India's Vegetable Oil Economy and Consumer Preference for Blended Soybean Oil in South India

** V. Kavitha*
*** S. Angles*
**** M. Chinnadurai*
***** Subbu Kumarappan*

Abstract

Oil seeds and edible oils are the essential commodities in Indian trade. Among the edible oils, soybean oil is highly recommended for reducing the level of bad cholesterol in the blood. Though it is used in large quantities in other parts of India, its usage in South India is quite limited. The analysis of growth rate of total oil seeds area in India showed a positive growth of 0.75%, and the production statistics revealed a growth rate of 2.98% per annum . This indicated that there is a need to promote oil seed crops. To promote this protein-rich oil, a study was undertaken in Coimbatore city of Tamil Nadu. The study aimed at analyzing the production and growth of oil seeds in India in general, and Tamil Nadu in particular, and to ascertain the factors influencing the consumers' buying behavior of blended soybean oil by using the logit model. The study revealed that in Coimbatore, soybean oil is sold as blended soybean oil (mixed with other vegetable oils). The major factors which influenced the consumers to purchase soybean oil were age, education, and occupation of the decision maker (regarding the oil to be used for cooking) and health conditions of the entire family.

Keywords: **blended soybean oil, logit model, consumer preference, oil seeds, edible oil**

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Oil seeds occupy an important position in the Indian agricultural economy. India plays an important role in the global edible oil market, accounting for 10.2% consumption share, 7% share of oilseed production, 5% share of edible oil production, and 13.6% share of world edible oil imports in 2009 -10 (Indian Credit Rating Agency, 2011). Though India is one of the largest producers of edible oil, the production is characterized by low yield (1000 kg/ha) and low production. The domestic oil production does not meet the domestic oil demand, and this necessitates import of edible oil, which accounts for almost 45-50% of the total domestic consumption requirement. Thus, India has become the largest importer of vegetable oils in the world. Palm oil is the major vegetable oil imported, which constituted 74% followed by soybean oil, which accounted for 18.86% of the total oil imported to India (The Solvent Extractors Association of India, 2012).

Edible oil consumption in India has traditionally been region-specific. Coconut, peanut, and sunflower oil are widely consumed in South India, peanut and cotton seed oils are consumed in Gujarat and Maharashtra, rapeseed oil in Northeast and Northwest India, while consumption of soybean oil is more prevalent in Central India. Among the vegetable oils, soybean oil is an excellent source of proteins, vitamins, and minerals such as magnesium, calcium, iron, potassium, copper, and is also a good source of fibre. The fats in soybean oil are polyunsaturated, which helps to reduce bad cholesterol levels and increase the good cholesterol levels. Soybean oil has Omega-3 fatty acids, which reduce the risk of cardiovascular disease. Foods containing soya protein are likely to reduce the risk of coronary heart diseases (Soy Food Association of North America, n.d.). Due to its several uses and good properties, soybean (Glycine max) is

* *Ph.D. Scholar,* Department of Agricultural Economics, Tamil Nadu Agricultural University, Coimbatore - 641 003, Tamil Nadu. E mail: kavi_economics@rediffmail.com
** *Assistant Professor,* Department of Agricultural Economics, Tamil Nadu Agricultural University, Coimbatore - 641 003, Tamil Nadu. Email: sangles@rediffmail.com
*** *Director,* Centre for Agriculture and Rural Development Studies, Tamil Nadu Agricultural University, Coimbatore - 641 003, Tamil Nadu. Email: mcdurai@hotmail.com
**** *Assistant Professor,* Agricultural Technical Institute, College of Food, Agricultural, and Environmental Sciences, Ohio State University, Ohio, USA. Email: kumarappan.1@osu.edu

known as the "golden bean" or the "miracle crop". Soybean oil is mainly used in Northern and Central regions of India due to the local production of soybean in large quantities in these regions. Increased health awareness also determines the consumption pattern of edible oils; mustard oil and soybean oil are considered healthier than palm oil, which has higher levels of saturated fatty acids. In terms of volume, palm, soybean, and mustard/rapeseed oil are the three major edible oils consumed in India and together, these oils account for 75% of the total edible oil demand (Indian Credit Rating Agency, 2011) . Compared to palm oil, soybean oil has good medicinal qualities, which is the need of the hour, as diabetes is rampant in India. Soybean oil is not the choice of edible oil in South India, particularly in Tamil Nadu. Hence, promoting this protein-rich oil within the state is highly important. In this context, the study was carried out with the following objectives.

Objectives of the Study

1) To assess the performance of India's oil seed economy.
2) To estimate the extent of consumers' awareness, attitude, and perceptions towards blended soybean oil.
3) To identify the factors influencing the consumers' decision making choice in use of blended soybean oil.

Methodology

In order to study the performance of India's oil seed economy with special reference to soybean oil, secondary data was collected from different sources. To assess the extent of consumers' awareness, attitude, and perceptions towards blended soybean oil, and to determine the factors influencing the consumers' decision making choices in purchase of soybean oil, primary data was collected during the period from March to May 2012. On the basis of stratified random sampling method, a pre - tested detailed questionnaire was administered to a sample of 100 consumers, consisting of 50 users of blended soybean oil and 50 other users of different (other than blended soybean oil) edible oils in Coimbatore city of Tamil Nadu.

Tools of Analysis

↳ **Compound Growth Rate :** The growth performance of oil seed production in India and Tamil Nadu was studied. To obtain the compound growth rates, secondary data regarding oil seed's area under cultivation, production, and productivity were collected and the compound growth rate was estimated using log linear model of the following form :

$$Y = e^{a+bt}$$

$$\ln Y = \ln a + b \ln t$$

Where,
Y = area/production/ productivity,
b = slope,
a = intercept,
t = time trend.

↳ **Instability Analysis:** In order to compute the instability in area, production, and yield of oilseeds, coefficient of variation (CV) was computed. The form of equation to compute the CV is as follows :

$$CV = \frac{\text{Standard Deviation}}{\text{Mean}} * 100$$

↳ **Logit Analysis :** In analyses involving a limited dependent variable, a qualitative dependent response model like logit model is used. Hence, for the present study, the logit model was employed to assess the factors which influence the preference for soybean oil. The logit function guarantees that the estimated probabilities of the shares lies between 0 and 1 (Gujarati & Sangeetha, 2007).

In the survey, it was found that of the various popular brands of edible oil, soybean oil is marketed as blended oil

with sunflower oil and rice bran oil. Hence, the consumers of blended vegetable oils were interviewed to find out the factors influencing consumers' willingness to buy blended soybean oil. In the analysis, the consumers of blended soybean oil and consumers of other vegetable oils were taken as the dependent variable. Blended soybean oil consumers were coded as 1 and the others were coded as 0. The age of the decision maker, his/her educational and employment status, annual income of the family, and health conditions of the family members were taken as the independent variables. The model can be specified as follows :

$$Pi = \frac{1}{1+e^{-Zi}} \qquad \frac{e^{z}}{1+e^{Z}} \qquad \text{..... (1)}$$

Where,

$$Zi = \beta_1 + \beta_2 X_i$$

Equation 1 is known as the logistic distribution function. *Zi* ranges from - $\propto$ to + $\propto$, *Pi* ranges from 0 to 1, and *Pi* is nonlinearly related to *Zi (Xi)*. If *Pi* is the probability of willingness to buy blended soy oil, then (1- *Pi*), is the probability of not willing to buy blended soy oil, that is :

$$1-Pi = \frac{1}{1+e^{-Zi}} \qquad \text{..... (2)}$$

The above equation can be written as :

$$\frac{Pi}{1-Pi} = \frac{1+e^{Zi}}{1+e^{-Zi}} = e^{Zi} \qquad \text{..... (3)}$$

$\frac{Pi}{(1-Pi)}$ is the odds ratio

The odds ratio indicates the probability of willingness to buy blended soybean oil to the probability that the consumers do not prefer to buy blended soybean oil. The natural log of equation 3 gives the log of odds ratio, that is,

$$Li = \ln\left(\frac{Pi}{1-Pi}\right) = Zi = \beta_1 + \beta_2 X_i \qquad \text{..... (4)}$$

Thus, the log of odds ratio is not only linear in *X*, but also linear in the parameters. In the study, the logistic form can be specified as *:*

$$\frac{Pi}{1-Pi} = \beta o + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5$$

Where,

β_o = Intercept,

X_1 = Age of the decision maker,

X_2 = Education of the decision maker,

X_3 = Employment status of the decision maker (dummy indicating 1 for employed and 0 for unemployed),

X_4 = Annual Income of the family,

X_5= Health condition of the family members (dummy indicating 1 for average condition and 0 for below average condition).

Table 1. Major Oil Seeds in India - Area and Production in India (2009-10)

Oil seeds	Area (Million Hectares)	% Share In Area	Production (Million Tonnes)	% Share in Production
Ground nut	5.48	21.09	5.43	21.82
Rape seed & mustard	5.59	21.53	6.61	26.56
Sunflower	1.48	5.70	0.85	3.41
Soybean	9.73	37.48	9.96	40.03
Others	**3.68**	**14.17**	**2.03**	**8.15**
Nine Major oil seeds	**25.96**		**24.88**	

Source : Government of India, Ministry of Agriculture (2013). Area, production and yield of major crops - Agricultural statistics at a glance, 2011. Department of Agriculture & Cooperation, Retrieved from http://agricoop.nic.in/agristatistics.htm

Table 2. Growth Rate of Area, Production, and Yield of Oil Seeds in India (1970-71 to 2009-10)

Crop	Area (%)	Production (%)	Yield (%)
Ground nut	-1.68*	6.38*	6.9***
	(-1.859)	(2.55)	(4.35)
Rape seed	1.19***	4.45***	3.13***
	(8.22)	(9.98)	(8.90)
Sunflower	-4.35***	-2.55***	2.98***
	(9.60)	(8.85)	(-1.16)
Soybean	4.88***	8.15***	3.12***
	(27.09)	(32.93)	(5.52)
Nine oil seeds	**0.16*** **	**4.08*** **	**3.55*** **
	(9.62)	**(9.74)**	**(8.70)**

Source : Authors' calculation from Government of India, Ministry of Agriculture (2013). Area, production and yield of major crops - Agricultural statistics at a glance, 2011. Department of Agriculture & Cooperation.

Note: Figures in parentheses indicates *t*- ratio, * significant at 10% confidence level, *** significant at 1% confidence level

Results and Discussion

Edible Oil Scenario in India : There are two sources of edible oils – primary sources and secondary sources. The primary sources are nine principal oilseeds, that is, groundnut, rapeseed, mustard, soybean, sunflower, sesame, niger, safflower, castor, and linseeds. Edible oils obtained through secondary sources include coconut, cottonseed, rice bran, and oilseed cakes.

The statistics regarding the major oil seed production in India during 2009-10 are presented in the Table 1. Of the nine major oil seeds produced in the country, sunflower occupied the major area (37%) followed by groundnut and rapeseed mustard (21%). In case of production, soybean made a head way in oilseed front with production (40%) followed by rapeseed and mustard (26%) and groundnut (21%). With reference to State wise production of oilseeds, Madhya Pradesh (64.29%) emerged as the soy state of the country followed by Maharashtra (22.05%) and Rajasthan (9.18 %). It was important to assess the growth performance of the major oil seeds produced in the country. The growth in area, production, and yield of major oil seeds is presented in the Table 2. It was observed that of all the oil seed crops, only groundnut and sunflower showed a negative growth rate in area under cultivation. In total, all the nine edible oil seeds indicated a meagre, but positive growth of 0.16% in area and high growth of 4.08% per annum in production. It is to be noted that the growth in production is contributed by yield ; the 4.08% per annum growth can be attributed to the growth rate in yield, which showed a positive growth of 3.55% for the nine edible oils seeds. In general, a very low growth rate was observed in case of area under cultivation, but higher growth was observed in production and productivity in case of all oil seed crops. The low growth rate of area under cultivation for all the major nine oil seed crops might be due to high instability in area under cultivation.

Table 3. Coefficient of Variation in Area, Production, and Yield of Oil Seeds in India During 1970-71 to 2009-10 (Percent)

Crop	Area (%)	Production (%)	Yield (%)
Ground nut	14.28	26.72	21.99
Rape seed	36.35	70.02	39.14
Sunflower	67.42	71.14	16.49
Soy bean	90.76	100.91	23.31
Nine Major Oil Seeds	**27.55**	**55.58**	**29.79**

Source : Government of India, Ministry of Agriculture (2013). Area, production and yield of major crops - Agricultural statistics at a glance, 2011. Department of Agriculture & Cooperation, Retrieved from http://agricoop.nic.in/agristatistics.htm

Table 4. Demand and Supply Gap of Edible Oil in India (Qty in Lakh Tonnes)

Year	Total demand for consumption	Net availability of edible oil from all domestic sources	Imports
2003-04	115.37	71.4	43.97
2004-05	122.89	72.47	50.42
2005-06	127.33	83.16	44.17
2006-07	120.85	73.7	47.15
2007-08	142.62	86.54	56.08
2008-09	166.39	84.65	81.83
2009-10	167.69	79.46	88.23
Average	137.59	78.77	58.84

Source: Government of India (2011). Annual Report (2010-11). Ministry of Consumer Affairs, Department of Food and Public Distribution.

Table 5. Status of Edible Oil Imports in the Total Agricultural Imports

Year	Edible Oil Import (₹ in crores)	Agricultural Import (₹ in crores)	Edible Oil Import Share in Agricultural Import (%)
2003-04	11683.24	21972.68	53.17
2004-05	11076.89	22811.84	48.56
2005-06	8960.99	21499.22	41.68
2006-07	9539.90	29637.86	32.19
2007-08	10301.09	29906.24	34.44
2008-09	15837.46	37183.03	42.59
2009-10	26483.32	59528.34	44.49
Annual CGR	**12.55 (NS) (1.22)**	**16.59* (2.86)**	

Source: Director General of Commerce and Intelligence, Ministry of Commerce and Industry, Government of India

Note: Figures in parenthesis indicates *t*- ratio, * Significant at 10% confident level, NS - Non Significant

Instability Analysis : It can be observed from the Table 3 that with the exception of groundnut, the instability in area was very high in case of all other major oil seeds. In case of soybean, the instability was extremely high to the extent of 90.76%. In case of yield, rape seed had high instability as compared with other oil seed crops. Both area and yield contribute to production instability. The instability in total production was very high in soybean, sunflower, and rapeseed.

Demand and Supply Gap of Edible Oils : The demand and supply scenario of edible oils during 2003-04 to 2009-10 is presented in the Table 4. The average demand for edible oils was 137 lakh tonnes against the average net availability - which was 78.7 lakh tonnes of edible oil - from all domestic sources . In order to meet this requirement, on an average, 58.8 lakh tonnes of oilseed was imported. It revealed the existence of huge demand and supply gap in the edible oil industry.

Table 6. Composition of Edible Oil Imports (Percent)

Year	Sunflower oil	Soybean oil	Coconut oil	Palm oil	Other edible oil
2003-04	1.72	20.26	0.05	64.97	13.00
2004-05	0.10	39.70	0.14	55.21	4.84
2005-06	2.28	38.57	0.51	56.29	2.36
2006-07	4.14	28.06	0.28	65.95	1.57
2007-08	0.47	13.54	0.23	85.14	0.62
2008-09	7.21	12.09	0.20	78.54	1.95
2009-10	7.14	18.89	0.05	72.34	1.58

Source: The Solvent Extractors Association of India (2012). Import of Vegetable oils. Retrieved from http://www.seaofindia.com/stats

Table 7. Export of Oilseeds in 2009-10

Oil seed	Export quantity (000 tons)	Percentage	Value (₹ Crores)	Percentage
Sesame Seeds	215.74	37.38	1494.1	50.02
Groundnut	340.24	58.95	1425.93	47.73
Mustard	13.04	2.26	35.01	1.17
Niger seed	6.00	1.04	24.22	0.81
Safflower	1.09	0.19	3.14	0.11
Sunflower	1.08	0.19	4.86	0.16
Total	**577.19**	**100.00**	**2987.26**	**100.00**

Source: Director General of Commerce and Intelligence, Ministry of Commerce and Industry, Government of India.

Edible Oil Import Scenario : It can be observed from the Table 5 that edible oil imports alone accounted for nearly 45% of the total agricultural imports. Thus, a huge amount of foreign exchange has been spent for the import of edible oil. The annual growth rate value of edible oil imports registered a growth rate of 12.5%, whereas the growth rate of agricultural imports in the total value of imports accounted for 16.5% growth. Over the years, due to instability in area under cultivation, production, and productivity of many oil seed crops, there was no uniform pattern in domestic production of various edible oils and this has had a profound impact on the import of edible oils. It can be inferred from the Table 6 that the import of palm oil increased from 64.9% to 72.3%, and the import of sunflower oil increased from 1.7% to 7%. The share of soyabean oil in the total oil imports showed a decreasing trend due to increased domestic production in recent years.

Oil seeds resulted in addition of ₹ 2987 crores to the government's expenditure due to the export of 577 thousand tonnes of different oil seeds (Table 7). Sesamum and groundnut are the major oil seeds exported from India and constitute about 95% of the total quantity of oil seeds exports and 97% of the total value of oil seed exports. To ensure domestic supply and to contain price rise, India banned the export of unbranded edible oil. Export of edible oil is permitted only in branded consumer packs of up to 5 kg, within a ceiling of 10,000 tonnes, for the period from November 1, 2011 to October 31, 2012. Currently, because of deficit rain, even such export of edible oils is prohibited.

Oil Seed Economy of Tamil Nadu : In the total oilseed area and production in India, Tamil Nadu's share was 2.03% in area under cultivation and 3.95 % in production of oilseeds in the country. In the State, groundnut and sesamum are the major oilseed crops. The analysis of growth rate (Table 8) shows that both the crops showed a negative growth rate in area, whereas positive growth was observed in production and productivity. Though groundnut and sesamum are major oil seed crops, besides these, there are other types of edible oils like sunflower oil, ricebran oil, coconut oil, and olive oil which are found in the consumption basket of the consumer. Thus, to analyze the various factors which influenced the consumers' purchase decision with reference to edible oil , the general characteristics of the consumers were first observed.

Table 8. Growth Rate of Area, Production, and Yield of Major Oil Seeds in Tamil Nadu (1970-71 to 2009-10)

Crop	Area	Production	Yield
Ground nut	-0.7891 NS (0.39)	0.34869 NS (1.36)	1.14684 NS (1.320)
Sesamum	-1.4825** (-3.62)	0.00281 NS (0.32)	1.50768*** (5.47)

Source: Government of Tamil Nadu (2011). Season and crop report of Tamil Nadu 2009-10. Chennai: Department of Economics and Statistics.

Note: Figures in parentheses indicates *t*- ratio, *** significant at 1% confidence level, **significant at 5% confidence level, NS- Non Significant

Table 9. Descriptive Statistics of the Sample Consumers

Particulars	Users of blended soybean oil	Non Users of blended soybean oil
Average age of decision maker (years)	37.6	50
Average education of decision maker (education years)	Graduate	Less than higher secondary
Employment status of decision maker (%)	63	10
Average Annual income (dollars)	6203	5055
Average family size (members)	3	4

Source: Primary Data

↳ **Descriptive Statistics of the Consumers :** The general characteristics of users and non-users of blended soybean oil (Table 9) show that the average age of the decision makers in case of users' family was lesser than what it was in case of non- users' family. Besides, the decision makers in blended soybean oil users' family were more educated than the decision makers in non - users' family. Employment status of both the categories showed that nearly 63% of the decision makers in users' family were employed, whereas only 10% of the decision makers in non- users' family were employed. The average annual income was higher in users' category, whereas the household size was higher in the non - users' category. Thus, overall, the decision makers in families using blended soybean oil were younger, more educated, had higher income, had a nuclear family set up, with below average health condition of the family members than the decision makers in families that were not using blended soybean oil.

↳ **Factors Determining Consumers' Preference for Edible Oil :** There are various factors which influence consumers to buy a particular type of edible oil. Das (2013) in his study on edible oil purchase in Tripura found that brand visibility, 'healthy' brand image, brand communication, packaging design, price of oil, and taste of the oil were the most important factors considered by the consumers while purchasing edible oil. Sarwade (2011) identified health consciousness, quality, and price of the edible oil as the major factors which influenced the buying behavior of consumers in Chennai. Pan, Mohanty, and Welch (2008) in their study used censored incomplete demand system to ascertain household expenditures for edible oil in India. The results showed that edible peanut oil was a luxury good in India, whereas expenditure elasticities for other edible oils were relatively low. The study revealed that food habits, location, education of household heads, and other demographic variables had a significant effect on the choice of edible oils. Pinkal (2010) studied the buying preference of edible oil in Ahmedabad, and found that the most attractive parameters considered by the consumers at the time of purchasing edible oil were quality, price, taste, availability, health, offers, and freshness. The study also indicated that groundnut oil followed by sunflower and cotton seed oil were the major oils used by the consumers. Olayemi (2003) in his study noted that the demand for commodities such as edible oil was dependent on the preference for the commodity, the substitutes, and the price of the product.

For the present study, age, education of the decision maker, health condition, and annual income of the family members were selected as the factors which determined the consumers' preference for blended soybean oil.

↳ **Logit Analysis :** The results of factors influencing the willingness to buy blended soybean oil are presented in the Table 10. It is inferred from the table that increase in age by one year resulted in 0.226% decrease in the probability of consumption of blended vegetable oil. Similarly, the odds ratio favoring consumption of blended vegetable oil decreased as the health condition of the consumers' family was poor , the family understood the need of consuming

Table 10: Factors Influencing Willingness to Buy Blended Soybean Oil

S.No.	Parameter	Coefficient	Odds ratio	*P* value
1	Constant	-2.599		0.552
2	Age	-0.226*	0.798	0.021
3	Health	-4.252**	0.014	0.001
4	Education	3.962*	52.574	0.024
5	Monthly income	0.489	1.631	0.301
6	Occupation	1.067	2.906	0.316
	Chi square *p* value	**0.0001**		
	McFadden's Rho-Squared	**0.698**		

Source : Primary survey data *Significant at 10% confidence level,

** Significant at 5% confidence level.

Table 11. Source of Information for Blended Soybean Oil

Source	Users of blended soy oil (%)
Doctors	80
Past experience	12
Friends and relatives	6
Advertisements	2

Source: Primary Data

proper edible oil as per their nutritional requirements. This finding is similar to that of Boone and Kurtz (2008), who indicated that the family's decision making as a whole plays a major part in the consumer buying process. As expected, education had a positive and significant effect over the consumption of blended soybean oil. Higher the educational level of the decision maker, the greater will be the awareness about the available blended oils in the market. Employment status of the decision maker and annual income of the family had a positive relation with the consumption pattern, but did not have a significant influence over the purchase of soybean oil. The chi square probability value and Rho squared value indicates the goodness of fit of the model.

↳ **Source of Information for Blended Soybean Edible Oil :** There are various sources of information which influence the consumers' decision making choice. Narayanasamy and Ramasamy (2011) found out that the major sources of information for the selection of a particular brand of edible oil were retailers, newspaper advertisements, television, Internet, doctor's advice, and window display. With reference to the present study, it was found that advertisements, friends and relatives, doctors, and past experience of the consumer were found to be the major sources of information regarding soybean oil. The results presented in the Table 11 reveal that of the major sources of information for users of blended soybean oil, doctors were the major source of information. According to the doctors, the usage of two to three oils alternatively helps in balancing the mono and poly saturated fats in the food, and most of the doctors recommended blended edible oil to their patients. Thus, the usage of blended soybean oil increased among the health conscious consumers.

↳ **Reasons for Not Preferring Blended Soybean Oil (Non - Users) :** Majority of the consumers in the non-user category were not aware about blended soy oil. About 2% of the consumers indicated that the taste of the oil was not as per their liking, and 8% of the consumers indicated that they were put off by the fish like odour of soybean oil. Finally, 10 % of the consumers were of the opinion that the oil was quite costly, and this was a major reason for them not buying blended soybean oil (Table 12).

↳ **Oil Preferences of Non Users of Blended Soybean Oil :** Based on the health conditions of the consumers, price, taste, and odour of the oil, the consumers had different preferences for different types of edible oils. The results presented in the Table 13 reveal the preference of consumers for different edible oils. Majority of the non users of soybean oil preferred sunflower oil, followed by groundnut oil , gingelly oil, palm oil , and rice bran oil in that order.

Table 12. Reasons for not Preferring Blended Soybean Oil

Attributes	Non users of blended soybean oil (%)
Price	10
Odour of soybean oil	8
Taste of soybean oil	2
No idea	80

Source: Primary survey data

Table 13. Non Users' Preference Regarding Types of Oil

Types of oil	Garett Score	Rank
Sunflower oil	58.60	1
Groundnut oil	57.40	2
Gingelly oil	54.16	3
Palm oil	52.80	4
Rice bran oil	26.04	5

Source: Primary Data

↳ **Opportunities for Soybean Oil Consumption in Tamil Nadu :** The share of soybean oil in household consumption in the state of Tamil Nadu is very low, and also, the taste and odour of soyabean creates pre-conceived notions among the consumers about the nature of soybean oil. Inspite of the said disadvantages, soybean oil has some advantages - the price of soybean oil is close to that of sunflower oil and is lesser than groundnut and sesamum oil, which are the major edible oils used in Tamil Nadu.

Summary and Conclusion

1) Analysis of the Indian oil seed economy showed that the compound annual growth rate of demand of edible oil has been rising, but the domestic production to meet out this demand showed a negative growth rate for some of the oilseeds, and meager growth for other oil seeds. Similar situation prevails in Tamil Nadu with respect to oil seed production. Achieving self sufficiency in edible oil production can be emphasized by taking adequate measures - like using high yielding, input responsive, drought, insect, and pest resistant crop varieties and crop management technologies.

2) It was found that health consciousness of the decision makers plays a major role in the consumption of blended soybean oil. In order to promote soybean oil among the non consumers, awareness should be created by advertising the health benefits that can be obtained from soyabean oil - that is - it is low in saturated fat, high in mono and poly unsaturated fats, and contains omega 3 fatty acids, which are considered good for the heart.

3) It was found that many customers were put off by the odour of soyabean oil; hence, soybean oil advertisements should emphasize that the oil undergoes deodorizing processes during refining. Since it is highly nutritious, it can be used for cooking in the government run schemes like the Mid - Day Meal Scheme so as to benefit the young generation and to create a taste among the children for this oil.

The suitability of soybean for cultivation in fallow land and the yield and price advantage over other crops, mainly coarse cereals and pulses, has resulted in high soybean production, and more area has been brought under cultivation. However, during the last few years, expansion of soybean cultivation was constrained due to fluctuations in productivity. Thus, there exists a mismatch between demand and supply of soybean oil. In order to meet the huge domestic demand, soybean oil is imported. Next to palm oil, soybean oil occupies a major share of all edible oil imports in India. However, currently, the share of soybean oil in total edible oil imports has decreased because of high domestic production and due to increased import of cheaper palm oil. In order to reduce the import of palm oil, which consumes more foreign exchange, the government can focus on policies which will have a profound influence over productivity of oil seeds like soybean oil and make India self sufficient in edible oil production.

References

Boone, L.E., & Kurtz, D. L. (2008). *Contemporary marketing* (13th Edition). USA: Thomson South-Western.

Das, M. (2013). Factors affecting the purchase of staple goods: An empirical study of edible oil purchase in Tripura. *Indian Journal of Marketing, 43*(6), 47 - 53.

Government of India, Directorate General of Commerce and Intelligence (n.d.). *Export of Oilseeds (2009- 2010)*. Ministry of Commerce and Industry.

Government of India (2011). *Annual Report (2010-11).* Ministry of Consumer Affairs, Department of Food and Public Distribution.

Government of India, Ministry of Agriculture (2013). Area, production and yield of major crops - Agricultural statistics at a glance, 2011. Department of Agriculture & Cooperation, Retrieved from http://agricoop.nic.in/agristatistics.htm

Government of Tamil Nadu (2011). Season and crop report of Tamil Nadu 2009-10. Chennai: Department of Economics and Statistics. Retrieved from http://www.agritech.tnau.ac.in/pdf/2012/Season%20&%20Crop%20Report%202012.pdf

Gujarati, D. N., & Sangeetha, B. (2007). *Basic econometrics (4th Edition)*. New Delhi: Tata McGraw Hill Publishing Company Limited.

Indian Credit Rating Agency (2011). Indian edible oil industry: Key trends and credit implications. Retrieved from http://www.icra.in/Files/ticker/ Indian Edible oils- 11072011.pdf

Narayanasamy, R., & Ramasamy, M. (2011). A study on consumer brand preference on the consumption of cooking oil of various income groups in Chennai. *SSRN*. Retrieved from http://ssrn.com/abstract=1894093

Olayemi, J.K. (2003). *Applied micro economics*. Ibadan Oyo State, Nigeria: Elshaddai Global Ventures Ltd.

_____Pinkal, (2010). Consumer preference and buying behaviour towards edible oil. *StudyMode.com.* Retrieved from http://www.studymode.com/essays/Buying-Preferences-Of-Edible-Oil-In-361470.html

Pan, S., Mohanty, S., & Welch, M. (2008). India edible oil consumption: A censored incomplete demand approach. *Journal of Agricultural and Applied Economics*, 40(3), 821 - 835.

Sarwade, W. K. (2011). *Brand preferences and consumption pattern of edible oils in Maharashtra state* (IPEDR Vol. 4, pp. 330-332). Proceedings of the International Conference on Economics and Finance Research, Singapore, February 26-28, 2011.

Soyfoods Association of North America (n.d.). Soy proteins and heart disease health claim. Retrieved from http://www.soyfoods.org/nutrition-health/soy-for-healthy-living/soy-for-heart-disease/soy-protein-and-heart-disease-health-claim

The Solvent Extractors Association of India (2012). Import of vegetable oils. Retrieved from http://www.seaofindia.com/stats