

**PRODUCTION OF CARDAMOM IN INDIA: AN ANALYSIS****R.Aruna\* and Dr.M.P.Mahesh \*\***

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**Abstract**-Small cardamom an important member in the family of spices is used for its flavor and taste in many food products prepared in the food processing industry, bakery, sweet shops and also in dishes prepared in homes. The crop can be cultivated in specific climatic conditions. India is one of the country that exhibit the required climatic conditions for the cultivation of small cardamom in its southern region. The favourable climatic condition prevails near the Western Ghats region of the southern state and provides superior quality of small cardamom. India stands as second largest cultivator and producer of small cardamom among the countries in the world involved in cardamom production. Though there exist a favourable climatic condition, the production is highly influenced by other factors such as rainfall, pests, soil fertility, technical procedure adaptation. Hence a detail analysis was done by considering cultivation area, production, yield of small cardamom with main focus to the major cultivation region Theni falls that geographically lies in Tamil Nadu a state in the southern part of India and the suggestions were provided to various execute various measures for improving the production of small cardamom.

**Keywords:** small cardamom, spices cultivation, small cardamom production, problems small cardamom production.

**I. Introduction**

Cardamom is one of the important spices that is cultivated in India. India is the second biggest producer in world among the small cardamom producing countries. Cardamom production in India brings high business opportunity in the export market. Cardamom a native crop of India is highly influenced by climatic condition. A category of cardamom called as small cardamom is cultivated in the southern parts of India. Cardamom grows in tropical climate or in hot and humid climatic conditions. Another variety called as large cardamom generally cultivated in northern hill states of India. This article discuss about the production of small cardamom in India. The crop is cultivated in hill side regions of the country with high humidity. In India small cardamom is cultivated in certain regions of Tamilnadu, Kerala and Karnataka specifically areas that are closer to Western Ghats. India, Guatemala, Srilanka, Tanzania, El Salvador, Vietnam, Laos, Cambodia and Papua New Guinea are the leading producers of cardamom in the world market. In recent years Guatemala contributes more with increasing trend in the international and export market of cardamom. Cardamom is one among the species cultivated mainly for adding as flavouring agent in food dishes. Cardamom has a significant contribution in the preparation of medicine for digestion problems including intestinal spasms, irritable bowel syndrome, liver and gallbladder complaints, diarrhea, heartburn, constipation, and loss of appetite. Cardamom is an important cash crop that brings India in the financial year 2016-17 small cardamom was cultivated over an area of 0.69 lakh hectares yielded a production volume of 19625 metric tonnes.

Cardamom cultivation contributes in high level for the economic activities of the southern states by involving manpower for cultivation, production and transportation activities. However there is a huge struggle for the cardamom cultivators of various states in obtaining optimum return and production through cardamom. A systematic scientific research and study is necessitated for analysing and relating the problems and difficulties in the production of cardamom. Hence an analysis is attempted towards the production progress of small cardamom cultivation in Tamilnadu and in the other states India such that it create awareness for the people involved in the domestic and international level market.

## **II. Problem statement**

The Indian states in which the western ghats of India spreads over are the major cultivators of cardamom. Cardamom is grown in southern part of India in the Western Ghats regions of Tamil Nadu, Kerala and Karnataka. Though there is an appreciable yield of cardamom that makes both the domestic and foreign trade to flourish, the difficulties and problems encountered during cultivation, crop maintenance, marketing cardamom at domestic and export levels does not allow the cultivators to avail the optimum return benefits. Also the traders in turn are ending their trade with a marginal profit. In India the role of middleman and their association with the farmers cultivating cardamom create a significant impact in the economic aspects of cardamom cultivation\*. Generally cardamom is cultivated as a monocrop and rarely as intercrop in India. Unavailability of regularized market at various cultivation zones invites and favours the unscrupulous middle man and traders in the cardamom trade generating poor returns to the cultivators<sup>1</sup>. In the recent years a wide variation existed in the export price of cardamom because of fluctuations existed in the foreign market. Hence it is unavoidable to analyse the cardamom production in India as it influences the trade of both domestic and international market.

## **III. Objective of the Study:**

The article is focused mainly about the growth and progress of small cardamom from 1997-98 to 2016-17 in Tamil nadu, India.

## **IV. Methodology of the study**

The required secondary data for the purpose of study discussed were mainly collected from Spices board of India and also from the other sources such as Agricultural department, District industrial centre, Forest department, Directorate of agricultural marketing, Directorate of statistical and economics department. Area of cardamom cultivation its production and yield per hectare in India, Tamilnadu and Theni district are shown in table 1. The yield has been estimated as per the procedure followed by the Spices board of India. The calculation procedure is carried out by using a basic arithmetic division of total production by total area and multiplied by 1000 for a given year.

## **V. Cardamom in India**

India holds the largest share in the world cultivation area of cardamom, India holds 27.79 percentage as its share in the world's total cultivation area of cardamom as per the statistical release of F.A.O. Though there exist a significant share in the global level the total cultivation area of 72,444 hectares had got shrink to 69357 hectares in the year 2016-17 that accounts to 4.26% decrease in the cultivation area. Though the declination is in the acceptable range as there will be a marginal percentage variation in the cultivation area of any crop in the year 2009-10 there is a

huge fall in the cultivation area of cardamom, the analysis of the data revealed that there is a significant reduce in the cultivation area of Kerala during this particular year because unfavorable climatic conditions and poor rainfall during 2009-2010.

**Table -1: Area, Production and Yield per Hectare of small cardamom in India**

INDIA			
YEAR	AREA	PRODUCTION IN METRIC TONNES	YIELD IN KILO GRAM
2000-01	72320	10480	144.91
2001-02	72663	11365	156.41
2002-03	73125	11920	163.01
2003-04	73237	11580	158.12
2004-05	73725	11415	154.83
2005-06	73795	12540	169.93
2006-07	73228	11235	153.42
2007-08	69300	9450	136.36
2008-09	71170	11000	154.56
2009-10	50237	10075	200.55
2010-11	71012	10380	146.17
2011-12	71285	15000	210.42
2012-13	69870	14000	200.37
2013-14	69970	16000	228.67
2014-15	69970	18000	257.25
2015-16	70082	23890	340.89
2016-17	69357	17990	259.38
2017-18	69330	20650	297.85
2018-19	69132	12940	187.18
2019-20	69087	11540	167.04
Constant	4.859	3.99	2.140
Trend Co-efficient	-0.001	0.011	0.013
R <sup>2</sup>	0.053	0.365	0.444
CGR	-0.23	2.565	3.038
Co-efficient of Variation	7.09	28.62	28.90

The factors that influenced the variations in cultivation area of cardamom in India are deforestation, restrictions on usage of pesticides near to the reserve forest area of Western Ghats India. Generally cardamom cultivation area falls closer to the restricted area of Western Ghats. Increase in tourism activities, labour cost low margin in profit are also considered for the declination in the cultivation area of the cardamom in Inda. Lack of government initiatives,

technical support by agricultural department and incentives for cardamom cultivation have been also identified as reasons for fluctuation in the cultivation area of cardamom<sup>ϕ</sup>.

Over the centuries cardamom is accounted as the important cash crop in the regions of Western Ghats. Cardamom is cultivated in three Indian states that share the Western Ghats. Kerala is the major cultivator of cardamom in India with Karnataka and Tamil Nadu at next positions respectively. In the year 2016-17 Kerala shares 56.34 percent of cardamom cultivation in the India's total cardamom cultivation. Kerala shares the major area of Western Ghats, landscapes with climatic conditions, rainfall favouring cardamom cultivation and another important reason is the people of Kerala takes cardamom cultivation as a way of life style makes the state as a leader in the cultivation of cardamom<sup>¥</sup>.

The production volume of cardamom found to be satisfactory mostly with in an increasing trend in India in the period of study as shown in Table.1. The year 2007-08 shows a fall in the production volume due to poor rain fall during the year. This made the farmers to take over a decision to switch over for alternative crops in the next few years resulting in a fall of total cultivation area of cardamom in India. There found a slight fluctuation in the production during every year due to re-plantation of crops, switch over of farmers with small land hold to new crops, lack of financial support to farmers for crop maintenance etc., At the same time government initiatives for farmer motivations, training programs about the proper irrigation procedure crop maintenance, methods for land development, procedures to be followed for increasing soil fertility, guidance about the proper selection of pesticides, implementation of rain water harvesting had improved the production volume in an appreciable manner<sup>#</sup>. Introduction of new varieties of cardamom also played a vital role in the increase of cardamom production.

The table 1 delivers there is a progressive change in the production volume of cardamom and yield though the cultivation area got decreased to a considerable number in the period of study. The  $R^2$  value of the area production and yield can be noted as 0.053, 0.365 and 0.444 respectively. The table 1 also delivers the area of cultivation, cardamom production; yield of cardamom got a change by -0.23, 2.565 and 3.038 percentages respectively per annum. The variability magnitude was found to be 7.09, 28.62 and 28.90 percent per annum respectively for the three parameters discussed in the table.1. The positive and significant value of the regression coefficient is the direct indication of the significant growth in the period taken for study.

## VI. Cardamom in Tamil Nadu

Cardamom cultivation is carried out in Theni, The Nilgiris, Coimbatore, Dinducgal, Salem, Kanyakumari, Tirunelveli and Namakkal districts of Tamil Nadu. The climatic conditions in these districts is highly favourable for cardamom cultivation. Tamil Nadu holds a total of 5160 hectares of cardamom cultivation land in the year 2016-17 as shown in the table 2. The area of cultivation is found to be a minor value than the value of hectares contributed by Kerala and Karnataka for cardamom cultivation is because of the availability of limited area in the regions of Tamil Nadu favouring the climatic conditions for cardamom cultivation<sup>§</sup>. In the year 2009-2010 there is a decline in the cultivation area in Tamil Nadu and also in the other two state because of unfavourable rainy season that prevailed during the year and replantation also played

**Table -2: Area, Production and Yield per Hectare of small cardamom in Tamil Nadu**

<b>TAMIL NADU</b>			
<b>YEAR</b>	<b>AREA</b>	<b>PRODUCTION IN METRIC TONNES</b>	<b>YIELD IN KILOGRAM</b>
2000-01	5085	800	157.33
2001-02	5069	870	171.63
2002-03	5069	930	183.47
2003-04	5067	965	190.45
2004-05	5253	920	175.14
2005-06	5255	1000	190.29
2006-07	5255	965	183.63
2007-08	4561	835	183.07
2008-09	4561	750	164.44
2009-10	3231	725	224.39
2010-11	4560	735	161.18
2011-12	4560	1145	251.10
2012-13	5160	850	164.73
2013-14	5160	950	184.11
2014-15	5160	950	184.11
2015-16	5160	950	184.11
2016-17	5160	891	172.67
2017-18	5115	850	166.18
2018-19	5115	715	139.78
2019-20	5095	690	135.43
Constant	3.687	2.963	2.276
Trend Co-efficient	0	-0.002	-0.003
R <sup>2</sup>	0.002	0.061	0.073
CGR	0	-0.461	-0.693
Co-efficient of Variation	9.52	13.20	14.41

a main role during the year. In the state of Tamil Nadu cardamom cultivation is carried out in the district area of Theni, Nilgiris, Coimbatore, Virudhunagar Dindugal, Thirunelveli, Kanyakumari, salem and Namakkal. Among the cardamom cultivation district of Tamil Nadu theni district holds a significant share of 25% of cultivation land in the total share of Tamil Nadu. Theni district Coimbatore and Nilgiris, kanyakumari districts also contributes 45% of the total production volume of the cardamom production. Theni districts shares 15% of the share in the production volume. The production volume is found to be decreased in 1998-99, 2007-2008 to 2009-10 because poor rainfall, replantation and insects exploitation and decrease in soil fertility and un regulated agricultural procedures. The yield rate of the Tamil Nadu is found to be higher value of 189 kg/ha when compared with the countries yield rate 283 kg/ha. The yield rate of Tamil Nadu is also found to be high comparatively with Karnataka and next to Kerala

The  $R^2$  value of the area production and yield can be noted as 0.002, 0.061 and 0.073 respectively. The table 2 also delivers the area of cultivation, cardamom production; yield of cardamom got an change by 0.0, -0.461 and -0.693 percentage respectively per annum. The variability magnitude was found to be 9.52, 13.20 and 14.41 percent per annum for the three parameters discussed in the table.2. The positive and significant value of the regression coefficient is the direct indication of the significant growth in the period taken for study.

## VII. Cardamom in Theni District

In Tamil Nadu, Theni district consistently remains as a major cardamom producer of the

**Table -3: Area, Production and Yield per Hectare of small cardamom in Theni**

THENI DISTRICT			
YEAR	AREA	PRODUCTION IN METRIC TONNES	YIELD IN KILO GRAM
2000-01	1288	123	95.50
2001-02	1329	126	94.81
2002-03	1350	130	96.30
2003-04	1418	136.13	96.00
2004-05	1499	143.9	96.00
2005-06	1516	145.54	96.00
2006-07	1494	143	95.72
2007-08	1484	142	95.69
2008-09	1491	143.14	96.00
2009-10	1509	145	96.09
2010-11	1505	144	95.68
2011-12	1501	144.1	96.00
2012-13	1276	122.5	96.00
2013-14	1391	134	96.00
2014-15	1410	135	95.74
2015-16	1404	133	95.00
2016-17	1450	142	97.93
2017-18	1450	145	100.00
2018-19	1450	150	103.45
2019-20	1435	142	98.95
Constant	3.148	2.123	1.975
Trend Co-efficient	0.001	0.002	0.001
$R^2$	0.037	0.149	0.385
CGR	0.231	0.462	0.231
Co-efficient of Variation	5.17	5.81	2.11

state. The Nilgiris and kanyakumari district comes next in the category respectively. Theni district holds 34.08%, with The Nilgiris district and coimbatore sharing 24.73% and 20.70% of Tamil Nadu total cultivation area in the year 2016-17. The cardamom production is found to be more or less constant in Tamil Nadu with a slight fluctuation 2 percent either as increase or decrease than the previous year. The variation in total cultivation land due to replantation, variation in rainfall among the districts, switch over to new varieties, switch over of small farmers to other cash crops insects invasion are the factors of fluctuation. Majority of cardamom cultivation, around 80% is carried out by small land holders in Theni district and the same condition exist in the other districts under cultivation except The Nilgiris district where about 65% of the cardamom cultivation land is under the hold of major cultivators or estate owners.

The  $R^2$  value of the area production and yield can be noted as 0.037, 0.149 and 0.385 respectively. The table 3 also delivers the area of cultivation, cardamom production; yield of cardamom got an increase by 0.231, 0.462 and 0.231 percentage respectively per annum. The variability magnitude was found to be 5.17, 5.81 and 2.11 percent per annum respectively for the three parameters discussed in the table.3. The positive and significant value of the regression coefficient is the direct indication of the significant growth in the period taken for study.

### VIII. Conclusion

Cardamom cultivation in India holds a significant cultivation area especially in the southern states of India, in particular the states that share the western Ghats of India. The climatic conditions of Western Ghats region highly favours cardamom cultivation and makes India to stands second among the cardamom producing countries across the globe. The Cardamom is being used widely as flavouring agent during food preparation by most of the countries in the world. Also cardamom is used in the preparation of medicine for digestive, respiratory problems. The high demand of cardamom in food and pharmaceutical industry generates high revenue to India in the international market<sup>&</sup>. Cardamom exist to be an important revenue generator of India hence improvement in cardamom cultivation methods through modern agricultural tools, technologies should be executed. Training program to farmers about the proper utilization of technical advancement in cardamom cultivation has to be conducted at regular intervals. Government initiatives and training program to farmers about online marketing and international trade removes the middle man role and brings significant profit to the farmers. Procedures for Providing financial assistance and subsidies for loans towards crop maintenance should be liberalized. Awareness about the insurance for crops will remove the financial and economic burden of the small farmers. Awareness about the introduction new cardamom varieties, rain water harvesting, improvement procedures for improvement of soil fertility, protection from pests and education about the usage of pesticides will retain the farmers in cardamom cultivation. Regular field study by agricultural department to understand and analyse the problems of cardamom cultivators and finding the solution in time will improve the production and also acts as a moral support to the cultivators. Promoting cardamom cultivation stabilize the socio economic conditions of the cardamom cultivation region. Encouragement to farmers in participating conferences, workshop related to cardamom cultivation, marketing and sales will bring a tremendous change in the cardamom production. Award to farmers implementing modern technologies and producing high yield will drive the other farmers to adapt towards modernization and increases the cardamom production.

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