

## Sal Seed -A losing proposition or an untapped resource?

Sanjoy Patnaik  
Meena Das Mohapatra

*SAL SEED (Shorea Robusta) plays a crucial role in the economies of the Central Indian States of Jharkhand, Bihar, Orissa, Chattisgarh, and Madhya Pradesh. About 90, 000 forest fringe villages with a combined population of 56 million (FSI) are dependent on sal seed as an important livelihood resource. In all these states, sal seed collection provides employment for more than 80 days a year. About 11 million forest dwellers, most of them tribals, in this part of the country eke out a living from Sal seed. Sal fat, which contains symmetrical triglycerides, makes it particularly useful in the food sector. It forms the primary ingredient for products such as oil, soap, Vanaspati, cocoa-butter equivalent (CBE) that forms a very efficient substitute for manufacturing chocolate and for tanning purposes. Besides, the de-oiled cake also has a good export market as cattle, poultry and fish feed.*

### I. Huge gap between potential and procurement

The potential availability of Sal Seed in India has been estimated to be of the tune of 1.5 million tonnes. The potential of Sal fat availability is around 0.18 million tonnes. However, only 6,000 to 9,000 tons of Sal fat is being produced annually in India.<sup>1</sup> One of the reasons for low production of sal fat is a result of the procurement policies of

states, which has led to stagnating collection prices, forcing traditional Sal seed collectors to opt for other, more remunerative occupations. At current prices, the income for a tribal in Central India varies between Rs. 25-30/ on an average collection of 6-8 kg of Sal kernel<sup>2</sup> a day-less than half the current minimum wages prevalent in these states.<sup>3</sup> The two major reasons for reduced procurement of kernels

and a consequent reduction in the production of speciality fats, as said earlier, are low and stagnating collection price and the failure of the procurement agencies to procure efficiently from all parts of the State. This is particularly true of states like Orissa and Jharkhand, where the procurement agencies have failed miserably to perform in the desired manner. Interestingly, the Orissa Government maintains that since there is not much demand for sal seeds, the state marketing corporations should not be compelled to procure sal seeds from tribals as the state government may not be in a position to pay for them. These state governments believe that investments in promoting tribal livelihoods are a liability. The indifference of governments has created an impression that Sal seed is losing demand and, therefore, needs to be left to the market to determine its price and the fate of collectors, who are no more the responsibility of the State. Interest-



<sup>1</sup> Trifed, New Delhi.

<sup>2</sup> Sal seed is dried, burnt and decorticated to collect the kernel, which is quite a tedious process.

<sup>3</sup> Except for Chattisgarh where the prices are a little better than its other central Indian counterparts.



ingly, after suffering losses for years and completely messing up the whole trade operation, the Government of Orissa has now handed over sal seed management to the Gram Panchayats as per the provisions of PESA (Panchayat's Extension to Schedule Areas) in 2006.

## II. Multifarious commercial uses of Sal seed

The economic importance of Sal seed is based on its tremendous and uncharted export potentiality. In the mid-sixties, Orissa pioneered scientific research on Sal seed and its use as raw material for oil and cattle feed. Sal fat, which contains about 69 per cent symmetrical triglycerides, makes it tailor-made for the food sector. It forms the primary ingredient for a diverse range of products such as oil, soap, cocoa-butter equivalent (CBE) in chocolate manufacturing and is also used for tanning purposes. The Central Committee of Food Standards has also cleared Sal oil (fat) for confectionery use. Sal fat in Vanaspati ghee (upto 20%) is preferred as there is no fear of this fat settling as cholesterol in blood vessels to cause blockage in the heart. Besides, the fat gives a natural green colour to soaps.

Till recently, the bulk of the best quality Sal oil used to be exported to developed countries like Canada, France, Italy, Japan, Malaysia, UK, etc, where it is used as a substitute for cocoa butter. If the

quality is maintained and free fatty acid (FFA) is kept below 5% and the hydroxyglycerides content is less, Sal oil has a tremendous export market. Sal fat is competitive in the export market due to its low price. The other thing that goes in its favour is that it is invariably organic, free from pollutants and fertilizers.

The best quality Sal oil, i.e. with FFA below 3-5%, is used in the chocolate industry and exported to Japan and the European Union countries. Oil with 5-7% FFA is used in the Vanaspati sector, above 7% FFA is used for soap making and still inferior quality with of above 10% finds use in manufacturing of paints, lubricants, etc. The oil cake is used for boiling plants, as a sizing material in textile industries and as cattle feed after standardization. A rough estimate of the uses of de-oiled cakes shows that 80% of the produce is used as fuel in solvent extraction plants, 3-5% in making coal briquettes and the rest is used as feed for cattle, poultry and fish. The de-oiled cake also has a good export market as cattle feed.

## III. The Fluctuating Trade Potential of Sal Fat

The global market for chocolate and confectionery products is estimated at 6 MT, with an expected annual growth of about 3 per cent. The largest customer group for sal fat consists of 6-7 MNCs manufacturing chocolates and confectionery that account for about 60% of the total production globally. Europe, being the largest chocolate producer, has a well-documented directive governing chocolate legislation in Europe. The directive by EU in August 2003 allows chocolate industries to use 5% vegetable fat as co-

coa butter substitute in products marketed as chocolates in EU countries. It was expected that it would generate additional demand for CBA (cocoa butter alternatives) to the tune of 25, 000 - 50, 000 tonnes per annum. It was also expected to directly benefit the producers of the tree-borne oilseeds. But no statistics are available as yet to assess whether and to what extent it has actually benefited the domestic sector.

The advantage of vegetable oil over cocoa is that cocoa continues to be one of the most expensive raw materials used in chocolate making. Hence, the only two ways to ensure a profit are keeping the price of the bean low or reducing the amount of cocoa used in chocolate. Vegetable substitutes of comparable quality are considerably cheaper - approximately 80 per cent of the price of cocoa butter. A reduced raw material and labour cost alone can allow big chocolate industries to raise the expenditure towards promotion that is so necessary for expansion of the market to newer areas. The arguments in favour of vegetable oil are its variety, quality and shelf life, though the real issue is cost. A five per cent cut in raw material costs could actually mean millions of dollars in profits for international chocolate producers.

### Export Potential of Sal fat

There is a vast potential for Sal oil/fat in our country because of vast Sal forest areas and the presence of millions of tribal collectors. However, it is yet to be used as cocoa butter equivalent in the domestic market as the Government of India has not yet permitted the use of vegetable fats in chocolates in the

## EXPORT OF SAL OILS AND FAT

Year	Quantity in MT	Value in Million Rs.
1996 - 97	1911.00	82.87
1997 - 98	62.00	3.02
1998 - 99	87.50	4.49
1999 - 00	145.00	10.06
2000 - 01	294.65	22.12
2001 - 02	1266.50	75.32
2002 - 03	586.00	40.15
2003 - 04	NA	
2004 - 05	NA	

country. International trade and development indicators suggest that the fluctuations in Sal oil export are due to the availability of cheaper substitutes. But there is a feeling within trade circles that Government apathy is one of the primary reasons for the decreasing volume of exports.

The fluctuations in Sal oil exports have been attributed to the following reasons:

1. Sal oil is mostly imported by countries for use as a substitute for cocoa butter, known as cocoa butter equivalent (CBE). The rise and fall in its prices is linked, besides the quality and quantity of Sal oil, to the production and use of cocoa butter (CB) itself in chocolate and confectionery industries.
2. International trade and development indicators suggest that the fluctuations in Sal oil export are also due to availability of cheaper substitutes like shea and illipe and availability of substitutes like milk fat replacers (MFR).

3. The consistently low price of cocoa beans in international markets has led to greater quantity of cocoa being used in chocolate making, hitting the demand for Sal oil hard.
4. The exporters of Sal oil in India have failed to meet the strict quality specifications insisted on by countries like Japan and UK. The reason for not meeting the specified free fatty acids and hydroglycerides limits was the huge gap between collection of the seed and the crushing of the kernel to oil in the factory.
5. Govt of India does not have a quality monitoring system as regards Sal fat to ensure adherence to pesticide norms implemented by European and Japanese Governments.

### IV. Quality issues and specifications

In the early 1980s, Mitsui and ISD (Unilever) were the two main international buyers of crude Sal oil. After the evolution of a refining process in India that could handle high FFA material, they switched over to a refined version. While Japan purchased Sal oil directly from Indian manufacturers, ISD routed its purchase through Hindustan Lever. In the absence of refining facilities, the quality issue of Sal oil remained largely unaddressed.

Such problems were not unique to Unilever. Increasing epoxy and hydroxy - stearic acid levels were identified with poor quality and long storage of seed and oil with sometimes high pesticide levels. Since the collection and storage



methods decided the FFA content and the FFA content, in turn, determined the demand for various uses, a trading system evolved whereby oil was shipped against contract only on approval of the buyer's analysis and acceptance of pre-shipment samples.<sup>4</sup>

The Prevention of Food Adulteration (PFA) Rules 1954, defines refined Sal seed fat as 'fat obtained from seed kernels of Sal trees, neutralized with alkali, bleached with bleaching earth or activated carbon or both and deodorized with steam, no other chemical agents being used. Alternatively, deacidification, bleaching and deodorization may be done by physical means. The material shall be clear on melting and free from adulterants, sediment, suspended or other foreign matter, separated water or added colouring substance. There shall be no turbidity after keeping the filtered sample at 40 degree C for 24 hours.'

It is also pertinent to note that the Government of India is hardly concerned about the quality specifica-

<sup>4</sup> Two examples relating to the quality issue deserve mention here. Cadbury industry in UK tried to incorporate Sal oil directly into chocolate recipes but found that the Sal oil supplied by its Indian associate was of inferior quality. This resulted in a virtual veto against the use of Sal oil in the UK CBE market. Hindustan Lever, with a view to solving all quality related problems, built an extremely expensive silica refining plant to produce Sal oil. But it made Sal oil so expensive that it became completely uncompetitive in the international market.

tions set by international buyers. The new pesticide norms implemented by European and Japanese Governments have forced the major buyers to shift to other alternate markets as Indian specialty fat is unable to meet such high quality specifications.<sup>5</sup>

There can be no second opinion that quality matters the most. It demands technological upgradations to match international quality parameters. For instance, the dry fractionation of Sal for production of Sal stearin was a most important innovation. It is inexpensive, off the shelf, produces an acceptable CBE component and is, moreover, readily available in the open market. Until this point, producers of CBE had been secure in the knowledge that their expensive and sophisticated solvent fractionation process was required to produce a stearin suitable for inclusion in CBE recipes. But with the path-breaking innovation, it is now possible to develop a CBE business with relatively low capital cost based on CBE components readily available in the open market.

#### V. Legislations influencing Trade: Enabling or Obstructing?

The evolution of CBE legislations in Europe and the trade relations of EU with shea and cocoa exporting countries also influenced Sal oil export. Since the 1950s, new entrants to European Economic Com-

munity (EEC) had been using non-cocoa vegetable fats in chocolates, initially to reduce dependence on scarce supplies of cocoa butter and limit the volatility of the cocoa market. But since these speciality fats had to be of high quality so as to ensure the quality of the product, the rules formulated by these countries specified properties that resembled those of cocoa butter as closely as possible.

In 1973, EEC brought in Denmark, Ireland and UK, which had a different chocolate tradition from that of the original six member states. There were two major issues: milk chocolates with high milk content and non-cocoa vegetable fats. The 1973 directive specifically stated that it did not affect Member State legislation, which authorized or prohibited the addition of vegetable fat other than cocoa butter to chocolate products. The European Commission also expressed the view that chocolate products containing non-cocoa vegetable fats, which are lawfully manufactured and marketed in one Member State, must be allowed to be marketed in all Member States. In the 1996 Directive of the Commission, provision was made to allow the use of non-cocoa vegetable fats in chocolates made throughout the European Union. The Council agreed on a Common Position on a new<sup>6</sup> Chocolate Directive that allowed replacement of cocoa butter (cocoa

butter equivalent) by vegetable fat in chocolates to the extent of 5%. The directive was finally adopted in 2000.<sup>7</sup>

However, there is stiff opposition in some EU countries to accepting the Chocolate Directive in all respects to protect the domestic market of 'pure chocolates', as in Italy. Italy introduced the special 'pure chocolate' label, i.e. -chocolate products with 100 per cent cocoa butter, in 2003. In January 2006, it embarked on a collision course with the EU over the definition of pure chocolates and voted to uphold its definition of 'pure chocolate' in the face of opposition from the European Commission.

#### European Parliament on non-cocoa fat

The European Parliament had a number of concerns on permitting the use of non-cocoa vegetable fat, most of them related to consumer interests within the EU and with cocoa producer interests outside it. It felt that the extension of the use of non-cocoa vegetable fats to the whole of the EU could result in a significant reduction in the foreign exchange earnings of cocoa producing countries. At the same time, it was recognized that this would be largely offset by increasing the market for those tropical nut oils, which are essential in the making of chocolate speciality fats. Therefore, the EP voted to restrict the sources of non-cocoa vegetable fats in choco-

<sup>5</sup> International buyers complain that sal fat procured from India is getting contaminated by pesticides due to improper methods followed during harvesting, value addition, storage etc. Banned pesticides like Aluminium Sulphide and DDT are being used during storage.

<sup>6</sup> The Chocolate Directive is a set of rules, which operates within the European Union (EU) to define the key elements of products sold using the description "chocolate". These rules lay down criteria for the use of terms such as 'chocolate', 'milk chocolate', and 'cocoa powder'. The criteria define compositional requirements such as the minimum quantity of additives like lecithin. There are, in addition, specifications for labeling of chocolates and chocolate products. It requires the Member States to permit the use of up to 5% non-cocoa vegetable fats in chocolate throughout the European Union, subject to certain constraints. It also rules that labeling is discriminatory against foreign imports.

<sup>7</sup> A few other countries such as Malaysia, Indonesia, Taiwan and Russia allow more. It is understood that the Indian Government is considering a level slightly above 5%.



lates to those that originate in tropical countries. But the suggested limitation of the source of oils to those of "tropical origin" was seen as unacceptable in terms of world trade agreements: it would represent a non-tariff barrier to trade with countries outside the tropical regions. Thus, a complete list of the source materials like palm, illipe, shea, sal, kokum and mango kernel was suggested.

The Common Position recognizes that chocolate containing non-cocoa vegetable fats is of equally high quality as that without. It was therefore decided not to prohibit their use altogether in chocolate making. This is considered a positive step towards the establishment of a true single market in chocolate products.

#### **Bottlenecks with Indian legislations:**

Though Sal seed finds uses in food processing industries in India, domestic food laws remain a huge bottleneck in further diversification of the uses of Sal seed. Domestic legislations like the Prevention of Food Adulteration (PFA) Rules, 1954 prohibit use of Sal fat in a number of prospective industries like chocolates, ice creams, etc. It says that "Chocolate means a homogeneous product obtained by an adequate process of manufacture from a mixture of one or more of the ingredients, namely, cocoa (cocoa) beans, cocoa (cocoa) nib, cocoa (cocoa) mass, cocoa press cake and co-

coa dust (cocoa fines/powder), including fat reduced cocoa powder with or without addition of sugars, cocoa butter, milk solids including milk fat and non-prohibited flavouring agents. The chocolates shall not contain any vegetable fat other than cocoa butter."

A study conducted by the Solvent Extractors' Association (SEA) in association with other health and food industry bodies reported that the Indian Government is about to permit the use of certain vegetable fats - namely Cocoa Butter Equivalents (CBEs) Sal, mango kernel and kokum - in chocolate manufacture, a practice currently forbidden under the Prevention of Food Adulteration (PFA) rules. SEA has been campaigning for some years for the increased use of some tree crops, which it sees as an under-utilized natural resources. The move is expected to provide the required impetus for this.

Besides, India imports a huge quantity of Vanaspati for domestic consumption. In Budget 2006-07 for the vegetable oil sector, the Indian government has raised the custom duty on Vanaspati from 30 to 80 %, which will check the import from Malaysia and Indonesia. However, import of Vanaspati from Sri Lanka would continue at zero percent duty. Under the FTA signed with Sri Lanka, India imports around 2.5 lakh tonnes of Vanaspati without any import duty, while the Indian product is charged a whopping 81.65 duty. This would seriously affect the working of the domestic Vanaspati industry. Therefore, the All India Vanaspati Industries Sangharsh Samiti (AIVISS), an umbrella organisation of small vanaspati manufacturers, has started a tirade

against the government's policy vis-a-vis the Vanaspati industry. According to AIVISS, the zero percent custom duty has led to a yearly loss of 617 crores of rupees (USD 139 million) for the Indian government in revenue and has resulted in the closure of 120 Vanaspati manufacturing units, leaving lakhs of people unemployed.

There is no dearth of opportunities in India to promote business and industries with Sal seeds. But the Government has been strangely reluctant to promote the Vanaspati industry within the country, particularly in areas where there is ample scope in terms of raw material and manpower. The irony is that the government has withdrawn the exemption on goods manufactured by oil mills, a rule that was in force since April 1975. Now solvent extraction industries shall have to pay a 16% excise duty on by-products such as fatty acid, wax, etc.

#### **VI. Hurdles to Trade Promotion: Governance Issues**

As per the International Cocoa Organization (ICCO), there will be a 20% drop in revenue from cocoa exporting countries such as Ghana, Ivory Coast and Nigeria as a result of the drop in demand for cocoa butter after the new chocolate directive. The European demand for cocoa beans will drop by some 2,00,000 tonnes, causing a glut in supply and fall in world prices.

It is a strange coincidence that about 11 million tribals are directly dependent on cocoa as a livelihood in Western Africa, while almost an exactly equal number of forest dwellers dependent on Sal seed in Central India stand to lose their livelihoods due to the EU Direc-

tive on chocolate. Preference for sal fat over cocoa would mean loss of huge foreign exchange for the West African countries resulting in higher health and school fees. Estimates of the loss in markets vary from a low of 88,450 tons to a high of 2,00,000 tons. The Western consumer is concerned over replacing a saturated fat like cocoa butter with the more harmful, hardened hydrogenated fats. However, the opposition does not seek to prevent the manufacture of vegetable-oil candies, but simply wants such products to be called something other than chocolate. The greatest threat, therefore, to sal oil is not its market share, but whether its produce can actually be termed as 'chocolate'. The Fair Trade Movement positions itself with the rights of the southern cocoa producers and the European consumers and advocates the denomination of chocolate to be reserved for cocoa based products not containing vegetable oil - vegetable candies may be called "vegelates".<sup>8</sup>

**Challenges to growth of the domestic market**

Though the Central Committee of Food Standards has also cleared Sal oil (fat) for confectionery use, the Prevention of Food Adulteration (PFA) Rules 1954 have not yet cleared the use of Sal fat in industries like chocolates, ice creams, etc. The irony is that the Govt. of India does not allow use of vegetable oil in the domestic food sector on health grounds, but there is no such restriction on the imported chocolate that uses vegetable oil as

CBE. The inability of the sal fat traders to prevail upon the government for bringing in the necessary policy changes has forced them to be at the mercy of an uncertain international market.

**VII. What should be done by whom and when?**

The sole objective of any intervention with regard to legislation and trade of Sal seed is undoubtedly ensuring greater returns to the primary collectors and enhanced op-



portunities for domestic and international trade. As said earlier, Sal seed not only takes care of the livelihood of millions of forest dwellers in Central India; it also guarantees employment for several millions more in the processing and end-use industries, besides looking after the foreign exchange needs and entrepreneurial development in the country. Apart from the direct stakeholders like primary collectors, processors and end-users, other players in the form of policy makers, procurers, forestry and

livelihood support organizations, researchers and research institutions have their distinct roles in achieving the above mentioned objective.

**1. Smart procurement policy:**

The importance of Indian specialty fats is growing in the international confectionery markets, contrary to what some state governments believe. Consequently, there are tremendous opportunities in India for the growth and expansion of Sal seed

and fat industries and business. The supply chain of the industry stands disrupted with decreased procurement as more and more people shift to other means of livelihood in the face of unremunerative collection prices.<sup>9</sup>

**2. Capacity building of primary collectors**

Since quality protection during the collection, primary processing and storage influences international trade potential, it is important that a mutually agreed

<sup>8</sup>Swift, Richard, 'Cocoa Farmer in Cadbury's Court'.

<sup>9</sup>A task force has to be created in the states to deal with sal seed procurement and trade. Industries consume only 10 per cent of the total sal seed collected. Due to improper government policies, the produce is not being managed properly and not even procured in several places. Where traders try to operate with their own network and resources, the policies of government create obstacles. (Ashish Saraf, Hanuman Minor Oils, Raipur).

harvesting protocol is prepared. The capacities of primary collectors and field level agents need to be developed on the basis of this protocol.

### 3. Research and development:

- Research institutes in India should take up comparative studies on the quality of chocolate fat vis-à-vis other cocoa butter substitutes. Technological upgradations need to be undertaken to match international quality parameters.
- Further inquiries need to be done on Sal fat constituents and its various uses in various food and confectionery industries. Special efforts should be made on product development research that would look for opportunities for a better domestic market for Sal fat, especially when the international market is so unpredictable.
- There is a need for coordinated research on product development keeping the requirements of industries in mind. Primary collectors/producers and their

organisations need to be trained so that they meet the exacting quality standards of modern industrial processes.

- Efforts should be made to link product development research with trade.
- Research must also focus on low cost, replicable and appropriate technology that can be used for value addition at the local level for uses like soap making, cattle feed etc.

### 4. Changes required in the legislations:

- The PFA Act 1954 needs to be changed to permit the use of Sal fat in chocolate making.
- The Indian Government should promote Vanaspati industry within the country, particularly in areas where there is ample scope in terms of raw material and manpower.
- Since solvent extraction industries have to pay 16% excise duty on by products such as fatty acid, wax, etc, the government needs to exempt goods manufactured by oil mills, a rule that was



prevalent since April 1975 but has now been withdrawn.

- There is a need for setting up of pesticide norms for all products in the food sector.

Prolonged dialogue and discussion are required among all stakeholders to identify the policy and legal changes required; to explore the possibility of having some kind of procurement network with the participation of industry and primary collectors' cooperatives and develop and popularize quality parameters/standards at all levels.



### References:

1. Directive 2000/36/EC of the European Parliament and of the Council of 23 June 2000 relating to Cocoa and Chocolate Products intended for human consumption.
2. Budget 2006-07 for vegetable oil sector, press release, A.R. Sharma, President, update 28th Feb, 2006 (internet)
3. Lanka set to make Indian Vanaspati Industry extinct, 18.01.2006, 1: 18 AM, source: Latest Asia News.
4. The Chocolate Directive, Bob Eagle, Bob Eagle Associates.
5. [www.fore.canterbury.ac.nz](http://www.fore.canterbury.ac.nz)
6. [www.britanniafood.com](http://www.britanniafood.com)
7. [bobeagle@vossnet.co.uk](mailto:bobeagle@vossnet.co.uk)
8. Report of the Workshop on Minor & Tree-Borne Oilseeds and Their Value Added Products, By SEA, Mumbai, 2nd July 2004 at Raipur.
9. Gautam, Krishna, H and Nora N. Devoe, 'Ecological and Anthropogenic Niches of Sal forest and prospects for Multiple-Product Forest Management - A Review, School of Forestry, University of Canterbury, NZ.
10. Mohapatra, Ajay, Sanjoy Patnaik, "Sal Seed Procurement and Trade Operations: Issues and Challenges", RCDC, April 2004.
11. Swift, Richard, 'Cocoa Farmer in Cadbury's Court'.
12. This article is also a product of the authors' discussions with the Solvent Extractors' Association, especially with Mr. Ashish Saraf, and CG MFP Federation, Mr. Mukesh Dholakia, Trifed, and many others in the business.
13. Report on the Multistakeholders' Consultation on Sa Seed Procurement, Management and Trade in Central India, 25-26 May, 2006, Raipur, organized by RCDC CFG.