop is harvested in January-February.

Total area under coriander gone up from 7527 ha. during 2013-14 to 9133 ha. during 2014-15, recording a increase of 21.34 per cent. The Yield rate has also

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increased by 153.47 per cent from 347.61 kg/ha. to 881.08 kg/ha. Total production increased from 2616 tonnes in 2013-14 to 8047 tonnes in 2014-15, the increase is appreciably significant with 207.61 per cent. Relevant information is in Table-8.

Table-14

District-wise Area, Average Yield and Production of Coriander for the year 2014-15

Sl. No.	District	No. of Experiments		Area as per Season and Crop Report (ha.)	Estimated Average Yield (kg/ha)	Estimated Production (tonnes)
		Planned	Analysed			
1	Tiruchirappalli	10	10	191	343.961	66
2	Ramanathapuram	20	20	1561	1617.909	2526
3	Virudhunagar	20	20	1983	552.197	1095
4	Thoothukudi	50	34	2516	877.529	2208
5	Thiruppur	10	10	813	405.718	330
	Total for the districts covered in the state	110	94	7064	881.083	6224
	Total for the entire state	110	94	9133		8047

*16 No Crop

Table-15
District Wise Area and Production of Coriander from 2010-11 to 2014-15

S. No	Districts	2010-11		2011-12		2012-13		2013-14		2014-15	
		Area	Estimated Production	Area	Estimated Production	Area	Estimated Production	Area	Estimated Production	Area	Estimated Production
1	Cuddalore	253	104	96	34	0	0	0	0	0	0
2	Thiruchirapalli	522	349	0	0	226	162	126	72	191	66
3	Ramanathapuram	1151	518	1921	530	1391	38	1418	535	1561	2526
4	Virudhunagar	2514	1655	2505	1809	1538	291	1173	724	1983	1095
5	Thoothukudi	4403	1045	3975	1544	3329	36	2237	159	2516	2208
6	Ariyalur	150	95	1921	530	0	0	0	0	0	330
7	Thirupur	0	0	0	0	228	80	423	378	813	0
	Total of covered district	8993	3766	10418	4447	6712	607	5377	1868	7064	6225
	State	10824	4532	10804	5049	8171	739	7527	2616	9133	8047

The area sown for coriander crop in Tamil Nadu was as high as 10824 and 10804 hectares for the years 2010-11 and 2011-12 respectively. In the beginning the area was 10824 in 2010-11 and it slightly shrunk to 10804 hectare in 2011-12. Thereafter its started dwindling down upto 2013-14, when it was 7527 hectares. In the year 2014-15, it attained its revival with 9133 hectares which is comparatively better.

It is Significant to note that Ramanathapuram, Virudhunagar and Thoothukudi districts have been registering sizeable area coverage over years. Of these three districts, Thoothukudi has been recording an all time high coverage. However, it is to be noted that area under coriander crop was as good as 4403 hectares in 2010-11 and underwent decreasing trend upto 2014-15 when it was 2516 hectares.

Similarly, the Production for the above three districts was comparatively higher than other districts. Of these two districts, Virudhunagar district continues maintain the performance of the higher production over years, except in the 2014-15, when the estimated production was 1095 tonnes.



Cashew_nut is a commercial and value added crop. It is bound to earn substantial foreign exchange. Since the crop is xerophytic by nature, it requires minimum care and maintenance. This crop is dominant in the districts of Ariyalur and Cuddalore.

Cashew_nut prevents Cancer, it contains low fat content when compared to other nuts, which is very healthy for heart. Cashew_nut reduces the blood pressure. Daily intake of cashew nuts can reduce the risk of developing gallstones. Also it is good for healthy teeth as well as strong gums to hold them.

Total area fell down from 92138 ha. during 2013-14 to 89021 ha. during 2014-15. The decrease being 3.38 per cent. But the yield rate has increased from 285 kg/ha. to 410 kg/ha. showing an increase of 44.03 per cent. Total production also has increased from 26274 tonnes, to 36563 tonnes, the increase being 39.16 percent. Detailed information is presented in the table-9 below:

Table-16

District-wise Area, Average Yield and Production of Cashewnut for the Year 2014-15

Sl. No	District	No of Experiments		Area as per Season & Crop Report (Ha.)	Estimated Average Yield (Kg/ha)	Estimated Production (tonnes)
		Planned	Analysed			
1	Cuddalore	40	40	29641	380.635	11282
2	Villupuram	20	20	4893	687.378	3363
3	Thanjavur	8	8	1593	3503.082	5580
4	Nagapattinam	12	12	1661	469.219	779
5	Pudukottai	20	20	6103	49.674	303
6	Theni	20	20	3961	217.055	860
7	Sivagangai	20	20	3238	80.764	262
8	Tirunelveli	20	20	3785	173.740	658
9	Ariyalur	40	40	30283	392.604	11889
Total for the districts covered in the state		200	200	85158	410.728	34977
Total for the entire state		200	200	89021		36563

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Table - 17

2010-11 to 2014-15

District Wise Area and Production of Cashewnut year-2010-2015

Sl. No	District	2010-11		2011-12		2012-13		2013-14		2014-15	
		Area	Estimated Production	Area	Estimated Production	Area	Estimated Production	Area	Estimated Production	Area	Estimated Production
1	Cuddalur	29764	22164	32261	5529	30404	6655	30146	12021	29641	11282
2	Villupuram	4905	1739	4715	610	5187	2643	5103	2409	4893	3363
3	Pudukottai	8620	3352	8396	3312	7370	1150	7393	750	6103	303
4	Sivagangai	4278	1323	3752	1035	3679	292	3432	243	3238	262
5	Tirunelveli	4452	470	4368	469	4173	114	3795	243	3785	658
6	Kanyakumari	1599	1170	0	0	0	0	0	0	0	0
7	Ariyalur	30458	4553	29930	6468	29574	3316	30152	6600	30283	11889
8	Theni	0	0	5520	5981	5110	3195	4729	1820	3961	860
9	Thanjavur	0	0	0	0	1502	257	1819	422	1593	5580
10	Nagapattinam	0	0	0	0	1891	1175	1693	661	1661	779
Total of covered district		84076	34771	88942	23404	88890	18797	88262	25169	85158	34976
State		96710	39995	97033	25532	93302	19730	92138	26274	89021	36563

In Tamil Nadu, the area under cashewnut crop is accounted as 89021 hectares in 2014-15. It is comparatively lower as compared to the figure of 96710 hectares in 2010-11, revealing a decreasing of 7.95 percent. It needs to be specified that the range in terms of area up to the year 2013-14, it is identified as 92.1 to 96.7 thousand hectares. Precisely speaking, the area coverage suffers a setback over the years.

Similarly, the production estimates of Cashewnut in Tamil Nadu underwent declining trend for the past five years. It was 40.0 thousand tonnes in 2010-11 and reached the point of 36.6 thousand tones with certain degree of fluctuations.

As regards area, Ariyalur tops the list with 30283 hectares in 2014-15 and this is followed by Cuddalore district with 29641 hectares in the same year.

It may be deduced that despite the area coverage of Cashew in Ariyalur district is comparatively higher than Cuddalore district, the performance in terms of production is low, in other words, the cuddalore district continues to maintain good production every year and the reason may be attributed to favourable bio-geo factors.

Chapter 4. Times series Data

Area, yield and production for the past 10 years are furnished in the following Tables.

Trend in Area

(in ha.)

Year	Chillies	Onion	Turmeric	Tapioca	Potato	Ginger	Coriander	Cashewnut
2005-06	49033	29169	25970	127122	5005	660	21062	106059
2006-07	61418	29587	30528	139628	5190	669	17425	103968
2007-08	67408	29809	27303	140092	4066	625	13288	101309
2008-09	65412	30255	29875	124301	4367	817	14139	99168
2009-10	58476	31024	33366	118647	4611	864	15977	99043
2010-11	53626	31959	51446	119618	4624	587	10824	96710
2011-12	56442	34912	67246	105349	4673	635	10804	97033
2012-13	47110	24031	46151	81027	4268	322	8171	93302
2013-14	41401	24987	31968	83526	5919	304	7527	92138
2014-15	44450	28069	26071	87914	4736	311	9133	89021

Trend in Average Yield

(in kg/ha)

Year	Chilli	Onion	Turmeric	Tapioca	Potato	Ginger	Corian der	Cashe w-nut
2005-06	649.1	8015.3	5520.0	38210.9	14903.8	19293.8	305.1	413.5
2006-07	695.5	8731.3	5745.2	40360.4	14921.8	18637.5	325.8	491.1
2007-08	505.6	9635.0	5347.8	42203.0	16765.6	19037.5	385.3	571.6
2008-09	503.4	9453.4	5768.9	36470.8	18438.4	20000.0	340.6	520.5
2009-10	534.1	9752.5	5067.2	34468.2	18365.4	16050.0	395.2	500.0
2010-11	404.5	9365.3	5403.3	32448.5	19232.6	9845.5	418.7	413.6
2011-12	436.6	10797.1	5478.6	37662.9	19731.9	11042.5	467.3	263.1
2012-13	381.0	8290.7	3787.0	34179.6	17848.2	9605.4	90.4	211.5
2013-14	272.8	9619.9	3672.9	29922.2	20736.2	6962.4	347.6	285.2
2014-15	661.2	8562.1	4027.7	32438.1	23634.2	4236.2	881.1	410.7

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Trend in Production

(in tonnes)

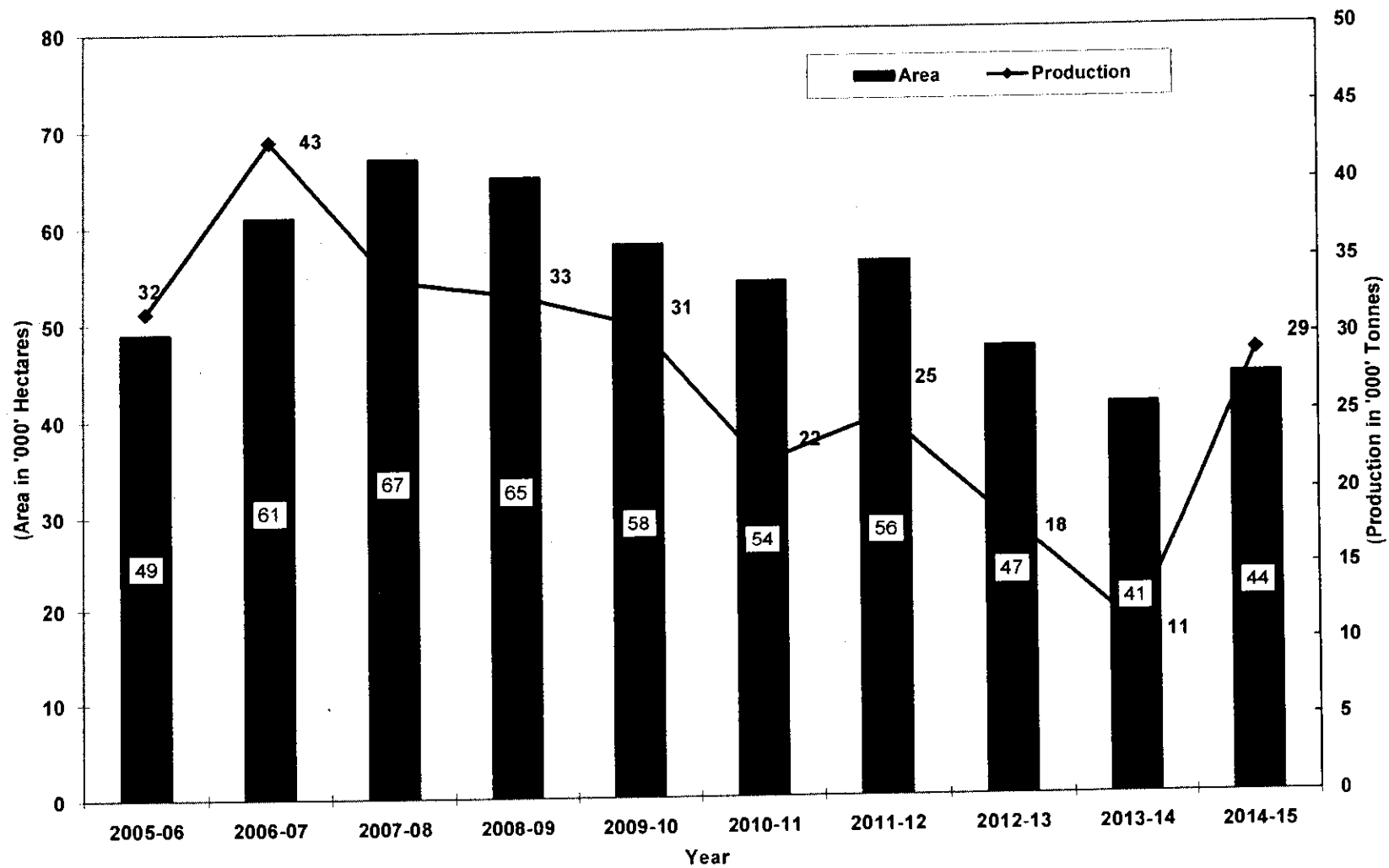
Year	Chillies	Onion	Turmeric	Tapioca	Potato	Ginger	Coriander	Cashew-nut
2005-06	31830	233796	143358	4857440	74593	12735	6425	43858
2006-07	42719	258333	175388	5635436	77443	12468	5676	51057
2007-08	34084	287210	146008	5912307	68169	11898	5120	57905
2008-09	32924	286040	172334	4533359	80539	16340	4817	51667
2009-10	31230	302563	169071	4089545	84683	13867	6315	49546
2010-11	21691	299304	277979	3881425	88932	5779	4532	39995
2011-12	24640	376947	368411	3967751	92207	7012	5049	25532
2012-13	17950	199234	174775	2769471	76176	3093	739	19730
2013-14	11294	240373	117415	2499279	122738	2117	2616	26274
2014-15	29390	240329	105005	2851759	111932	1317	8047	36563

Conclusion

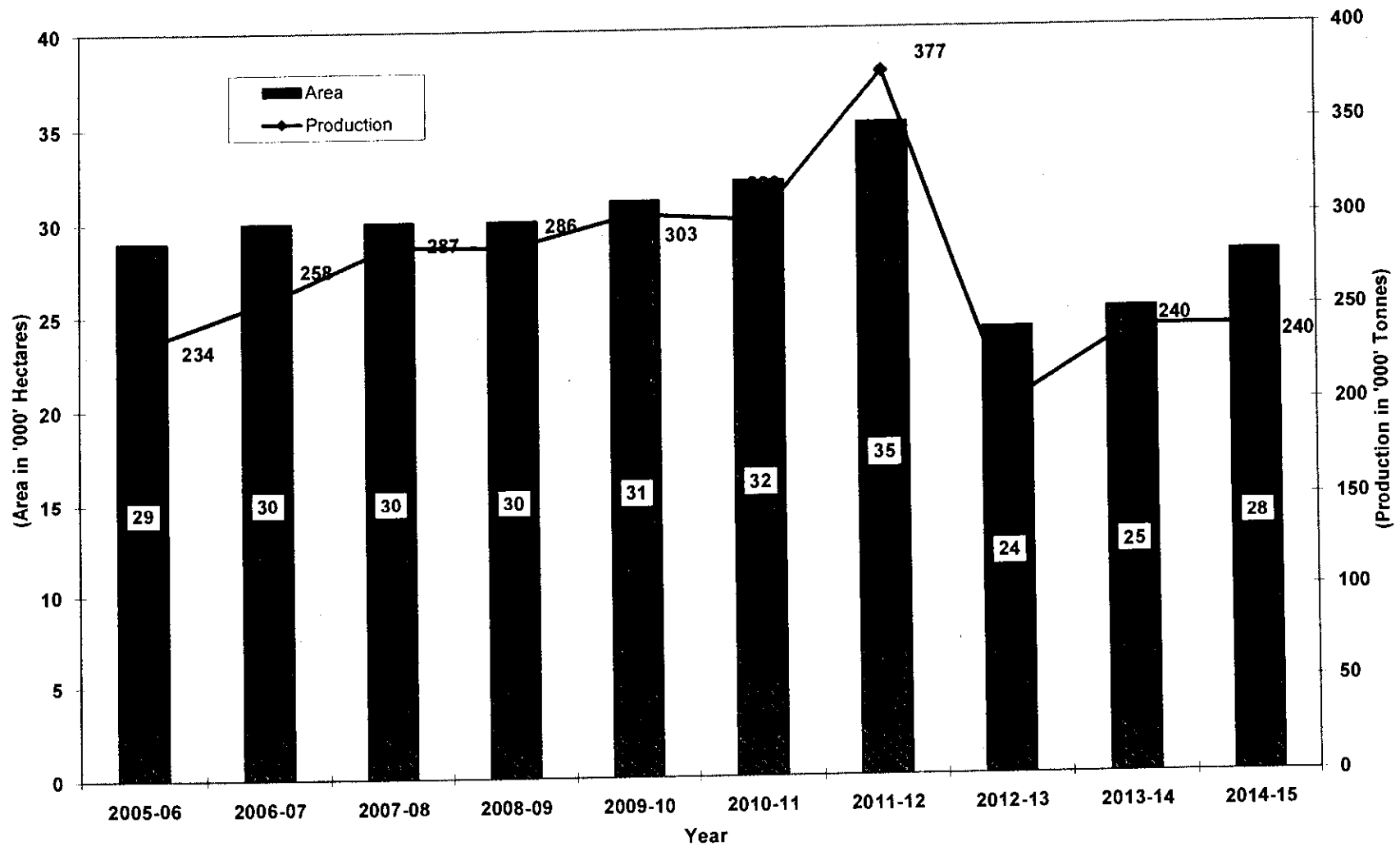
Glancing through the time series data, it reveals that wide variations are found in area coverage, production and yield rate for all crops during the 10 year period under reference. Due to wide variations in area coverage, many oscillations are noticed in the level of production and yield rate for all crops.

In general, due to changing socio economic scenario in the State the area under cultivation of Minor Crops shows varying fluctuation over a period of time. Inspite of these fluctuations the production of these crops can be increased by using advanced techniques and modern applications.

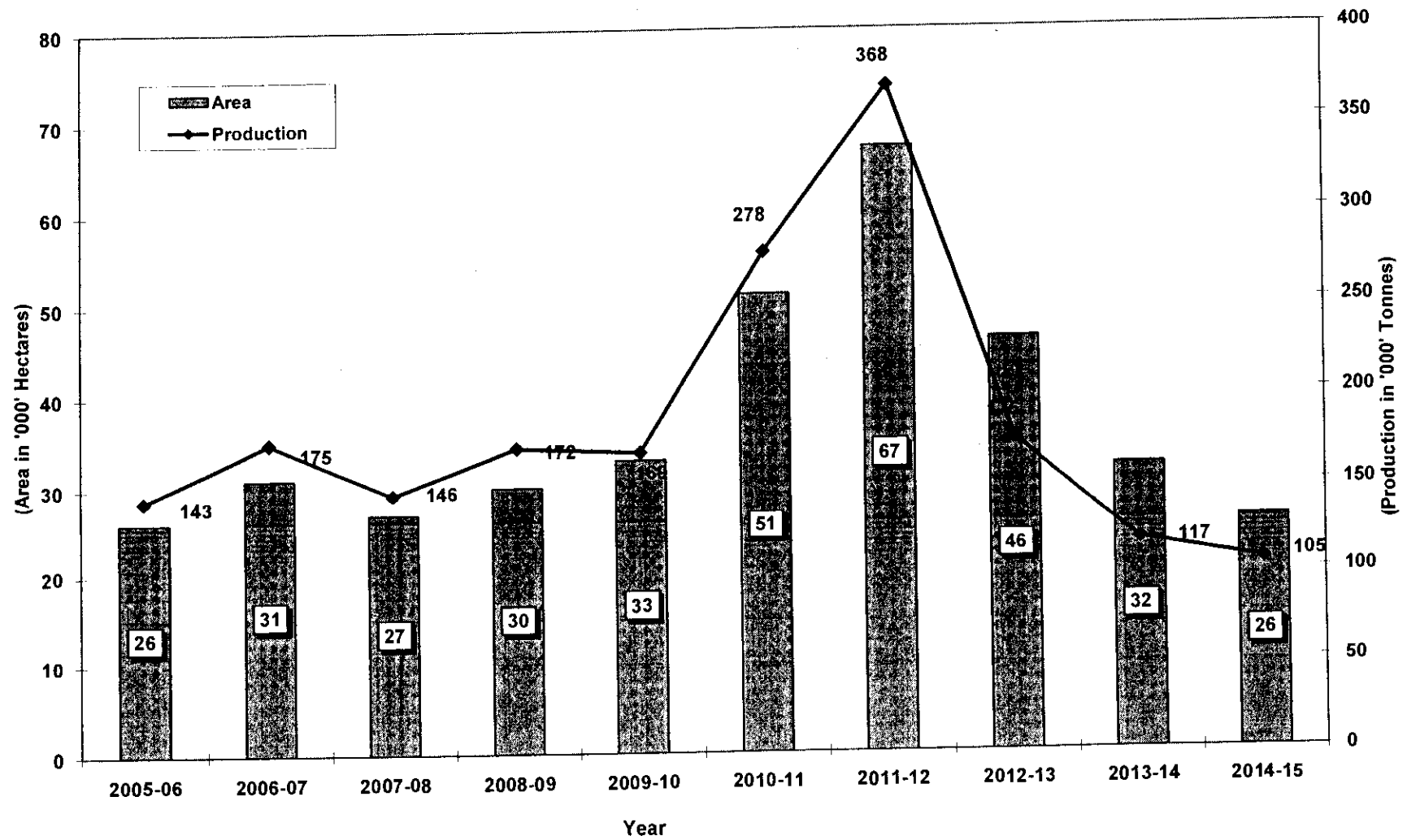
AREA AND PRODUCTION OF CHILLIES 2005-06 2014-15



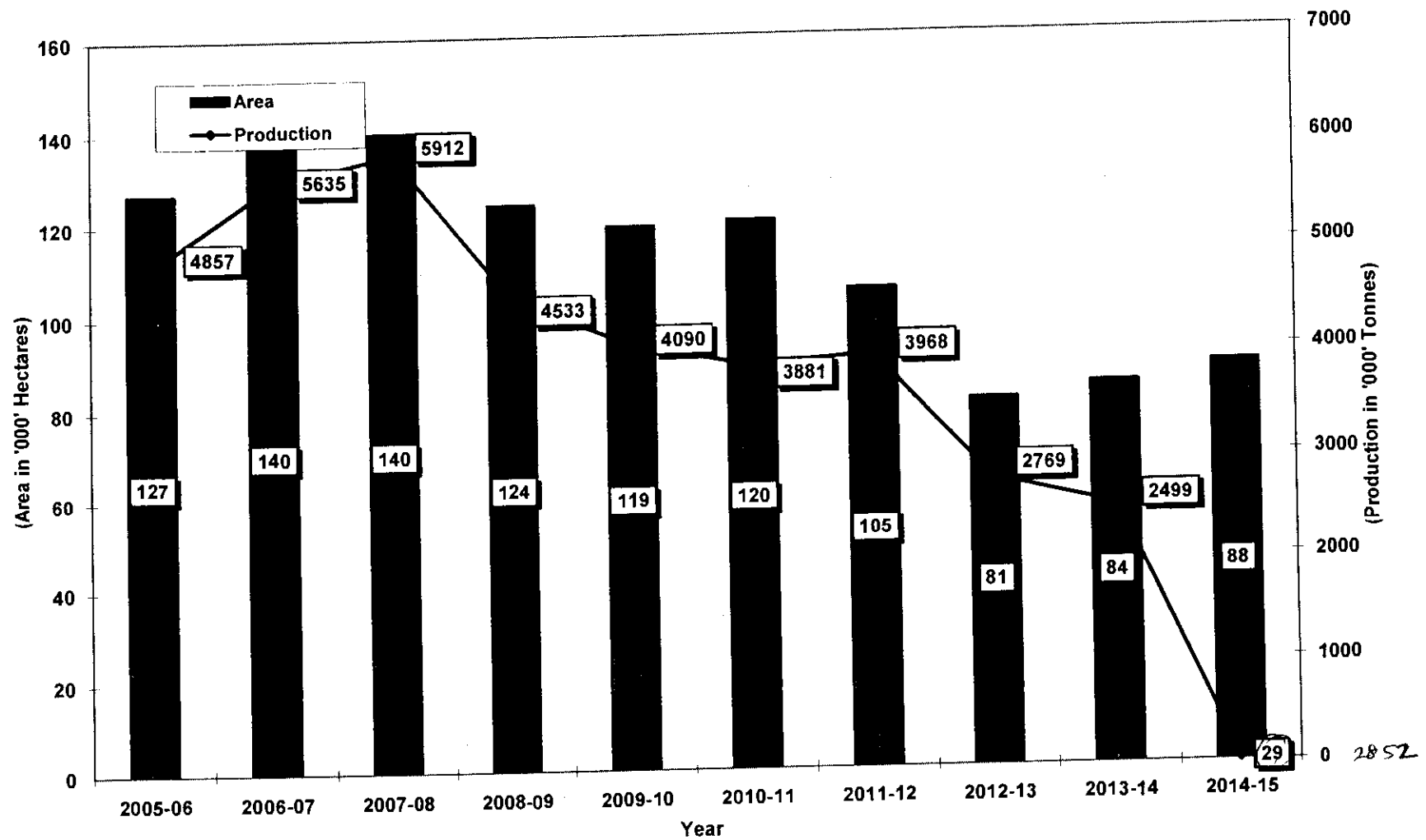
AREA AND PRODUCTION OF ONION 2005-06 TO 2014-15



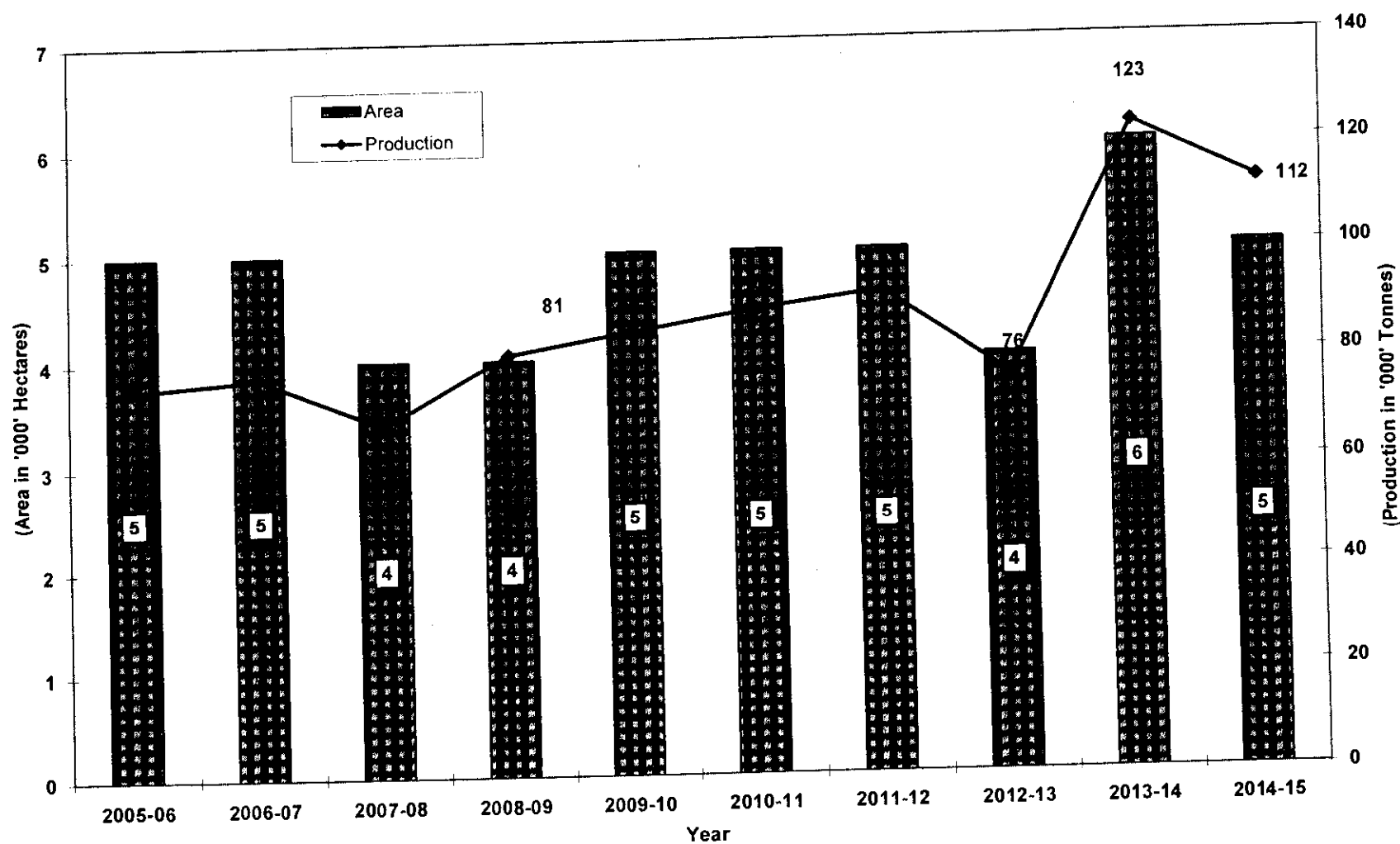
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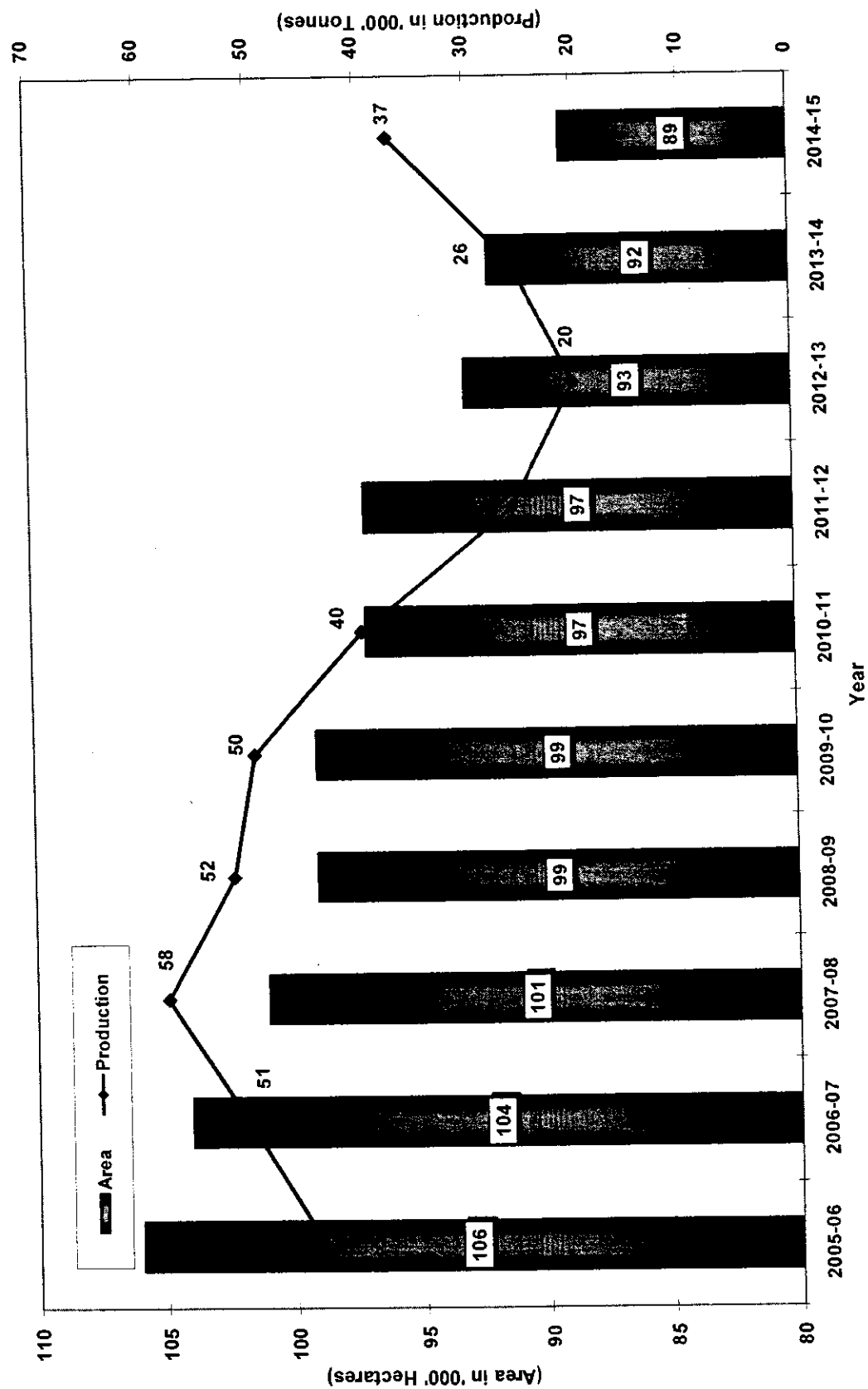
AREA AND PRODUCTION OF TAPIOCA 2005-06 TO 2014-15



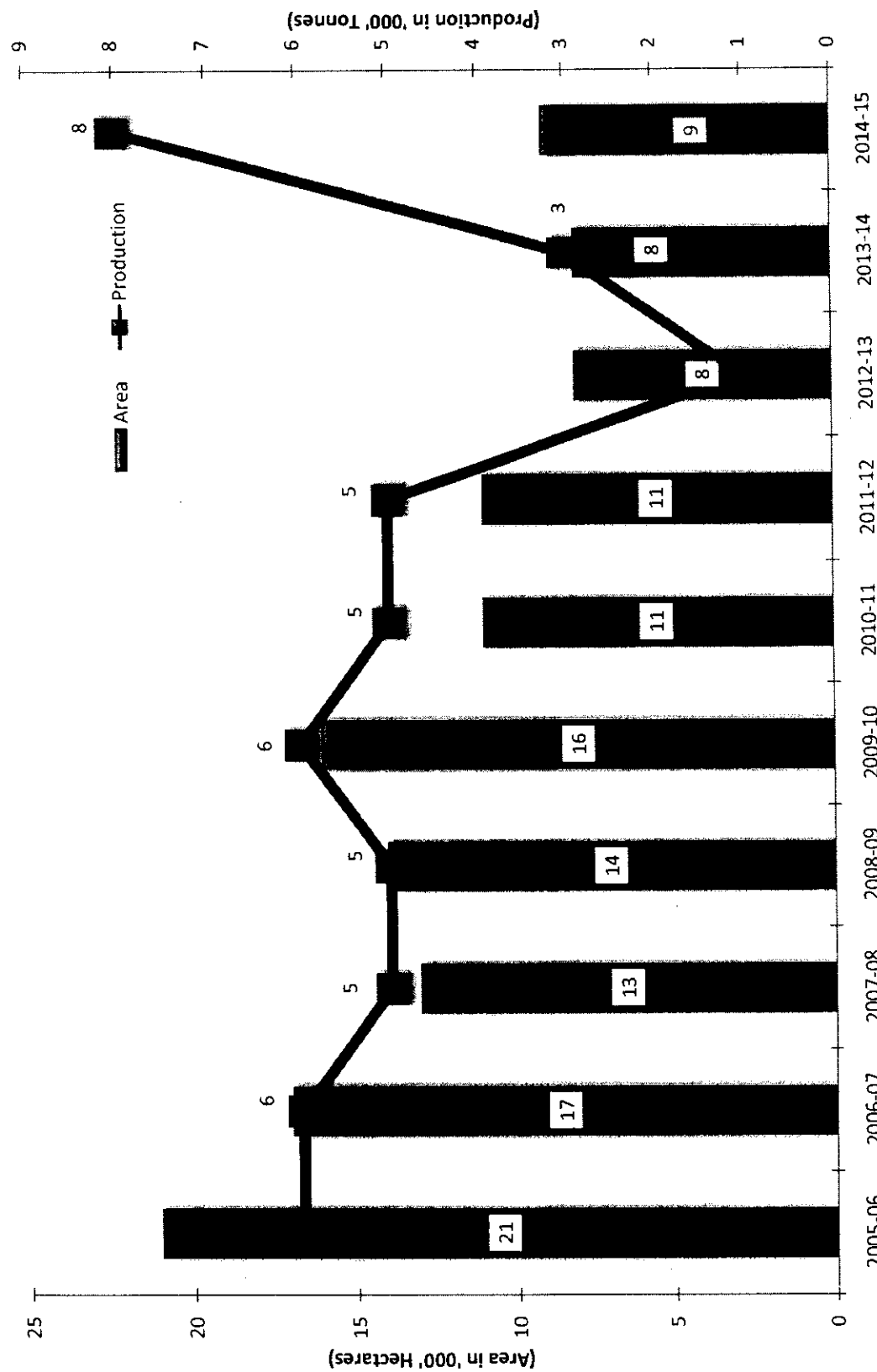
AREA AND PRODUCTION OF POTATO 2005-06 TO 2014-15



AREA AND PRODUCTION OF CASHEWNUT 2005-06 TO 2014-15



AREA AND PRODUCTION OF CORIANDER 2005-06 TO 2014-15



AREA AND PRODUCTION OF GINGER 2005-06 TO 2014-15

