

PRODUCTION AND EXPORT PERFORMANCE OF CARDAMOM IN INDIA

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Abstract

Cardamom is generally produced in the tropical regions of the world. Guatemala is the largest cardamom producing country followed by India. The total world production of this spice is around 35,000 MT per annum. India is to be the largest producer of Cardamom, during 2000 and thereafter, Guatemala pushed her to the second position. Cardamom cultivation is concentrated on the Western Ghats in the country; and the Western Ghats are also known as “Cardamom Hills”. In 2012-13, as per provisional trade estimates, India's production is around 12,000 MT. Following states are the major producers of cardamom in India Kerala, Karnataka, and Tamil Nadu. Kerala producers were 70 per cent which was followed by Karnataka 20 per cent and Tamil Nadu 10 per cent. India is the second largest exporter of cardamom after Guatemala. India exports roughly 15 per cent to 20 per cents of its total cardamom production. India is the largest producer, consumer and exporter of spices, with a 46 per cent share by volume and 23 per cent share by value, in the world market.

Introduction

India is the largest producer, consumer and exporter of spices, with a 46 per cent share by volume and 23 per cent share by value, in the world market. However, a few spices and value added forms constitute a major segment of the country 's total export earnings. India accounts for 25-30 per cent of world's pepper production, 35 per cent of ginger and about 90 per cent of turmeric production. Among the Indian federal states, Kerala tops in pepper (96 per cent), Cardamom (53 per cent) ,Ginger (25 per cent) production in the country.

Cardamom

The world's cardamom production during the year 2013-14 was 35000 to 40,000 Metric Tonnes. At present, the major producer is Guatemala, is expected for produce around 25,000 Metric Tonnes. India is the second largest producer with an average production of 12,000 to 12,500 Metric Tonnes. Other major producing countries are Sri Lanka and Tanzania. Despite its numerous applications in the cuisines of Sri Lanka, India and Iran, 60 per cent of the world production is exported to the Arab (South West Asia, North Africa) countries, where the larger part is used to prepare coffee.

Objective of the Study

1. To examine trend in area, production and productivity of Cardamom in India during 2000-01 to 2011-12.
2. Export performance of Cardamom in India during 2000-01 to 2011-12.

3. To measure the contribution of area and yield in change in production of cardamom in India.

Tools of Analysis

The following tools were employed to analyses the data with reference to objective chosen for the study.

1. Estimation of Compound Growth Rate

Several methods are available to estimate growth rates. In this study exponential function was used to estimate compound growth rate by taking time as the independent variable and credit as dependent variable. This exponential trend equation gives constant rate of increase or decrease per unit of time and they are termed as 'Geometric' or Compound Growth Rate.

(1) Compound growth rate is estimated by fitting exponential trend equation of the following type

$$Y = a b^t \text{----- (1)}$$

Where,

Y = Turmeric Value

t = time variable in years

a = constant

and b = (1 + i)

Where i = Compound Growth Rate

The equation (1) takes the following linear form by taking logarithms of both sides of the equation

$$\text{Log } y = \text{log } a + t \text{ log } b$$

Compound growth rate is computed using the following formula.

$$\text{Compound Growth Rate (CGR)} = (\text{Antilog } (\text{log } b - 1) * 100$$

(2) Growth Of Cardamom Production an- Analysis By Component Elements

The production of any crop will be increased by way of increasing either area under the crop or both. In cardamom more area has been brought under cultivation during the last few years. Similarly, yield also has increased considerably. Ultimately the production of Turmeric also increased over the years. The relative contribution of area, yield and their interaction in increased in production of crop can be estimated using the following measure

$$Q_0 = A_0 Y_0$$

$$Q_n = A_n Y_n$$

$$\text{Also, } Q_n = Q_0 + \Delta Q, A_n = A_0 + \Delta A \text{ and } Y_n = Y_0 + \Delta Y$$

$$\text{Therefore } (Q_0 + \Delta Q) = (A_0 + \Delta A) (Y_0 + \Delta Y)$$

$$= A_0 Y_0 + A_0 \Delta Y + Y_0 \Delta A + \Delta A \Delta Y$$

$$\begin{aligned}\Delta Q &= A_0 Y_0 + A_0 \Delta Y + Y_0 \Delta A + \Delta A \Delta Y - Q_0 \\ \Delta Q &= A_0 \Delta Y + Y_0 \Delta A + \Delta A \Delta Y\end{aligned}$$

The first term ($A_0 \Delta Y$) can be considered as the yield effect, the second term ($Y_0 \Delta A$) as the area effect and the third ($\Delta A \Delta Y$) as the interaction effect. The total change in production can thus be decomposed into three-effect viz., yield effect, area effect and the interaction effect.

Global Scenario - Demand and Supply of Cardamom

Cardamom is generally produced in the tropical regions of the world. Guatemala is the largest cardamom producing country followed by India. The total world production of this spice is around 35,000 MT per annum. Consumption of cardamom has sharply increased throughout the world during the last two decades. The major consuming countries of cardamom are the Middle Eastern countries, India, Pakistan, European countries, the US, and Japan. Middle Eastern countries such as Saudi Arabia and the United Arab Emirates, and South-East Asian countries such as India, etc., account for more than 60% of the world's consumption. Saudi Arabia is the single largest importer of Cardamom in the world, followed by Kuwait.

Indian Scenario - Demand and Supply

India is the largest producer of Cardamom, during 2000 and thereafter, Guatemala pushed her to the second position. Cardamom cultivation is concentrated on the Western Ghats in the country; and the Western Ghats are also known as "Cardamom Hills". In 2012-13, as per provisional trade estimates, India's production is around 12,000 MT. Following states are the major producers of cardamom in India Kerala, Karnataka, and Tamil Nadu. Kerala producers were 70 per cent which was followed by Karnataka 20 per cent and Tamil Nadu 10 per cent. Idukki district in Kerala is the major cardamom-producing area and places such as Udumbanchola taluka, Peermede taluka and Devikulam taluka are important centres in Idukki district.

Domestic Consumption Cardamom

At present, India is the second largest consumer of small cardamom in the world after Saudi Arabia. India's consumption is estimated to be between 11,000 to 12,000 Metric Tonnes per annum in 2013-14. Industrial consumption of cardamom, particularly by the pharmaceutical or ayurvedic and cosmetics industries is the highest and accounts for over 45 per cent of the total consumption. A clear regional disparity is seen in cardamom's consumption pattern.

Export of Cardamom from India

India is the second largest exporter of cardamom after Guatemala. Indian small cardamom is always preferred in the global market due to its aroma and premium quality. India exports roughly 15 per cent to 20 per cent of its total cardamom production. Saudi Arabia is the single largest importer of cardamom, distantly followed by Kuwait. However, export during 2004-05 to 2008-09 remained lower due to higher domestic consumption and production of less than 10,000 MT. Nonetheless, in the year 2009-10, exports from India shot up to 1975 MT due to a drastic fall in production amid unfavorable weather conditions. In 2010-11, export fell to 1175 MT but, during 2011-12 due to an increase in production, exports have become easier. In 2011-12, India exported around 4,650 MT of small cardamom, which is considered the record high of the past few years. However, during the year 2013-14, 2,080 MT of cardamom valued at Rs 16,429.38 lakh were exported, compared to the 2372 MT in 2012-13 according to the data released by the spices board of India.

Cardamom is grown in many states in India. But small cardamom is produced in three states Kerala, Karnataka and Tamil Nadu. Among these three states, Kerala stands first in the area of production and output. Cardamom is cultivated in 9 districts in Kerala state. Amongst these districts, idukki ranks first in the total crop area.

Table 1: Area, Production and Productivity of Cardamom in India during 2000-2001 to 2011-12

Year	Area ('000 hectares)	Indices Base Period (2000-01)	Production (Metric tonnes)	Indices Base Period (2000-01)	Productivity (Kg/per hectares)	Indices Base Period (2000-01)
2000-01	72318	100	10480	100	423	100
2001-02	72663	100.47	11365	108.44	455	106.80
2002-03	73125	101.11	11920	113.74	480	113.47
2003-04	73237	101.27	11580	110.49	470	111.11
2004-05	73725	101.94	11415	108.92	453	107.09
2005-06	73795	102.04	12540	119.65	492	116.31
2006-07	73228	101.25	11235	107.20	455	107.57
2007-08	69300	95.82	9450	90.17	423	100
2008-09	71170	98.41	11000	104.96	574	135.69
2009-10	71110	98.32	10075	96.13	409	96.69
2010-11	71011	98.19	10380	99.04	421	99.52
2011-12	71285	98.57	4582	43.72	372	87.94
CGR	-0.32		-4.12		-0.88	

Source: Spices Board of India

Area

The data related to area, production and productivity of cardamom in India from 2000-2001 to 2011-12 is given in table 1. It reveals that the area under cardamom had decreased from 72318 hectares in the year 2000-01 to 71285 hectares in 2011-12. The area has under cardamom reached the maximum of 73795 hectares during 2005-06. The area indices worked out for cardamom showed fluctuating trends. The area indices worked out for cardamom. The area indices were maximum at 102.04 during the reference period the estimated Compound Growth Rate of area under cardamom was negative which was estimated to be -0.32 per cent per annum.

Production

The general trend of production indicated that it had decreased from 10480 metric tonnes during the year 2000-01 to 4582 in the year 2011-13 with some fluctuation in the intervening years. The production of cardamom was maximum during the year 2005-06 with 12540 metric tonnes, while it was minimum during the year 2011-12 4582 metric tonnes. The indices of production of cardamom reached maximum during the year 2005-06 with 119.65 per cent. The annual Compound Growth Rate was negative with the magnitude of -4.12 per cent per annum during the reference period.

Productivity

The productivity of India shows that it has decreased from 423 kg per hectare in the year 2000-01 to 372 kg per hectare during 2011-12 with some variation in some years. The productivity of cardamom attained the maximum during the period 2008-09 with 574 kg per hectares. The indices for productivity were maximum in 2005-06 135.69 per cent and minimum in 2011-12 87.94 per cent. The indices were less than 100 years 2009-10, and 2010-11. The estimate Compound Growth Rate for negative productivity of cardamom was -0.88 per cent.

Table 2: Area and Yield Effect of Cardamom Production in India during 2000-2001 to 2011-12

Sl. No	India	Period	A ₀	Y ₀	ΔA	ΔY	Area Effect	Yield Effect	Interaction Effect
1	India	2000-2001 and 2011-12	72318	423	1033	51	88.28	10.45	1.26

Sources: Computer Data

Relative Contribution Area and Yield on Production

Table 2 Shows that the Effect of Production, area and interaction of Cardamom production in India during 2000-01 to 2011-12 are calculated. The total production of Cardamom increased during the reference period was about 4177860 Million tonnes of which 10.45 per cent was due to increased in productivity, 88.28 per cent was due to interaction of both area and productivity. Area effect is more than yield effect in the case of change in total in production in Cardamom.

Table 3: Area under Cardamom in Important State's in India ("000 hectares)

State	Kerala	Karnataka	Tamil Nadu
2000-01	41288	25947	5083
2001-02	41336	26258	5069
2002-03	41412	26644	5069
2003-04	41332	26838	5067
2004-05	41378	27094	5253
2005-06	41367	27173	5255
2006-07	41362	26611	5255
2007-08	39763	24976	4561
2008-09	41588	25021	4561
2009-10	41593	24956	4561
2010-11	41242	25209	4560
2011-12	41600	25125	4560
CGR	0.001	-0.63	-1.33

Source: Spices Board of India

State-Wise Area

The data on state wise area under cardamom is presented in table 3 for the period 2000-01-to 2011-12. Out of the major producing cardamom states in India, Kerala had more area under cardamom during the period of reference, which was followed by Kerala, Karnataka, Tamil Nadu.

Kerala

In Kerala cardamom was cultivated under 41288 thousand hectares during 2000-01. Increased in the 416000 thousand hectares in during 2011-12. The maximum area under cardamom cultivation was during the year 2011-12 41600 thousand hectares and which it was minimum 39763 thousand hectares during 2007-08. The estimated Compound Growth Rate showed positive growth which was 0.001 per cent annum.

Karnataka

Next to Kerala, Karnataka had more area under cardamom cultivation, though the area under cardamom cultivation was 25947 thousand hectares during 2000-01, it has decreased 25125 thousand hectares in the year. The maximum area of cardamom in 27173 thousand hectares in during 2005-06. The estimated Compound Growth Rate was negative with -0.63 per cent per annum.

Tamil Nadu

In Tamil Nadu the area under cardamom cultivation during the period of reference had decreased from 5083 thousand hectares in during 2000-01 beginning of the reference period to 4560 thousand hectares in the last year of reference period. Cardamom cultivation was maximum during the year 2006-07 5255 thousand hectares. The estimated Compound Growth Rate was negative with -1.33 per cent per annum.

**Table 4: Production of Cardamom in Important States in India
("Production in metric tonnes)**

State	Kerala	Karnataka	Tamil Nadu
2000-01	7580	2100	800
2001-02	8380	2115	870
2002-03	8680	2310	930
2003-04	8875	1740	965
2004-05	8616	1879	920
2005-06	9765	1775	1000
2006-07	8545	1725	965
2007-08	7030	1585	835
2008-09	8550	1700	750
2009-10	7800	1550	725
2010-11	7935	1710	735
2011-12	1022	2415	1145
CGR	-8.12	-1.33	-0.32

Source: Spices Board of India

State Wise Production

The data related to State -Wise production of cardamom in India for the period 2000-01 to 2011-12 are provided in the table 4.

Kerala

Production of cardamom in Kerala has decreased from 7580 thousand metric tonnes during the year 2000-01 to 1022 thousand metric tonnes in 2011-12. The production was maximum during the year 2005-06 9765 thousand metric tonnes and minimum during 2011-

12 1022 thousand metric tonnes. The Estimated Compound Growth Rate was negative with -8.12 per cent during the period reference.

Karnataka

The production of cardamom in Karnataka has increased from 2100 thousand metric tonnes to 2415 thousand metric tonnes in 2011-12. The production of cardamom reached the maximum during 2011-12 with 2415 thousand metric tonnes. The Estimated Compound Growth Rate was -1.33 per cent annum during the period of reference.

Tamil Nadu

The production of cardamom in Tamil Nadu has increased from 800 thousand metric tonnes during the year 2000-01 to 1145 thousand metric tonnes in 2011-12. The cardamom production was maximum during the year 2011-12 with 1145 thousand metric tonnes, while it was minimum during 2009-10 with 725 thousand metric tonnes. The Estimated Compound Growth Rate was negative in -0.32 per cent during the period of reference.

Table 5: Productivity of Cardamom in Important States in India (“Kg/per hectares)

State	Kerala	Karnataka	Tamil Nadu
2000-01	183.58	80.93	157.32
2001-02	202.72	80.54	171.63
2002-03	209.60	86.69	183.46
2003-04	214.72	64.83	190.44
2004-05	208.22	69.35	175.13
2005-06	236.05	65.32	190.29
2006-07	206.59	64.82	183.63
2007-08	176.79	63.46	183.07
2008-09	341.71	67.94	164.43
2009-10	187.53	62.10	158.95
2010-11	192.40	67.83	161.18
2011-12	24.56	96.11	251.09
CGR	-7.30	-0.71	1.03

Source: Spices Board of India

Kerala

The Productivity of cardamom has decreased from 183.58 kg per hectare during 2000-01 to 24.56 kg per hectare during 2011-12. The yield was maximum during 2008-09 with 341.71 kg per hectare and minimum during 2011-12 with 24.56 kg per hectare. The Estimated Compound Growth Rate was negative with -7.30 per cent during the period of reference.

Karnataka

In case of Karnataka, Productivity of cardamom has increased from 80.93 kg per hectare during 2000-01 to 96.11 kg per hectare in 2011-12. The yield was recorded maximum during the year 2011-12 with 96.11 kg per hectare and minimum during 2009-10 with 62.10 kg per hectare. The annual Compound Growth Rate was estimated was negative with -0.71 per cent during the period of reference.

Tamil Nadu

In case of Tamil Nadu, the Productivity has increased from 157.32 kg per hectare during 2000-01 to 251.09 kg per hectare in 2011-12. The yield was maximum during 2011-12 with 251.09 kg per hectare and minimum during the year 2000-01 with 157.32 kg per hectare. The annual Compound Growth Rate was estimated positive 1.03 per cent during the reference period.

**Table 6: Export Quantity and Value of Cardamom in India
(Quantity in tonnes and Value in Rs Lakhs)**

Year	Quantity (MT)	Value (Lakh)
2000-01	890	2872.2
2001-02	587	2487
2002-03	681	4707.40
2003-04	756	3691.70
2004-05	642	2362.40
2005-06	863	2682.10
2006-07	655	2348.1
2007-08	500	2475
2008-09	750	4726.49
2009-10	1975	16570.14
2010-11	1175	13216.66
2011-12	4650	25871.4
CGR	11.37	18.79

Source: Spices Board of India

The export quantity of Cardamom and its value in India during from 2000-2001 to 2011-12 is given in table 6. The export cardamom was maximum in 25871.4 Lakh during 2011-12 and While it was minimum in 500 tonnes during 2007-2008. Export Value was fluctuating trend throughout the study period. The Compound Growth Rate of Quantity and Value was positive at 11.37 per cent and 18.79 per cent respectively.

Conclusion

Area, Production and Productivity Cardamom has constant trend of reference period. Kerala is the pre dominate production of Cardamom in India after Karnataka and Tamil Nadu. Export of Cardamom had increasing trend. But, it is not enough, so Government of India should be steps taken by way of an increasing area (or) an increasing productivity of Cardamom by way of many subsidies (Fertilizer, Pesticides, High yielding Varieties of seeds) given by the farmers.

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