

Price competitiveness of coconut oil

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Introduction

Coconut oil is considered as a premium priced oil on account of its unique inherent qualities, varied uses and applications for both edible and non edible purposes. Even though coconut products and by-products like; copra, desiccated coconut powder, coconut oil, copra meal, coconut milk, palm sugar, coco oleo chemicals, nata de coco, coconut water, coir & coir products, coconut shell charcoal and the shell based activated carbon etc. have global demand and supply, the trade in coconut oil and its derivatives in the world market determine the growth and sustainability of coconut cultivation and industry in all producing countries. The studies conducted in India and elsewhere in the world revealed that the prices of coconut and its products are integrated with the price of coconut oil which is influenced by the prices of other vegetable oils and fats¹. In the major coconut producing countries like Indonesia, Philippines, Thailand, Sri Lanka etc. the bulk of their coconut products are exported and hence coconut cultivation and industry plays a pivotal role for the growth of their economies. Coconut oil being an important item in the export basket of these countries, the domestic prices of coconut in these countries are determined by the international price of coconut oil.

Coconut oil is extracted from the dry kernel (copra) or meat of matured coconut. It is generally extracted from copra by expeller or rotary mills. Coconut oil is heat stable and an excellent cooking and frying oil. Coconut oil is also used

as industrial oil for the manufacture of soap and toiletry oils. In Kerala and the adjoining districts of Tamil Nadu and Karnataka coconut oil is extensively used as the main cooking medium and hence is an important vegetable oil. Typically, fresh coconut kernel contain 50 % moisture, 34 % oil, 2.2 % ash, 3 % fibre, 3.5 % protein and 7.3 % carbohydrate. Coconut has the highest oil content among all oil-bearing crops, with an oil content of 65-68% at 4-6 % moisture level.

Physico-chemical characteristics of lauric oils:

Coconut oil contains approximately 92.1% saturated fatty acids, 6.2% monounsaturated fatty acids and 1.6% polyunsaturated fatty acids. Lauric acid (12:0) is the major fatty acid content in coconut oil. Oils rich in lauric acid and its derivatives have many characteristics which is in great demand both in food and chemical industries due its diverse applications. Among the seventeen major oils and fats in world, Coconut Oil (CNO) and Palm Kernel Oil (PKO) are the only two lauric oils because of their lauric acid(12:0) content. The major uses of lauric oils in the chemical industry are for the manufacture of soaps and detergents because of its effects on surface tension, production of stable leathers, resistances to oxidation, biodegradable characteristics and non-abrasiveness. Some of these unique inherent characteristics of the lauric oils have made it possible for potential applications in the manufacture of pharmaceutical and cosmetic products. Between the two

lauric oils, coconut oil and palm kernel oil, coconut oil has advantage over palm kernel oil due to its medicinal and health benefit besides the benefit of cost advantage of further processing into value added products for industrial application.

Consumption pattern

The bulk of the domestic production of coconut absorbs in the domestic market to meet the indigenous demand for varied end uses and hence export market hardly make any influence on the whole sale price of coconut and various coconut products. Coconut and coconut products have consumer demand across the country and hence are inevitable consumer items in every household for both edible and non edible purposes. A study by the Center for Development Studies(CDS), Trivandrum, Kerala revealed that the largest proportion of households using coconut oil is in Kerala-close to 90 per cent of the total household in rural areas and 83 per cent in the urban areas. In the states of Karnataka and Tamil Nadu, only 8 and 5 per cent of the rural households consume coconut oil for culinary purposes. The percentage of households consuming coconuts for culinary purposes in India is 24% in rural areas and 31 % in urban areas. In Kerala, more than 90 % of households consume coconut irrespective of rural and urban areas. The consumption of coconut in states of Tamil Nadu, Karnataka and Andhara Pradesh is widespread, the percentage being over 80 % in both rural and urban areas. Consumption of coconut oil for culinary purposes

in India is rare except in Kerala or where a sizeable Malayalee population resides. The CDS study revealed that the monthly consumption of coconut oil in Kerala is around 1.5 kg for an average family of five members. Coconut consumption at the all India level is not as insignificant as that of coconut oil. The per capita consumption of coconut at the all India level ranges from 0.32 nuts in the rural areas to 0.46 nuts in urban areas. In Kerala, the per capita monthly consumption of coconut is around 4.8 nuts which is highest in the country. The study further revealed that with the expansion of coconut cultivation in other states, the consumption of coconut is increasing rapidly. The four southern states apart from producing 91 per cent of the total production of coconut in the country also account for the bulk of the total consumption of coconut for culinary purpose in India.

Traditionally, the preferences for edible oils for direct food uses in India vary from region to region, depending mostly on their local availability. As such, while groundnut oil is the most preferred oil in the producing states of Gujarat, Maharashtra, Andhra Pradesh and Tamil Nadu, mustard oil in Bihar, Assam and West Bengal, coconut is the most preferred oil in Kerala. Coconut oil, a rich source of vitamin A is extensively used in Kerala owing to its palatability, agreeable flavor and easy digestibility. Besides its edible uses, coconut oil is widely applied as hair oil and as skin care body oil. Despite, coconut oil being the predominant oil consumed in Kerala for edible purpose, the post globalization period witnessed a reduction in the demand for coconut oil due to the availability of imported cheaper substitute oils like palm oil. Similarly the consumption of

soybean oils and sunflower oil have also increased manifold on account of the anti propaganda linked with the health hazards of coconut oil. The comparatively high price of coconut oil and the availability of imported palm oil at prices far below that of coconut oil prompted many Keralites to switch over to the consumption of palm oil for edible purposes. The domestic demand for coconut oil is generally affected when cheaper vegetable oils like palm oil and palm kernel oil are in surplus supply. The availability of cheaper oils has also been causing coconut oil adulteration particularly with cheap palm kernel oil, the detection of which is impossible for want of distinguishing characteristics. The physical and chemical characteristics of palm kernel oil and coconut oil are similar except for its iodine value and the aroma. Pure coconut oil has a unique aroma and has low iodine value which generally ranges from 7 to 10¹

Tender coconut: an emerging market:

In the recent years, the consumption of tender coconut in the country is popular even among economically weaker people. A new demand sector of inelastic nature is emerging for tender coconut trade. In India, tender coconut is traded in almost all the cities in its natural form. The traders are mostly street vendors. India is the largest producer and the consumer of tender coconut water in the world. The major assembling markets for upcountry sales of tender coconuts are Maddur in Karnataka, College Street, Kolkatta in West Bengal, Junagadh in Gujarat and Mumbai in Maharashtra. Tender coconut is widely marketed in the states of Tamil Nadu, Karnataka,

Kerala, Andhra Pradesh and Goa. In Tamil Nadu more than one lakh tender coconut is being sold daily in cities like Chennai and Madurai. Of late Tamil Nadu supply tender coconut to the neighbouring states like Kerala for their daily requirements. In Karnataka, the Agricultural Produce Marketing Cooperatives (APMCs) at Maddur, Mandya, Channarayapatana, Holenarshimapura, Hosdurga and Kadur are the major assembling markets for tender coconut. India annually produces about 15,730 million nuts out of which about 3200 million nuts are utilized as tender coconut. About 20 per cent of the total production of coconut in the country is consumed in the form of tender coconut. More than 3 lakh people are dependent on tender coconut trade. The increasing demand for tender coconut across the country has created a new market segment which in turn has been resulting in an inverse relation in the supply of mature coconut. The share of coconut in the total coconut and oil consumption is around 80 per cent and the use of coconut in food is not easily substituted. This indicates that like other essential commodities there exists a consistent demand for coconut and coconut products in the country. Thus coconut is considered as one of the important crops of national importance as it provides food and livelihood security.

Domestic supply

Coconut is cultivated mainly as a rain-fed crop and is owned by small and marginal farmers. Because of its nature of distribution, cultivation and management, the crop is vulnerable to biotic and abiotic stress of which drought, cyclone, outbreak of epidemic and

endemic pests and diseases often causes havocs and losses. The climate change on account of global warming further aggravated the situation and adversely affected the supply. Even though coconut is cultivated in 18 states and 3 UTs, the four southern states of Kerala, Tamil Nadu, Karnataka and Andhra Pradesh play a vitall role in the supply of coconut and coconut products in the country. India annually produces 15730 million nuts of which 35 per cent is utilized for the production of copra which is estimated as 9.5 lakh MT of copra in 2012 cropping season. The major states that are involved in the commercial production of copra are Kerala, Karnataka, Tamil Nadu, Andhara Pradesh and UTs of Lakshadweep and A&N islands. Tamil Nadu plays a pivotal role in the supply of coconut oil now due to the setting up of new generation high capacity oil mills. Even though coconut cultivation is widely distributed in the country, the growth of the industry is positively correlated with the stability of copra-coconut oil market where the major copra producing states play a critical role.

Trend in the prices of coconut oil and other competing oils:

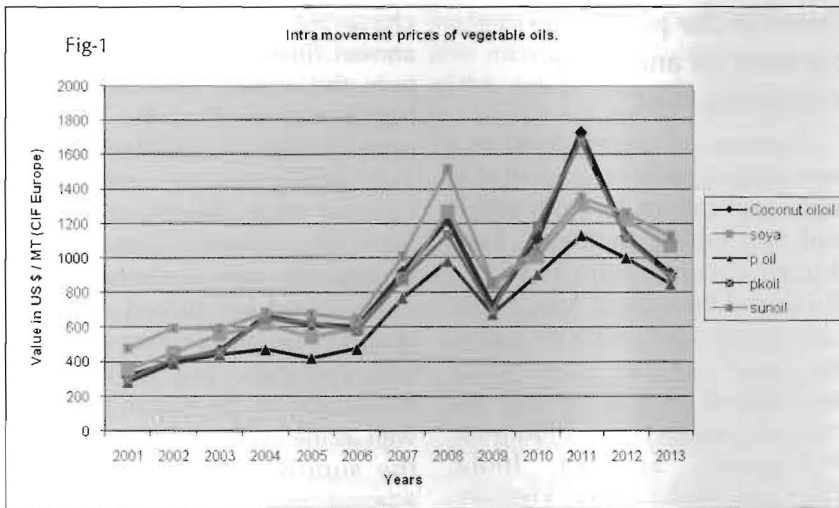
Coconut oil is considered as a premium priced oil on account of its wide applications for both edible and non edible purposes. Even though coconut palm is widely distributed throughout Asia, Africa, Latin America and the Pacific region, the major countries involved in international trade of coconut and coconut products are Indonesia, Philippines, Srilanka, India, Thailand, Mexico and Vietnam. More than 130 countries import coconut in various forms. The major importers of coconut oil are U.S.A., Germany, The Netherlands, China, Malaysia, Russian Federation, Belgium, France, Italy, Japan, Srilanka, Korea Republic, Spain and U.K. Coconut oil is considered as the single largest commodity that determines the market of the primary product of coconut in all the producing countries. Hence the stability of the coconut oil market is important for the growth of the coconut culture and industry. An analysis of price behavior of coconut oil in the international market revealed that the market is

characterized by seasonal and annual fluctuations. Between the two, the annual fluctuations are highly volatile than the monthly price variations.(see Table-1-2 & Fig-1-3) While seasonal variations in coconut oil is directly correlated with the seasonal demand and supply, the annual fluctuation of coconut oil are linked with the abundant supply of cheap vegetable oils and fats due to the free movement of the commodities as well as the cyclic variations (CV) in the supply. The trend in the international prices of coconut oil and the competing oils since the year 2001 are given in tables 1 to Table-2 and the Fig 1-3. It could be observed from the data that both the annual and the monthly variations in respect of the prices of all important vegetable oils are in sympathy with each other. The low CV in respect of monthly prices indicates that month to month variations in the prices of all vegetable oils are marginally low and that of annual fluctuations are so violent. Among the major vegetable oils, the fluctuations are more pronounced in respect of palm oil, coconut oil and palm kernel oils. It is interesting to note that the

Table- 1

Annual Average Prices & Price indices of important Vegetable oils in the international Market:															
Years	Coconut oil			Soybean oil			Palm oil			Palm kernel oil			Sunflower oil		
	Price	Index number	CV	Price	Index number	CV	Price	Index number	CV	Price	Index number	CV	Price	Index number	CV
2001	317	100	8	356	100	14	284	100	15	299	100	10	479	100	15
2002	398	126	17	454	128	18	390	137	11	416	139	10	594	124	5
2003	467	147	10	561	158	8	443	156	9	459	153	12	593	124	6
2004	662	209	7	619	174	8	472	166	11	650	218	8	684	143	6
2005	616	194	9	545	153	4	422	149	3	627	210	7	677	141	6
2006	602	190	8	598	168	9	476	168	11	581	194	6	649	135	9
2007	919	290	15	880	247	18	770	271	16	882	295	18	1011	211	28
2008	1224	386	25	1271	357	22	981	345	28	1136	380	30	1516	316	30
2009	724	228	8	854	240	9	678	239	12	694	232	13	861	180	8
2010	1114	351	26	1010	284	16	903	318	16	1187	397	25	1051	219	15
2011	1730	546	20	1313	369	5	1130	398	9	1677	561	23	1354	283	7
2012	1128	356	20	1226	344	5	1000	352	13	1117	373	20	1262	263	3
2013	911	288	14	1068	300	7	848	298	4	891	298	12	1127	235	11

Price: US \$/MT, CIF Rotterdam



movement of prices of coconut oil and that of palm kernel oil are symmetrical. It could also be observed that the annual price of coconut oil is characterized by cyclical movements with three year gap. The year 2008 witnessed a sudden price crash in respect of all vegetable oils on account of global recession and resulting reduction in the import-appetite of consuming countries whereas the year 2010 witnessed a reverse trend and hence noticed comparatively higher CV in both the cases. Similarly the year 2011 experienced a sharp fall in the

whole-sale prices of all vegetable oils in the international markets. A comparative look at the annual year average prices of major vegetable oil revealed that sunflower oil commands highest price and palm oil is the cheapest vegetable oil among all vegetable oils. However, the trend in the prices of all the oils is moving in close sympathy with each other

Slackening competitiveness of Indian coconut oil

The trade liberalization of coconut economies of producing countries with the global economic

recessions created set-back in the global competitiveness of coconut oil. India too experienced a similar trend. Even though there exist inelastic demand for coconut oil, the globalization made coconut oil substituted with palm oil in the edible sector and palm kernel oil in the industrial sector. The increase in the production of palm oil and palm kernel oil lead to a decelerating growth in the area and production of coconut in major producing countries like Indonesia, Philippines and India. In India, the price of coconut oil always rules above the international coconut oil price and hence receives unwelcoming response from the major importing countries. The trend in the international and the domestic price of coconut oil indicates that the domestic oil price always rules above the international price. It could also be observed that the movement of price of coconut oil in both domestic and international markets is in close sympathy with each other. However, domestic price always rules above the international price with significantly a higher margin. This concludes that Indian coconut oil is not globally competitive and India can no longer

Table: 2.Monthly Average price of Coconut oil at Kochi market (in Rs./quintal)

Years	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
January	2831	3706	5451	6306	7280	4536	5273	5306	5779	5049	9060	7406	7062
February	3079	3604	5709	NT	7198	4965	5145	5379	5441	5126	9300	6594	6715
March	3013	3398	5543	6193	6199	4753	4682	5822	5176	4956	9075	6482	6297
April	2848	3801	5361	5985	5763	4735	4689	6036	5125	4964	9713	6502	6352
May	2963	3874	5177	6219	5394	4851	4827	5975	4817	5040	10148	6482	6146
June	3118	4323	5037	6736	5539	4853	4694	6255	4637	5240	9904	6063	6748
July	3110	4607	5536	6740	5212	4566	4879	6535	4736	5377	9010	6207	6817
August	3169	4716	5886	7009	5154	4810	5002	6391	4808	5778	9626	6092	7289
September	3020	4554	6286	6680	5125	5073	4693	6418	4498	6475	8823	6015	8198
October	3018	4637	6664	6753	4862	5510	4550	6055	4416	6943	8031	5761	9339
November	3153	5476	6950	7077	4864	5462	4845	6027	4460	7571	8177	6014	10184
December	3911	5525	6754	7224	4765	5474	5157	5928	4989	8102	7965	6500	10397
Average	3103	4352	5863	6629	5613	4966	4870	6011	4907	5885	9069	6343	7629
Std	699	647	402	862	344	228	380	416	1112	726	426	1530	1530
CV	23	15	7	13	6	5	8	7	23	12	5	24	20

Fig-2 Compound growth rate in International price of major vegetable oils.

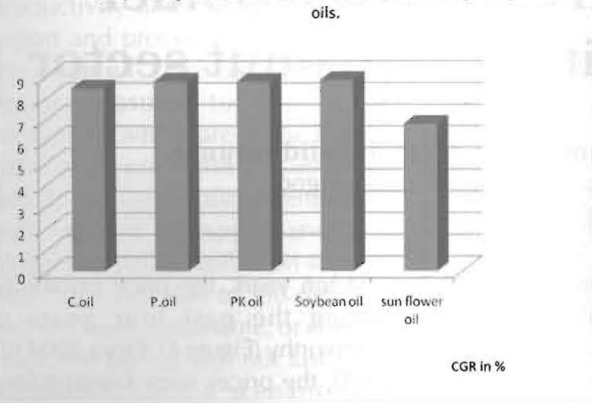
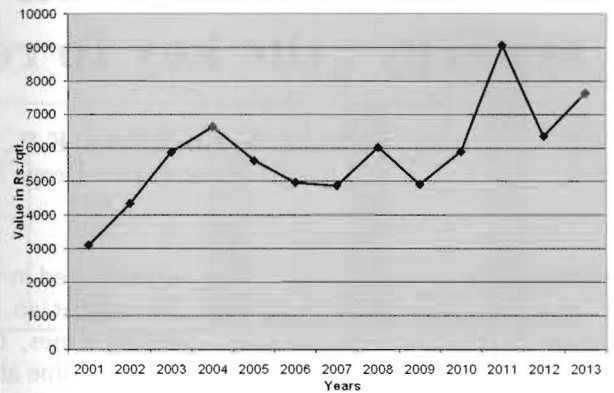


Fig-2 Compound growth rate in the prices of major vegetable oils.

Fig-3 Trend in Domestic prices of coconut oil



CGR 7 per cent per annum

depend fully on coconut oil market for the growth of the coconut culture and industry. However, its inherent qualities, clean and hygienic method of copra processing and oil extraction coupled with the inelastic demand in certain sectors and the domestic demand make the industry sustainable.

Conclusion

Among the seventeen major oils and fats in world, Coconut Oil (CNO) and Palm Kernel Oil (PKO) are the only two lauric oils. Between the two, coconut oil has advantage over Palm Kernel Oil due to its medicinal and health benefit besides the benefit of cost advantage for further processing into value added products for industrial application. The high price of coconut oil and the availability of imported palm oil at prices far below that of coconut oil, induced many house holds and hotel industries in the state to switch over to the consumption of palm oil in the edible sector and PKO in the non-edible sector. The opening of the domestic market for world players and subsequent global integration of the domestic markets witnessed a paradigm shift. The domestic price of coconut oil has begun to converge with the international prices of coconut oil

and other major vegetable oils regardless of the state of domestic supply and demand. The monthly variations in the prices of important vegetable oils are in sympathy with each other and the fluctuations are marginally low whereas the annual fluctuations are highly volatile. Among the major vegetable oils, the fluctuations are more pronounced in respect of palm oil, coconut oil and palm kernel oils. The domestic price of coconut oil always rules above the international price.

Notes and References:

1. ¹ For details see, Thomas Mathew, M "Trend and Seasonal Fluctuations in Arrivals of coconut, copra and coconut oil in Kerala" PLACROSYM-XI.

2. Thomas Mathew, M" (1997) "Long run relationship of coconut markets in Kerala: A co-integration Analysis" Agricultural Situation in India, February 1997.

² Palm oil is obtained from the flesh ("mesocarp") of the oil palm fruit. Like olive oil, palm oil is a fruit oil. Palm oil should not be mistaken for palm kernel oil which is extracted from the kernel or seed of the palm fruit.

Therefore, the oil palm fruit is unique. From the fruit two distinct types of oils are produced - palm oil and palm kernel oil. Both are edible

oils but with very different chemical composition, physical properties and applications. Each palm fruit produces about 90% palm oil and 10% palm kernel oil

Palm oil has a balanced composition of both saturated and unsaturated fatty acids. Coupled with nature's gift of high vitamin E content, the oil is naturally very stable.

Palm oil contains an equal proportion of saturated and unsaturated fatty acids. It's particularly rich in the saturated palmitic acid (44%), with substantial amount of the monounsaturated oleic acid (40%), and smaller amount of polyunsaturated fatty acids (10%).

Palm oil has had a history of food use of over 5,000 years, and this major oil in the world's oils and fats trade is currently consumed in over 130 countries worldwide.

Palm kernel oil has very different chemical composition and physical characteristics compared to palm oil. Both these oils come from the same fruit but they are uniquely different. Palm oil comes from the flesh or mesocarp of the fruit while palm kernel oil comes from the kernel or seed of the fruit.

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