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CASHEW EXPORT IN BEFORE AND AFTER –LIBERALIZATION PERIOD IN INDIA

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ABSTRACT

Cashew as a marketable commodity has a very important role to play in the liberalized Indian economy. With export earnings of Rs. 12,320 million in 1995-96, cashew ranked as one of the top agricultural export commodities. From the farmers' as well as from the exporters' point of view, the current emphasis that cashew is receiving as a horticultural crop from the research and development front, is a welcome sign. At present, India has a processing capacity of nearly seven hundred thousand metric tons and to meet the raw nut demand, the country depends partially on imports from several African, and in recent years, from south-east Asian countries. This has considerable drain on the country's foreign exchange reserves and there is an urgent need to increase local production to substitute imported raw material in order to derive the maximum benefits from a strong processing and marketing capability developed over the years by the Indian cashew industry. Despite its versatile adaptability and economic importance, as a cultivated crop, the Cashew is grown to a limited extent in selected locations in many states viz., Maharashtra, Karnataka, Andhra Pradesh, Rajasthan and Uttar Pradesh in India. The present paper highlights the production scenario, export, direction of Cashew trade etc. The secondary data were collected from different sources for this purpose. The periods 1987-88 to 1995-96 and 1996-97 to 2009-10 were considered as pre and post-WTO period. The compound growth rate and Markov Chain analysis were used to meet the objectives of the study. The quantity exported from India to different countries has increased from 1.2 million kgs in 1990-91 to 33.41 million kgs in 2009-10 with an increase in the export value from Rs. 1.62 crores to Rs. 110.88 Crores. However, still the quantity exported is less than three percent of its total production. The growth rate analysis showed that the higher growth in the Cashew export during pre-WTO period than the post-WTO period both in terms of quantity and value may be due to lower base as it was further substantiated by higher coefficient of variation during pre-WTO period. Though exports of the Cashew are currently directed all over the world, due to their origin, they are mostly consumed in the Middle and Far East as well as in Mediterranean countries and the United Kingdom. Consumption is dispersed and slow to take off, as western consumers consider it exotic and difficult to eat. This indicates there is a need to harness other potential markets too considering the quality requirements and taste changes preferred by the consumers. Markov chain analyses showed that UAE was one of the stable importers of Indian Cashew in both the periods. In the post-WTO period the probability of retention was higher for the countries grouped in the others category. That means the there is a demand for Indian Cashew in the other western countries

KEY WORDS: Production, Export, Growth, Trade direction, Markov, Transition probability matrix.

INTRODUCTION

Cashew (*Anacardium occidentale* L.), often referred to as 'wonder nut', is one of the most valuable processed nuts traded on the global commodity markets and is also an important cash crop. It has the potential to provide source of livelihood for the cashew growers, empower rural women in the processing sector, create employment opportunities and generate foreign exchange through exports. Cashew tree is believed to be a native of Brazil, from where it has dispersed to different parts of the world primarily for soil conservation, afforestation and wasteland development. The term 'Cashew' has originated from the Brazilian name

'acajaiba' and the Tupi name 'acaju', which the Portugueseconverted into 'Caju' and is commonly known as 'kaju' in India. It is known as 'Paragi Andi' in Kerala meaning foreign nut, 'Lanka Beeja' in Orissa assuming its introduction from Sri Lanka, and 'Mundiri' indicating the shape of the nut in Tamil Nadu. Cashew is cultivated mainly in the Asian, African and Latin American zones. The Asiatic zone includes India and Vietnam as the major producers, besides Indonesia, Philippines, Malaysia, Thailand and Sri Lanka. In the African zone, Nigeria, Côte d'Ivoire and Tanzania are the major producers, besides other countries like Benin, Guinea Bissau, Mozambique, Ghana, Senegal and Madagascar. The primary producers in the Latin American zone are Brazil, besides Columbia, Costa Rica, Honduras and Salvador. Cashew kernels are of high nutritive value. It contains 21 percent of protein, fat (47%), moisture (5.9 %), carbohydrates (22%), phosphorus (0.45%), calcium (0.05%), iron (5%) for every 100 gm and other mineral elements. Cashew kernel contains 47 percent fat but 82 percent of this is unsaturated fatty acid, which lowers the cholesterol level in blood. The

most prominent vitamins in cashew are Vitamin A, D and E, which help to assimilate fats and increase the immunity level. Cashew kernel is a rich source of minerals like calcium, phosphorus and iron. Cashew kernel proteins contain all the essential amino acids such as Arginine, Histidine, Lysine, Tyrosine, Phenylalamine, Cyctine, Methinonine and Valine. Cashew nuts do not add to obesity and help control, the specific objectives for the study were: (i) to study the production scenario and export of Cashew from India, (ii) to estimate the growth and instability in the export of Cashew and (iii) to identify the direction of Cashew trade.

METHODOLOGY

The study utilizes the secondary data collected from different sources like Export statistics for Agro and Food products, APEDA 2007, Department of Horticulture, Bangalore and the information was also accessed from the official websites of Agricultural Processed Products Export Development Authority (APEDA) and Food and Agricultural Organization (FAO), http://www.apeda.com and http://fao.org.com. The data collected pertain to the period 1990-91 to 2009-10. The growth rate analysis was used to study the growth in the Cashew export. The instability in production and export of Cashew was assessed through coefficient of variation. Markov chain analysis was carried out to understand direction of Cashew trade and inequality in the export of Indian Cashew to different countries.

Estimation of growth rates: Compound growth rates of area. Production and productivity of cashew for the all districts and the state as a whole for periods mentioned

earlier by fitting an exponential function of the following form:

y= Abt Log Y = Log A +t*log b Where, Y = Area/Production/Productivity A = Constant

b = (1+r)

r = compound growth rate

t = time variable in years (1, 2, 3....n)

Estimation of extent of instability

Coefficient of variation (CV): This explains the fluctuations over the period

CV (per cent) = (Standard deviation/mean)*100

RESULTS & DISCUSSION

This section highlights the production scenario, export, direction of Cashew trade.

Production scenario

Cashew is being cultivated in India in an area of 923 thousand hectares with a production of 613 thousand tonnes (Table 1). It is mainly cultivated in Maharashtra, Andhra Pradesh, Kerala and Tamilnadu states. Maharashtra is the leading state in the cultivation of Cashew (175,000 hectares) with a production of 198 thousand tones and contributing 32.30 percent to the country's production. Andhra Pradesh is the second largest producer of Cashew contributing 16.15 percent of the India's Cashew production (Fig.1). Considering its production potential there is need to understand the export prospects.

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Sl. No.	State	Area	% to	Production	% to	Yield		
		(000'ha)	All - India	(in tonnes)	All - India	(Kg./ Hectare)		
1	Maharashtra	175.00	18.96	198.00	32.30	1186		
2	Andhra Pradesh	183.00	19.83	99.00	16.15	544		
3	Orissa	143.00	15.49	84.00	13.70	641		
4	Kerala	72.00	7.80	66.00	10.77	957		
5	Tamil Nadu	133.00	14.41	60.00	9.79	472		
6	Karnataka	118.00	12.78	53.00	8.65	461		
7	Goa	55.00	5.96	26.00	4.24	473		
8	West Bengal	11.00	1.19	10.00	1.63	909		
9	Others	33.00	3.58	17.00	2.77	680		
	All India	923.00	100.00	613.00	100.00	695		
	Source: The Directorate of Cashewnut & Cocoa Development, Cochin, Kerala.							

TABLE 1: Area, Production and Yield of Cashewnut in major Cashewnut producing States (2008-09)

Cashew Export

Production and export details of Cashew are presented in Table 2. It is observed from the table that in the recent years in tune with the increase in production there is increase in the quantity exported. The percentage of export to the production has also increased from 1.87 to 1.99 though sales channels of the Cashew are currently directed all over the world, due to their origin, The major markets of Indian cashew are USA, UK, Japan, Netherlands, Australia, Canada and Middle East countries. Vietnam has emerged as a major competitor to India in international cashew trade. Consumption is dispersed and slow to take off, as western consumers consider it exotic and difficult to eat. This indicates there is a need to harness other potential markets too considering the quality requirements and taste changes preferred by the consumers. In order to see the export performance of Cashew over the period growth in the export was assessed in the following paragraphs (Rajiv Kumar, 2003).

Year	Production (tonnes)	Export (tonnes)	% of export
2003-04	535000	10029.7	1.87
2004-05	544000	11811	2.17
2005-06	573000	12510.2	2.18
2006-07	620000	12277.6	1.98
2007-08	665000	11127.5	1.67
2008-09	695000	12614.7	1.82
2009-10	613000	12216.8	1.99

TABLE 2: Export performance of Cashew production from India

Growth in the export of Cashew from India

The compound growth rates of Cashew were computed for pre-WTO (1978-79 to 1995-96), Post-WTO (1996-97 to 2009-10) and Overall (1978-79 to 2009-10) periods and the results are presented in Table 3. The results from the table revealed that the total quantity of Cashew exported from India showed a significant and positive growth for all the three periods. The highest growth was observed during Pre-WTO period (5.32 per cent) followed by overall period (5.30 %) and post-WTO period (3.39 %). The high and significant

growth during pre-WTO period may be because of lower base compared to post-WTO period. However, the high and significant growth rate in quantity exported in all the periods was mainly because of increased demand in Middle and Far East as well as in Mediterranean countries and also in the recent years there is high demand for Indian Cashew in the European countries. In tune with the increase in quantity exported the growth in the export value (16.69%) was also higher during the pre-WTO period.

TABLE 3: Compound growth rate of Export of Cashew from India (1978-79 to 2009-10)

			Compound Growth Rate (%)				
		Pre-WTO	Post-WTO	Overall			
Sl. No.	Particulars	(1978-79 to 1995-96)	(1996-97 to 2009-10)	(1978-79 to 2009-10)			
1	Quantity (Mt)	5.32	3.39**	5.30*			
2	Value (Lacs)	16.69	5.50**	12.73			
Note: ** indicates significant at 1 per cent level of significance							
* indicates significant at 5 per cent level of significance							

Direction of Cashew Trade

The direction of trade was assessed using Markov chain analysis for 2002-03 to 2009-10 periods and the results of the same are presented under the following paragraphs. The transitional probability matrix of Cashew export is presented in the (Table 4). There are eight countries importing Indian Cashew in large quantities, namely, United States, United Arab Emirates, Netherland, Japan, United Kingdom, Saudi Arabia, France, and Belgium. The exports to remaining countries were pooled under 'others' category (Cashew Vision).

It was evident from the table that United States and UAE were the stable importers of Indian Cashew as reflected in high probability of retention of 0.7610 and 0.6497 respectively *i.e.*, the probability that United States and UAE retained their export share of 76.10 and 64.90 percent respectively during the period 2002-03 to 2009-10. On the other hand Belgium could able to retain its share only to the extent of 0.3 percent and Netherland, Japan, United Kingdom, Saudi Arabia and France had a probability of retention of zero indicating unstable importer of Indian Cashew. It is important to note that other countries could able to retain their share to the tune of 65 percent. It was

observed from the TPM that many countries were not consistently importing the Indian Cashew (Ratheesh Kumar, 1990).

The major gainer among importers of Indian Cashew was US. In addition to having high probability of retention of its own share, US was also likely to gain from Japan, Netharland and UK with a probability of gain of 0.5263, 0.3037 and 0.2496 respectively. This indicated there was likely shift in shares of exports of Indian Cashew from Japan, Netharland and UK to U S. UAE would likely to gain from Belgium (0.6077), Saudi Arabia (0.2782) Netherland (0.0817) and others (0.0658). Belgium though it retained its share of 0.0398, but likely to gain from Japan (0.1027). On the other hand UK, which was having zero probability of retention of its own share of exports of Cashew, was likely to gain to some extent from Japan (0.3710). The probability of gain to Netherland was at the cost of United Kingdom (0.7504) and to some extent from Saudi Arabia (0.6346), United States (0.0844) and others (0.1705). The other countries though retained their share but likely to gain to some extent from France (1.0000), Netherland (0.4279) and United States (0.0049).

Countries	United States	United Arab Emirates	Netherland	Japan	United Kingdom	Saudi Arabia	France	Belgium	others
United									
States	0.7610	0.0000	0.0844	0.0456	0.0702	0.0000	0.0116	0.0223	0.0049
United Arab									
Emirates	0.0000	0.6497	0.0000	0.1997	0.0000	0.0349	0.0314	0.0843	0.0000
Netherland	0.3037	0.0817	0.0000	0.0457	0.0000	0.1411	0.0000	0.0000	0.4279
Japan	0.5263	0.0000	0.0000	0.0000	0.3710	0.0000	0.0000	0.1027	0.0000
United									
Kingdom	0.2496	0.0000	0.7504	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Saudi Arabia	0.0000	0.2782	0.6346	0.0000	0.0000	0.0000	0.0871	0.0000	0.0000
France	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000
Belgium	0.0000	0.6077	0.0000	0.0000	0.1437	0.2089	0.0000	0.0398	0.0000
others	0.0000	0.0658	0.1705	0.0000	0.0000	0.0223	0.0882	0.0000	0.6533

TABLE 4: Transitional Probability Matrix of Cashew export from India during 2002-03 to 2009-10

Projections of Indian Cashew Exports to Major countries

The export shares of Indian Cashew to different countries were estimated for the periods 2003-04, 2004-05, 2005-06, 2006-07, 2007-08, 2008-09, 2009-2010, 2010-11, 2011-12, and 2012-13 by using transitional probability matrix of overall period and the same were compared with the observed export shares. A close look at the observed and estimated shares of Cashew (Table-5) revealed that the difference was by and large small. That means the observed proportions of export shares are in consistent with the predicted shares of exports, which were derived from the Markov process validating the use of the Markov chain model for estimating the share of different countries

by using TPM. US, was the major importer since 2002-03 with a share of 54.04 percent which rose to 28.05 percent in 2009-10, but as per the projection the share of UAE remained around 47 to 30 percent in all the triennium periods. According to the projection using TPM, during 2012-13 period eight major countries considered together would likely to have 74.94 percent of their share in the Indian Cashew export. The difference in export of shares between observed and expected values were by and large found to be minimum and small. If there are some instances of differences in few years they are mainly due to limitations of the model that the present estimates depend only on the previous year's observations (Basavaraj Banakar and Shankar,).

TABLE 5: Predicted and actual share of different could	ntries in Indian Cas	shew export during 2002-2	2013
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Years	United	United Arab			United	Saudi			
	States	Emirates	Netherland	Japan	Kingdom	Arabia	France	Belgium	others
				Observ	ved Share				
2002-2003	54.04	4.57	11.69	4.02	4.80	2.01	2.40	1.15	15.33
2003-2004	47.99	5.78	12.05	4.87	5.45	1.84	2.30	2.05	17.68
2004-2005	47.69	5.46	12.32	3.80	5.47	2.51	2.46	2.14	18.16
2005-2006	37.67	7.80	15.27	3.78	5.39	2.78	3.05	2.00	22.27
2006-2007	36.64	8.73	15.68	3.45	4.04	3.23	2.89	1.87	23.47
2007-2008	35.47	12.05	11.53	4.13	3.29	3.43	3.00	1.98	25.11
2008-2009	33.49	12.58	12.99	4.55	3.13	3.02	3.42	2.31	24.51
2009-2010	28.05	16.41	8.92	5.00	4.53	3.30	3.21	3.30	27.28
			Pre	dicted share	e				
2003-2004	47.99	6.19	12.05	3.91	5.45	2.39	2.30	2.05	17.68
2004-2005	44.10	7.66	12.32	3.89	5.47	2.72	2.46	2.14	19.24
2005-2006	43.40	7.75	12.82	3.83	5.06	2.78	2.55	2.00	19.83
2006-2007	36.64	9.77	12.78	3.97	4.33	3.34	2.89	1.97	24.32
2007-2008	35.47	10.53	12.17	4.13	4.12	3.43	3.05	1.98	25.11
2008-2009	33.49	12.58	11.92	4.55	4.31	3.02	3.31	2.31	24.51
2009-2010	32.61	13.09	11.27	4.63	4.37	3.30	3.21	2.37	25.15
2010-2011	27.82	16.11	12.51	4.96	4.30	3.13	3.54	2.65	24.98
2011-2012	28.65	15.61	11.82	5.06	4.18	3.44	3.31	2.59	25.35
2012-2013	29.10	15.31	12.05	4.96	4.26	3.32	3.36	2.58	25.06

Countries	1988	1989	1990	Average (1989-91)
Australia	2 014	2 720	2 808	2 930
Belgium	362	295	363	NA
Canada	3 299	4 377	4 7 3 0	4 309
France	1 176	1 065	1 202	NA
Germany	3 380	3 261	3 737	3 661
Japan	3 718	3 783	4 303	4 520
New Zealand	324	350	350	NA
Netherlands	2 883	3 058	3 873	3 669
Sweden	65	70	70	NA
UK	4 212	4 855	5 100	4 919
USA	38 016	41 338	54 600	48 372
USSR	3 151	5 849	9 807	3 328
Total	64 582	72 590	92 513	75 708

TABLE 6: Cashew kernels imports into major markets (Mt.)

Source: columns 2, 3 and 4 NOMISMA (1994), column 5 Jaffee et al.(1995)

In (table 6) revealed that the world import of cashew kernels has changed as much as the nut production. The major importing countries and the quantities imported are shown in Table 8. The import level reached in 1990 was the highest for most countries (except USSR) since 1980. The latter had its highest imports (30029 t) in 1975 and the lowest (108 t) in 1984 and is thus not a very reliable importer. The USA (49257t), Canada (6583 t) and Japan (6599 t) also reached peak imports in 1976 (Cashew Bulletin).

Nutritive value of cashew kernels

The composition of cashew kernels given in the literature varies greatly, probably due to varietal variation and differences in analyses as shown in Table 1 and Table 2. (Water and ashes make totals up to 100%). The protein content varies depending on the genotype. Values between 13-25% were found. In Table 1 the protein content is around 21%, - high compared with the value given in (Table 8).

TABLE 7: Composition and calorific value of 5 major tree nuts (per 100g)

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	Calories	Protein	Fat	Carbohydr.	Fibre
Almond	598	18.6	54.2	19.5	2.6
Amazonia nut	654	14.3	66.9	10.9	3.1
Cashew	561	17.2	45.7	29.3	1.4
Pistachio	594	19.3	53.7	19.0	1.9
Walnut	628	20.5	59.3	14.8	1.7

In (table 7) reveled that there is no discrepancy in the fat content, cashew has 10-20% less fat than the other nuts and might therefore be preferable to other dessert nuts for the well nourished consumers. About 77% of the fatty acid are unsaturated and ideal for heart diets, according to the American school The protein count lies between 10% (maize, Franke 1976) and 38% (soybeans, Relim et al.1984) and could help to reduce malnutrition in cashew growing countries. In countries with bad cashew marketing channels the nuts are shown in table 8.

TABLE 8:	Production	and consum	ption potential	of Cashew	Kernel
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	Potential cashew	Potential kernel	Potential cashew	Potential kernel
Years	Kernel production	export (home	Kernel production	export (home
	(growth rate 3%)	consumption 20%)	(growth rate 5%)	consumption 20%)
1990	250 000	200 000	200 000	200 000
1995	289 819	231 855	319 070	255 256
2000	335 979	268 783	407 224	325 779
2005	389 492	311 593	519 732	415 786
2010	451 528	361 222	663 324	530 660
2015	523 444	418 756	846 589	677 271

* based on the potential production in 1990

The economic development in China and the "Tiger Nations" in South East Asia (not considered in this calculation) is rapidly expanding the market for cashew products. This is because cashew nuts are part of the diet, not merely dessert nuts. In China, the local price is higher than the world market price. Growth in income in these countries will further increase demand. Minor producing countries should therefore be able to sell their cashew nuts on the world market, over the period of time from 1999 to 2015 there is a increasing trend @3 percent rate in production 25000 to 523444, similarly export potential @ rate of 20 percent is 200000 to 418756 respectively @ 5 percent rate the production will be increased from 200000 to 846589 similarly home consumption also 200000 to 677271respectively (Abdul Salam, 1991).

CONCLUSION

One of the key factors in favor of expanding the cashew industry in India is the stable price in the International market when compared to other nuts such as almond, hazel nut etc. Nutritionally, cashew also compares well with other tree nut crops. It is a commodity rich in unsaturated fatty acids with high protein and low levels of saturated fats and soluble sugars. Higher levels of polyunsaturated fatty acids which lower blood cholesterol are particularly of high nutritional significance. The crop is steadily gaining acceptance in many western markets where consumers are more health conscious. The production of Cashew is concentrated in few states and Maharashtra is the leading producer of Cashew in the country contributing over 32.30 per cent of the production basket of the country. Cashew is primarily an exportoriented commodity and accrued an export earning of Rs. 228890 lakh (cashew kernels) during 2007-08. Although the share of cashew exports to agricultural exports has declined from 7.08 percent in 1990-91 to 3.02 percent in 2007-08, yet its foreign exchange earnings has increased from Rs. 44780 lakh to Rs. 230087 lakh during the same period, indicating a growth of more than five times during the period. Though sales channels of the Cashew are currently directed all over the world, due to their origin, they are mostly consumed in the Middle and Far East as well as in Mediterranean countries and the United States. Consumption is dispersed and slow to take off, as western consumers consider it exotic and difficult to eat. This indicates there is a need to harness other potential markets

too considering the quality requirements and taste changes preferred by the consumers.

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