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Performance of Area, Production and Productivity of Cashew in India and Kerala in the Globalised Scenario

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1. Introduction

Cashew industry is one of the traditional industries which is export oriented and generates foreign exchange to build up the share of the gross domestic product of the country. The increase in import of raw cashew shows the lack of availability of raw nuts and the lack of domestic cultivation of cashew especially for generating the employment opportunities in the cashew processing industries. The industry being highly labour intensive is a vital source for domestic employment and it provides employment to large number of people especially to women. Statistics reveals that about 93 percent of workers in the industry are women.

Over the past few decades this industry has been showing some rapid and tremendous growth, though unregulated. One of the major constraints of the industry is the perennial shortage of supplies of raw nuts and the precarious dependence on supplies from other countries. India has historical importance in this regard that it is the first country in the world that started the international trade of cashew. Cashew industry in Kerala with respect to the export was 44060 MT in 1990-91which increased to 68150 MT 2015-16 and the percentage increase during the period was 3.63%. With respect to import, the percentage increase was 11.55(CEPCI, 2016).

Large area under cashew is covered with non-descript genetically inferior seedling progenies. Compared to other plantation crops, cashew is still confined mostly to marginal and inferior land in fertility and is considered as a wasteland crop. Moreover, cashew has been considered as 'maintenance free' crop and the recommended package of practices are not followed. All these factors lead to low yield. Production of cashew nut broadly depends on cashew nut area, yield rate, area under fruit bearing trees, age of plantations and breed of plantations. Government interventions for plantations in wastelands, watershed areas and subsidy support for private plantations were the major reasons for increased area under cashew plantations in India. In the light of escalating demand for cashew, it is necessary to amalgamate the new opportunities available with

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the development of cashew processing industry. Keeping in view the growing demand for cashew and to meet the challenges of attaining self sufficiency in raw cashew nut production, the revival in the cashew processing industry is needed. In this context, the researchers make an attempt at examining the performance of cashew with the following objectives.

2 Objectives:

1. To identify the current position of cashew in India and Kerala, and
2. To evaluate the trends in area, production and productivity of cashew in India and Kerala.

3 Methodology

The study is based on secondary data. Data were collected from Report of Cashew Export Promotion Council of India, report of the Directorate General of Commercial Intelligence and Statistics Kolkata, the Directorate of the Cashew-nut and Cocoa Development of India, Food and agricultural Organization, Horticultural statistics and other sources. The secondary data collected cover a period of fifty years from 1965 to 2016.The period of study has been divided into two parts: pre reform (globalization) period (1965-66 to 1989-90) and the post reform (globalization) period (1990-91 to 2015-16) to identify the performance of area, production and productivity of cashew.

4 Cashew industry in India

The performance of cashew industry in India with respect to the total area, production and productivity of cashew shows that during 1965-66 the total area of cultivation of cashew nut was 302 thousand hectares, the total production of cashew was about 127 thousand tones and the total productivity of cashew was about 253 kg per thousand hectares. In the successive years, the area, production and productivity of cashew showed an increasing trend and it increased to 1011 thousand hectares, 743 thousand tones and 756 kg per thousand hectares respectively in 2015-16. It shows that the area increased by 2.34 times compared with 1975-76, production increased by 3.46 times and productivity by 2.62 times in India.

4.1 Area of Cultivation of Cashew during Pre and Post Globalisation Period in India

The area of cultivation of cashew in India was 302 thousand hectares in 1965-66 and the increase was 24.17% in the next five years. The successive periods have witnessed an increasing trend. The compound annual growth rate of area of cultivation of cashew during this period was 2.51%. Thus, it can be inferred that during the pre-reform period, the area of cultivation was slightly increasing. Similarly, during 2000-01 to 2015-16, the area of cultivation of cashew showed increasing trend from 720 thousand hectares to 1011 thousand hectares. The compound annual growth rate of area of cultivation of cashew during this period was 2.60%. Thus, the area of cultivation of cashew was increasing both in pre-reform and post reform periods (Table 1).

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Table.1 Area of Cultivation of Cashew during Pre and Post Globalisation Period in India (1965-66 to 2015-16)

Pre globalisation			Post globalisation		
Year	Area (000ha)	% Change to Previous Year	Year	Area (000ha)	% Change to Previous Year
1965-66	302	-	1990-91	532	-5.17
1970-71	375	24.17	1995-96	635	19.36
1975-76	432	15.20	2000-01	720	13.38
1980-81	502	16.20	2005-06	837	16.25
1985-86	562	11.59	2010-11	945	12.90
1989-90	561	-0.18	2015-16	1011	6.98
CAGR	2.51%		CAGR	2.60%	

Source: Cashew Export Promotion Council of India, 2016

4.2 Production of Cashew Nut during Pre and Post Globalisation Period in India

The production of cashew nut in India was 127 thousand tons in 1965-66 and in 1989-90 it increased to 334 thousand tones. The compound annual growth rate of production of cashew during this period was 4.08%. However, the reform year 1990-91 witnessed a fall in the production of cashew in India to 295 thousand tones; but it rose to 418 thousand tonnes in 1995-96 to 743 thousand tonnes in 2015-16; the percentage increase was 13.78 during the reform period. The compound annual growth rate of production of cashew during this period shows an increasing trend of 3.76% compared with pre-globalisation period. Thus, in general, the production of cashew nut was increasing during the post globalisation period (Table 2)**.**

Table 2 Production of Cashew Nut during Pre and Post Globalisation Period in India (1965-66 to 2015-16)

Pre globalisation			Post globalisation		
Year	Production (000tonnes)	% Change to Previous Year	Year	Production (000tonnes)	% Change to Previous Year
1965-66	127	-	1990-91	295	-11.68
1970-71	162	27.55	1995-96	418	41.69
1975-76	215	32.72	2000-01	450	7.66
1980-81	223	3.72	2005-06	573	27.33
1985-86	295	32.29	2010-11	653	13.96
1989-90	334	13.22	2015-16	743	13.78
CAGR	4.08%		CAGR	3.76%	

Source: Cashew Export Promotion Council of India, 2016

4.3 Productivity of Cashew Nut during Pre and Post Globalisation Period in India

The productivity of cashew in 1965-66 was 253 kg/thousand hectors which rose to 756 tonnes and the percentage increase was 3.16% in 2015-16. After 1980-81 to 1989-90 the productivity of cashew revealed an increasing trend from 308 kg/thousand hectares to 534 kg/thousand hectares and the percentage increase was only 4.70%. The compound annual growth rate of productivity of cashew during this period was 3.03%. Table.3 reveals that during pre-reform period the productivity of cashew was fluctuating. The same was the case with post globalisation period. However, in the reform period, the productivity slightly improved from 636 kg per thousand hectares to 756 kg per thousand hectares. The compound annual growth rate of productivity of cashew during this period was 0.69% (Table 3). Thus it can be summarized that during the reform period the productivity of cashew nut shows a fluctuating trend.

Table.3. Productivity of Cashew Nut during Pre and Post Globalisation Period in India (1965-66 to 2015-16)

Pre globalisation			Post globalisation		
Year	Productivity (Kg/000ha)	% Change to Previous Year	Year	Productivity (Kg/000ha)	% Change to Previous Year
1965-66	253	-	1990-91	636	19.10
1970-71	261	3.16	1995-96	862	35.53
1975-76	289	10.73	2000-01	710	-17.63
1980-81	308	6.57	2005-06	815	14.88
1985-86	510	65.58	2010-11	720	-11.66
1989-90	534	4.70	2015-16	756	5
CAGR	3.03%		CAGR	0.69%	

Source: Cashew Export Promotion Council of India, 2016

5 Performance of Area, Production and Productivity of Cashew in Kerala

The performance of cashew processing industry in Kerala showed that the area, production and productivity decreased especially after the reform period. The reforms and consequent policies changed the employment pattern of the society and the role of traditional industries decreased because of high preference of the white color and new generation jobs. The entrepreneurs and industrialists stick on to the most profitable sectors for investment, so the traditional industries like cashew industries are under a threat of collapse. The trend in area of cultivation of cashew in Kerala was decreasing mainly due to the shift from cashew cultivation to more lucrative crops like rubber. The Government of Kerala had brought the Land Reforms Act in 1969; Cashew was taken away from the plantation status while Rubber, Tea, Coffee and Cardamom were given the plantation status. Before the act came into force, existing cashew plantations were converted into rubber plantations. Since Kerala had a monopoly of the cashew crop, the Land Reforms Act and similar acts in other states simultaneously affected the

indigenous production of cashew nuts. The production and productivity of cashew in Kerala shows a decreasing trend because of the lack of high yielding crops, senility of the cashew plants and improper weather conditions.

In the post globalisation period too, the area, production and productivity of cashew in Kerala shows a decreasing trend. The mean production of cashew differs significantly before and after the globalization period. In the pre-globalization period there was an increase in the production of cashew with a mean score of 121.71 thousand tones, while in the post globalization period it was only 98.06 thousand tones. The mean productivity of cashew does not differ significantly before and after the globalisation periods. The fall in the area of cultivation of cashew in the post globalisation period was mainly because of the increase in the rubber cultivation and tremendous shift to Rubber cultivation. At present in Kerala, cashew is grown mostly in areas unsuited for cultivation of crops such as rubber and coconut. Cashew trees tend to be grown on marginal and less fertile land and may continue to produce for many years without the intensive inputs and labour which other crops require. For farmers in Kerala, cashew constitutes only a supplementary source of income. The production of cashew nut in the post globalisation period shows a deteriorating trend. Some reasons for the decline of cashew production in Kerala include the pronounced seasonality of the cashew production cycle, high sensitivity of yield to weather conditions, unattractive prices, and land ceilings for cashew plantations, senility of the trees and the non-agricultural orientation of landowners. But there have been little research into the extent to which these reasons, or a combination of these reasons, have led to a decline in Kerala's relative share in the production of raw nuts. During the pre and post globalisation period of cashew with respect to the above-mentioned variables of cashew differ significantly.

5.1 Area of Cultivation of Cashew during Pre and Post Globalisation Period in Kerala

The area of cultivation of cashew plants in the pre-globalisation period rose to 50 percent, the compound annual growth rate being 2.0%. But in the post globalisation period, the area declined by 50 percent to 84.53 thousand hectares, the compound annual growth rate of area of cultivation of cashew during this period decreased to -2.41 %. Thus, in Kerala, the cashew cultivation in the reform period shows a deteriorating trend. The major factors attributed to this fall include the paradigm shift in the agricultural pattern of the farmers, lack of benefits, and volatility nature of cashew nut price. A further disaggregation of the performance statistics is given in Table 4.

5.2 Production of Cashew Nut during Pre and Post Globalisation Period in Kerala

The production of cashew nut rose from 95.3 thousand tonnes in 1965-66 to 139.5 thousand tonnes in 1989-90 and declined to 80 thousand tonnes in 2015-16, a decline of almost 50 percent in the reform period. The compound annual growth rate of production of cashew during this period was 1.54 % in the pre reform period and a severe decline of 2.27 percent in the reform period. The factors contributing to this fall

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in production are lack of high yielding variety of cashew plants, senility of the tree and the changes in the weather conditions (Table.5).

Table.4 Area of Cultivation of Cashew during Pre and Post Globalisation Period in Kerala (1965-66 to 2015-16)

Pre globalisation			Post globalisation		
Year	Area (000ha)	% Change to Previous Year	Year	Area (000ha)	% Change to Previous Year
1965-66	94.72	-	1990-91	155.50	0.06
1970-71	103.61	9.39	1995-96	118.60	-23.73
1975-76	112.90	8.96	2000-01	122.00	2.87
1980-81	145.20	28.61	2005-06	80.00	-34.43
1985-86	154.10	6.13	2010-11	78.00	-2.50
1989-90	155.40	0.84	2015-16	84.53	8.37
CAGR	2.0%		CAGR	-2.41%	

Source: Directorate of Cashew nut and Cocoa Development, 2016

Table 5 Production of Cashew Nut during Pre and Post Globalisation Period in Kerala (1965-66 to 2015-16)

Pre globalisation			Post globalisation		
Year	Production (000tonnes)	% Change to Previous Year	Year	Production (000tonnes)	% Change to Previous Year
1965-66	95.30	-	1990-91	142.1	1.86
1970-71	100.20	5.14	1995-96	140.0	-1.47
1975-76	107.20	6.98	2000-01	76.00	-45.71
1980-81	117.00	9.14	2005-06	67.00	-11.84
1985-86	128.90	10.17	2010-11	71.00	5.97
1989-90	139.50	8.22	2015-16	80.00	12.67
CAGR	1.54%		CAGR	-2.27%	

Source: Directorate of Cashew nut and Cocoa Development, 2016

5.3 Productivity of Cashew Nut during Pre and Post Globalisation Period in Kerala

In the pre-globalisation period productivity of cashew declined slightly during 1965-66 to 1990-91; then in the post globalisation period, there was a mild improvement in productivity from 925 kg per thousand hectares in 1990-91 to 946 kg per thousand hectares in 2015-16. The compound annual growth rate of productivity of cashew during this period was only 0.09% (Table 6). Thus, during the post reform period, the productivity of cashew nut was overall hopeful.

Table.6 Productivity of Cashew Nut during Pre and Post Globalisation Period in Kerala (1965-66 to 2015-16)

Pre globalisation	Post globalisation

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Year	Productivity (Kg/000ha)	% Change to Previous Year	Year	Productivity (Kg/000ha)	% Change to Previous Year
1965-66	956	-	1990-91	925	0
1970-71	965	0.94	1995-96	1000	8.11
1975-76	971	0.62	2000-01	765	-23.5
1980-81	967	-0.41	2005-06	900	17.65
1985-86	956	-1.14	2010-11	947	5.22
1989-90	925	-3.24	2015-16	946	-0.11
CAGR	-0.13%		CAGR	0.09%	

Source: Directorate of Cashew nut and Cocoa Development, 2016

6 Area, Production and Productivity of Cashew in India and Kerala: Pre and post Globalisation

Government of India introduced a large number of innovative promotional measures to uplift the growth of traditional industries. Cashew is an agro based industry which provides foreign exchange for the economic development of our country. As a traditional industry, cashew leads to a greater utilization of natural resources, production of goods and services, creation of employment opportunities and improvement in the general standard of living. The relevance of cashew industry is analyzed through the area, production and productivity. The independent sample t- test was used to find out the relevance of cashew industry in India and Kerala (Table 7). With respect to area of cashew in India, the t test indicates that difference in area of cultivation during pre and post globalisation period is significant at 0.01 with t value of 6.11.

Table 7 Area, Production and Productivity of Cashew in India and Kerala: Pre and post Globalisation

Indicators	Period	India			Kerala		
		Mean	t-value	Significance	Mean	t-value	Significance
Area	Pre-Globalization (25 years)	516.27	6.11	0.01	144.39	4.478	0.01
	Post Globalization (25 years)	771.16			108.18		
Production	Pre-Globalization (25 years)	257.53	6.68	0.01	121.71	2.96	0.01
	Post Globalization (25 years)	542.12			98.06		
Productivity	Pre-Globalization (25 years)	410.13	11.4	0.01	958.93	1.59	0.01
	Post Globalization (25 years)	753.00			922.96		

Source: Estimate from secondary data, 1965-66 to 2015-16

The mean score indicates that post globalization period has witnessed an increase in area of cultivation of cashew in India with a mean score of 771.16 thousand hectors, while that of pre globalization period is only 516. 27 thousand hectors. Whereas in

Kerala, there was a significant decrease in area of cultivation during post globalisation period. The average area of cashew cultivation decreased to 108.18 thousand hectares during post reform period from 144.39 thousand hectors during pre reform period.

With respect to production in India, there is considerable increase in the production after economic reform. The increase is significant at 0.01 with t-value of 6.68. The mean score indicates that post globalization period witnessed an increase in production of cashew with a mean score of 542.12 thousand tones as compared to that of only 257.53 thousand tones during the pre globalization period. While in Kerala, production of cashew significantly decreased after the economic reform and its all India share further declined. As far as the productivity of cashew is concerned, the same trend is seen as in the case of area and production of cashew. In India, productivity of cashew increased significantly while in Kerala it decreased considerably after reform. During the pre reform period, average productivity of cashew in India was 410.13 kg per thousand hectors which increased to 753.00 kg per thousand hectors. But in the case of Kerala, average productivity of cashew during pre reform period was 958.93 kg per thousand hectors which declined to 922.96 kg per thousand hectors.

6.1 Reasons for Declining Trends in Cashew production

India is largest producer of raw cashew nuts in the world and its production increased from 6.92 lakh MT in 2011-12 to 7.28 lakh MT in 2012-13 while the area under cashew cultivation declined to 9.91 lakh hectares in 2011-12 and to 9.82 lakh hectares in 2012-13. Kerala had been at the top in production of cashew nuts in the early 90s, but gradually dropped to the 4th position after Maharashtra, Andhra Pradesh, and Orissa. In Kerala there has been a continuous and considerable decline in both area under cultivation and production of cashew for the last one decade. Interestingly, area and production are increasing steadily in other producing states in the country. Area under cashew cultivation and yield per acre has been decreasing in Kerala mainly due to the replacement of cashew with remunerative crops like rubber and rapid urbanization.

Despite most processing factories being located in south Kerala, most cashews is grown in the northern districts, especially Kannur and Kasaragod, where the biophysical conditions are particularly suitable. North Kerala is known for the high productivity (590 kg per acre) and quality of the nuts it produces. Yet despite favorable biophysical conditions, Kerala farmers have not engaged in intensive cultivation practices although the reasons for this are unclear. Many farmers, especially in the southern districts, have switched from growing cashew to other more lucrative crops, such as rubber. Thus, the relatively low value of cashew has been an important reason for its decline in Kerala. The production and area of cultivation of rubber rapidly increased during the last few decades.

The decline in area in Kerala is mainly attributed to the pressure on land and the existing land ceiling laws and the continued denial of plantation status to cashew. Besides, the lack of enthusiasm on the part of the implementing agencies, especially the

State agriculture department, is said to be a reason for the decline. On the other hand, Kerala has vast areas of cashew plantations which have not been replanted. As a result, the production has also dropped. A major reason for the unpredictability of cashew cultivation is the fact that nearly 70 percent of the cashew trees in the state are aged, local varieties, which start yielding late in the season. Climate change also affects cashew cultivation. Coincidence of excessive rainfall and high relative humidity with flowering may result in flower or fruit drop and heavy incidence of fungal disease. Other reasons include pronounced seasonality of the cashew production cycle, unattractive prices, land ceiling for cashew plantations, the non-agricultural orientation of landowners and the senility of the trees. Some of these reasons, or a combination of all reasons, has led to a decline in Kerala's relative share in the production of raw nut. Shift to more profitable cash crops - mainly rubber - has brought down the area under cashew cultivation in Kerala. Unlike rubber; cashew is not treated as a plantation crop. If it were given plantation status, there would be farmers reverting or switching over to cashew given low prices of late of natural rubber, according to a farmer who has shifted to cashew from rubber. The investment in raising a cashew plantation was comparatively much less while the return is remunerative. Because of the pressure on land, wasteland could be used for cashew planting. Not only that due to the absence of high yielding varieties and multiplication techniques, seeds and seedlings were used for plantation development in an unscientific manner.

7. Conclusion

At all India level, the area of cultivation of cashew, its and productivity during the post globalisation period show significant increase compared to the pre globalisation period. But, in Kerala, the performance of cashew processing industry in terms of area, production and productivity show a decreasing trend especially after the reform period. The reforms and consequent policies shift the employment pattern of the society and the role of traditional industries decrease and the white colour and new generation jobs got high preference. The entrepreneurs and industrialists stick on to the most profitable sectors for investment; so the traditional industries like cashew industries are under a threat of collapse. The main reason for the decrease in the area of cultivation of cashew is the shift from cashew cultivation to more lucrative crops like rubber. The Government of Kerala had brought the Land Reforms Act in which Cashew was taken away from the plantation status while Rubber, Tea, Coffee and Cardamom were given the plantation status. Before the act came into force, existing cashew plantations were converted into rubber plantations. Since Kerala had a monopoly of the cashew crop, the Land Reforms Act and similar acts in other states simultaneously affect the indigenous production of cashew nuts. Similarly the reason for the decline in the production and productivity of cashew in Kerala are

the lack of high yielding crops, senility of the cashew plants and improper weather conditions.

References

Balasubramian, & Singh. (2002). *Cashew development in India: an integrated strategically approach*. Indian Cashew Industry, Directorate of Cashew nut and Cocoa Development, Cochin.

Banker, Basavaraj & Shanker M. G. (2003). "Cashew Production and Export", *Yojana*, November 15, 2003.

Bhat, M. G, Nagaraja, K. V, & Rupa, T. R. (2010). Cashew research in India, *Journal of Horticultural Sciences*, V (1), 1-16.

Food and Agriculture Organization (FAO), retrieved from the website <http://fao.org> on 6.01.2016.

Government of Kerala (2017). *Economic Review*, Various Issues, State Planning Board, Trivandrum.

Gupta, S.P (2003). Production Performance and Processing of Cashew nut in Goa: An Empirical Analysis, *Indian Journal of Agricultural Economics*.

Krishnaswamy (1992). "World Market for Cashew", National Workshop on Cashew Kannur December 10-15, 1992.

Naik Amita Namdeo., Kovlagi. A.K., & Wader. L.K. (2006). Marketing of Cashew Kernels in North District of Goa. *Indian Journal of Agriculture Marketing*.

Nair, CK. (2002). Quality maintenance of cashew kernels. Paper presented at the Fifth National Cashew Seminar, 12-13 April, Visakhapatnam, and Government of India, Directorate of Cashew nut and Cocoa Development, Cochin.

Nomisma, (1994). *The World Cashew Economy*. Edizioni L in chiostroblu Oltrema. Bologna, Italy.

Olunloyo, O.A. (1996). Cashew and its potentials. Paper presented at the 3-Day National Workshop on Cashew Production Technology held at Cocoa research Institute of Nigeria, Idi-Ayunre Ibadan, Nigeria. Pp26-29.

Saravanan, M. P. (2000). *Economics of cashew nut processing and marketing in Tamil Nadu*. M. Sc. (Ag.) Thesis, Tamil Nadu Agricultural University, Coimbatore.

Senthil, A., & Mahesh, D. M. (2013). Analysis of Cashew Nut Production in India, *Asia Pacific Journal of Marketing & Management Review*, II (3), 106-110.

Varmudy, V. (2011). Cashew: Time to Raise Production. (V. Varmudy, Ed.) Market Survey, pp. 16-19.