PALM OIL
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World's Oils and Fats Production Increase

Total world's oils and fats production during January to March 1995 recorded an increase of 1.42 million tonnes or 6.8% from the same corresponding quarter last year. The production from January to March , 1995 was 22.29 million tonnes.

Source : Oil World

In This Issue...

Impact of R&D on the Market Acceptance of Palm Oil in Pakistan

by Iftikhar Ahmad

INTRODUCTION

Pakistan has emerged as one of the world's largest importers and consumers of Malaysian Palm Oil. Its annual palm oil imports have exceeded well over one million tonnes. The palm oil share in the formulation of local commonly used multipurpose fat (vegetable ghee or vanaspati) ranges between 80-100 per cent. This status of palm oil use in the vegetable ghee blend has been attained with consistent efforts over a period of 20 years. There have been many techno-economic factors which have contributed in one way or another to this phenomenal process of the market development of palm oil in this country. But the most significant contributing factor has been the technical support which was provided by the Malaysian palm oil industry through the PORIM's R&D efforts.

This article reviews the impact of these R&D efforts in accelerating the technical acceptance of palm oil as a major component of vegetable ghee by the edible oil industry of Pakistan.

PALM OIL MARKET DEVELOPMENT

Palm oil was first introduced into Pakistan in 1970 by the Malaysian based company Harrison and Crossfield but regular imports of palm oil began in 1974. Since then, the process of market development and market acceptance of palm oil has been on-going for almost 20 years.

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Over the years, palm oil imports have grown from 27 000 tonnes in 1974 to 1.15 million tonnes in 1994 (*Table 1*), (*Figure 1*). This whole process can be divided into six phases of market development (*Table 2*). Each phase has not only resulted in the increased technical acceptance of palm oil in the vegetable ghee blends but has also resulted in the palm oil market consolidation for the subsequent stages. The type and the extent of R&D efforts and the associated technical supports provided for each phase was different and variable in nature. The chronology of such R&D inputs are listed in *Table 3*. Following is a phase-wise review of the impacts of such R&D efforts in the palm oil acceptance and palm oil market development in Pakistan:

Phase - I

The first consignment of palm oil which arrived in Pakistan was of crude quality. It was imported in drums due to the non-existence of bulk handling and storage facilities. The product was unknown to the local oils and fats technologists. In view of these facts, the acceptance of palm oil by Pakistan's edible oil industry was initially rather slow. It was found convenient to keep the palm oil level in the vegetable ghee blends ranging between 5-20 per cent. During this period the technical representatives of the Malaysian suppliers of palm oil paid frequent visits to impart necessary technical information particularly in the areas of bulk handling and processing of CPO.

Phase - II

In this period, the country's dependence on imported vegetable oils started to grow and coupled with it was the industry's experience in the handling and processing of crude palm oil. As a result of this, the import of palm oil by Pakistan started to grow accordingly and the palm oil share in the vegetable ghee blend rose from 20% to 40 per cent. Pakistan's edible oil industry was randomly visited by the supplier's technical personnel to provide the essential technical information on crude palm oil bulk handling, storage, transportation and processing. By the end of this phase Pakistan was already importing about a quarter million tonnes of palm oil per annum (*Table 1*).

Phase - III

This was the period for the rapid acceptance and development of the palm oil market in Pakistan. For this period, the palm oil share in the vegetable ghee blends went up to 60 per cent. The major contribution for this development came from PORIM by organising collaborative industrial trials jointly with the Ghee Corporation of Pakistan (GCP), Trading Corporation of Pakistan (TCP) and Federal Land Development Authority (FELDA) of Malaysia to introduce for the first time RBD palm oil to Pakistani vegetable ghee industry. A supervised shipment of 1000 tonnes of RBD palm oil was brought into Pakistan and vegetable ghee production trials were conducted in the factories using RBD palm oil and partially hydrogenated cottonseed and soyabean oils. The success of these trials prompted Pakistan to switch its palm oil imports from crude or neutralized quality to RBD quality. Pakistani vegetable ghee industry was soon convinced of the techno-economic and logistical merits of using RBD palm oil in the vegetable ghee formulations.

Furthermore, in 1981-82 PORIM conducted a survey of the Pakistani vegetable ghee products and carried out R&D work in its laboratories to formulate local type vegetable ghee products incorporating higher amounts of palm oil taking into considerations the requirements of vegetable ghee quality and the availability of locally produced vegetable oils during the different seasons in the country (*Table 4*). Vegetable ghee blends were prepared using palm oil, palm olein and partially hydrogenated cottonseed and soyabean oils. The R&D work on vegetable ghee contributed significantly to the rapid and large scale acceptance of palm oil into the locally produced vegetable ghee commercial products.

Phase - IV

This was more or less the consolidation period of the use of palm oil by the local vegetable ghee industry. This process was fully backed up by PORIM with the setting up of a regional TAS office in Pakistan to provide prompt technical services to the industrial consumers of palm oil. These efforts were further supplemented by conducting regular palm oil technical seminars for the industry on various aspects of palm oil specifically on quality and product formulations as well as inviting the Pakistani oils and fats technologists and policy makers to PORIM's palm oil familiarization programmes with a view to provide them with a better insight into the products. Due to the aforementioned strategic efforts the palm oil share in vegetable ghee was maintained and consolidated

at the 65% level. However, it could not go beyond this level due to import tariff mechanism on vegetable oils imposed at that period. By the late 80's, a greater acceptance of the Malaysian palm oil had been achieved as a result of the commissioning of a nutritional research project in Pakistan which further confirmed nutritional attributes and suitability of palm oil vis-a-vis the hydrogenated product for Pakistani vegetable ghee formulations.

Phase - V

This was a relatively short but very rapid phase of further market acceptance of palm oil in the vegetable ghee blends. Many important developments took place during this period. For example, suspension of the U.S. assistance on soya bean oil, fast development of local vegetable ghee industry and the liberalization of vegetable oils trade. Coupled with these developments was the stepping up of palm oil nutrition research programme undertaken by PORIM at AKMU and PCSIR Laboratories in Pakistan. A project on quality monitoring of palm oil was also undertaken to identify and improve the weak areas in the bulk handling, storage and transportation of palm oil. The findings of the palm oil nutrition and quality monitoring projects were presented at various local forums including conducting regular seminars and symposia. These research findings generated a lot of awareness and interest about palm oil not only among the oils and fats technologists but also among the scientists, academicians and policy makers of Pakistan. Meanwhile, the process of palm oil familiarization was kept going through visits and the distribution of PORIM's technical publications. These efforts had resulted in further enhancing the share of palm oil incorporation in the vegetable ghee blends from 65% to 80 per cent.

Phase - VI

This is an important phase in which more achievements and consolidation of market and acceptance of palm oil at consumer level have been materialised. In 1992 the level of palm oil being incorporated in vegetable ghee formulations had attained to more than 80% replacing hydrogenated soya bean and cottonseed oils.

Due to the nutritional awareness and the controversies surrounding the health aspects of trans-fatty acids, the concept of trans-free or low trans-vegetable ghee is catching on fast in Pakistan. It is likely that in future hydrogenated oils will be discouraged for ghee manufacture in Pakistan and modified palm oil will obviously be the substitute for the hydrogenated fats. In order to further support this trend appropriate nutritional studies on palm oil have been commissioned and some are being carried out.

The technical acceptance of palm oil in Pakistani vegetable ghee formulations has been attributed to the continuous efforts on research and development under taken by PORIM.

TABLE 1.
GROWTH OF PALM OIL MARKET IN PAKISTAN

Year	Palm Oil Imports ('000 tonnes)	Type of Products
1970	2	Crude palm oil
1974	27	Crude palm oil
1975	130	Crude palm oil
1980	233	Neutralised palm oil
1985	507	Refined bleached deodorised palm oil
1988	526	Refined bleached deodorisd palm oil
1990	683	Refined bleached deodorised palm oil
1991	976	Refined bleached deodorised palm oil
1992	856	Refined bleached deodorised palm oil/palm olein
1993	1180	Refined bleached deodorised palm oil/palm olein
1994	1150	Refined bleached deodorised palm oil/palm olein

Source : PORLA Statistics Oil World

TABLE 2. MARKET SHARE OF PALM OIL

Phase	Period	Palm Oil Share (%)
I	1970 - 75	5 - 20
II	1975 - 80	20 - 40
III	1980 - 85	40 - 60
IV	1985 - 90	50 - 65
V	1990 - 92	65 - 80
VI	1992 - 94	80 - 100

TABLE 3. CHRONOLOGY OF R&D SUPPORT FOR PALM OIL IN PAKISTAN

1970 - 80 : Random visits by the technical representatives of the Malaysian suppliers of palm oil to advise on bulk handling and refining practices.

1980 : Collaborative industrial trials by PORIM, GCP TCP and Felda to introduce RBD palm oil for the first time in Pakistan.

1981 : Survey of Pakistani vegetable ghee products.

1982 : Formulation work on palm based vegetable ghee.

1984 : Setting up of PORIM Regional TAS office in Karachi for rapid technical support.

1989 : Commissioning of 1st Palm Oil Nutrition Research project at PCSIR Laboratories - Lahore - Pakistan.

1991 : Commissioning of Multicentric palm oil Nutrition study simultaneously conducted on 600 human volunteers at four centres.

1992 : Commissioning of palm oil quality monitoring project during shipping, bulk handling and storage.

1993 : Commissioning of three more palm oil nutrition studies at AKMU and AFIP.

1980 - 94 : Information dissemination of palm oil such as :

- Invited about 46 participants from Pakistan for the Palm Oil Familiarization Programmes conducted in Malaysia.
- Conducted yearly regular technical seminars/symposia on the various aspects of palm oil such as a quality, product formulations and nutrition.
- Supply of PORIM's technical publications.
- Regular technical visits and interaction with the oils and fats technologists, researchers and policy

TABLE 4. COMMON BINARY BLENDS FOR VEGETABLE GHEE FOR PAKISTAN

Composition (%)		Solid Fat Contents Temperature ^{o}C								
		10	15	20	25	30	35	37	40	Slip M.Pt ^{o}C
HPO(41)	HSBO (35)									
60	40	81	72	51.7	37.6	23.4	11.7	8.5	3.4	38
50	50	83	72	51.3	36.9	22.5	9.4	5.5	2.6	36.8
PO	HSBO (39)									
80	20	61	47	33.9	21	13.9	7.1	5.7	1.6	37.2
60	40	67	54	41.9	28.4	17.1	9.1	6.3	3.1	37.8
PO(37)	HPOo (38)									
80	20	57	42.7	36.1	24.1	15.1	9.5	6.5	3.5	37.8
60	40	63.7	50.3	45	30.7	19.5	12.6	9.3	5.1	37.5
Typical Pakistan Vanaspati										
– Winter Blend		59	49	38	26	18.1	9.6	8.7	3.8	37.2
– Summer Blend		75.6	63.2	50.9	36.8	22.6	11.3	7.3	4.5	38.0

Key : Palm Oil(PO) Hydrogenated Palm Olein (HPOo), Hydrogenated Soya Bean Oil (HSBO), Hydrogenated Cottonseed Oil (HCSO), Hydrogenated Palm Oil (HPO).

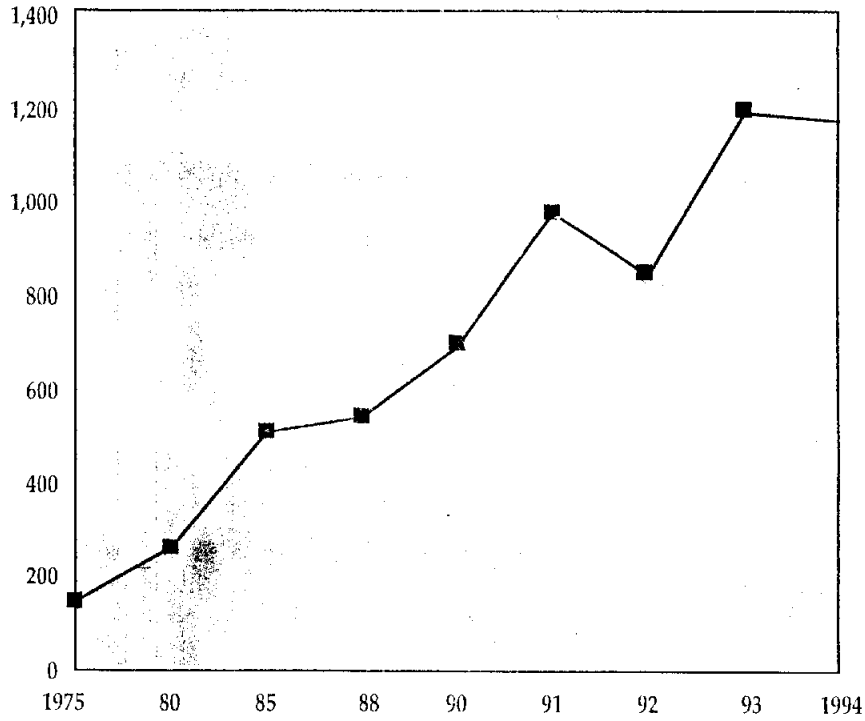

Figure 1. Import of Malaysian Palm Oil to Pakistan (1 000 tonnes)

MINOR COMPONENTS OF PALM OIL

by
C L Chong and M Rasid M Jaais

The carotenoids, tocopherols, sterols, phosphatides and triterpenic and aliphatic alcohols are among the minor constituents of palm oil.

The total content of the minor component is about 1% of the weight of palm oil, however these minor constituents play a significant role in relation to the stability and refinability of the oil, while several of them (e.g. the carotenes, tocopherols and tocotrienols) are of nutritional importance. The carotenoids in crude palm oil probably also protect the triglycerides against oxidation by being oxidized first.

Crude palm oil contains tocopherols and tocotrienols in the range of 600 to 1000 ppm; the levels in refined palm oil are slightly lower. Tocopherols and tocotrienols are also antioxidants and also provide some natural protection to the oil. *Table 1* shows the types of tocopherols and tocotrienols present in palm oil.

From *Table 1*, it can be seen that α-tocopherol and α-tocotrienol account for the major portion of the total tocopherols and tocotrienols present in palm oil. Gapor (1981) confirmed the presence of these tocopherols and tocotrienols by HPLC and also indicated the presence of their esterified forms.

TABLE 1. TOCOPHEROLS AND TOCOTRIENOLS IN CRUDE PALM OIL

Type	Percentage
α-tocopherol	21.5
α-tocotrienol	23.1
γ-tocotrienol	43.7
β-tocotrienol	11.7

A. Gapor, 1979

The combined effects of the minor components, *i.e.* carotenoids, tocopherols and tocotrienols appear to contribute to the higher oxidative stability of palm oil in comparison with many other vegetable oils.

The amounts of cholesterol in vegetable oils are generally so low as to have no nutritional significance. The cholesterol content of palm oil is even lower than that of some other common oils (*Table 2*).

TABLE 2. CHOLESTEROL LEVELS IN VEGETABLE OILS AND FATS

Type	Average (ppm)	Range (ppm)
Coconut oil	14	5 - 24
Cocoa butter	59	9 - 40
Palm kernel oil	17	13 - 19
Palm oil	18	8 - 44
Sunflower seed oil	17	20 - 35
Soya bean oil	28	28 - 108
Cottonseed oil	44	25 - 80
Rapeseed oil	49	25 - 80
Maize oil	50	18 - 95

Source: (a) M J Downes. Letherhead Research Report, 1982, 1983, 1984, 1985.

Table 3 shows the sterols-present in crude and refined palm oil and palm olein. It can be seen that the already negligible cholesterol levels in crude palm oil and crude palm olein are further reduced on refining.

The phophatides and the triterpene alcohols in palm oil are shown in *Tables 4* and *5* respectively.

TABLE 4. PHOSPHOLIPIDS OF PALM OIL

Phospholipid	Percentage
Phosphatidylcholine	36
Phosphatidylethanolamine	24
Phosphatidylinositol	22
Phosphatidylglycerol	9
Phosphatidylglycerol	4
Phosphatidic Acid	3
Lysophosphatidylethanolamine	2
Lysophosphatidylcholine	trace

Source: Goh, S H. (1982). Private communication

TABLE 3. STEROLS COMPOSITION OF CRUDE AND REFINED PALM OIL AND PALM OLEIN (PPM)

Sample	Cholesterol	Campresterol	Sitosterol
Palm Oil			
Crude	7 - 13	90 - 151	218 - 370
Degummed, bleached	5 - 10	49 - 116	113 - 286
RBD	1 - 5	15 - 16	45 - 167
Palm Olein			
Crude	6 - 8	57 - 104	149 - 253
Degummed, bleached	3 - 4	36 - 43	99 - 123
RBD	2	26 - 30	68 - 114

Sample	Stigmasterol	Unknown
Palm Oil		
Crude	44 - 66	2 - 18
Degummed, bleached	22 - 51	trace to 8
RBD	8 - 30	trace
Palm Olein		
Crude	30 - 51	24 - 28
Degummed, bleached	21 - 25	trace to 5
RBD	12 - 23	–

*Source: Siew (1982), **Private Communications***

TABLE 5. TRITERPENE ALCOHOLS OF PALM OIL

Alcohol	Percentage
Cycloartanol	16.7
α-Amyrin	20.1
Cycloartenol	50.1
2, 4-Methylene cycloartenol	13.1

*Source: Teah (1980). **MSc Thesis**. University of Reading.*

Trend in Non-Edible Uses of Oils and Fats

by
Dr B A Elias

In non-edible uses of oils and fats over the last 10 years changes showed remarkable increases in the consumption of palm oil in the period 1992/93.

In 1982/83, the largest share was held by the animal fats at 43% followed by the laurics at 20% linseed, castor at 13%, soya bean, rapeseed, sunflower at 11%, palm at 9% and others at 4%. In 1992/93 however, the share of animal fats was down to 32% while palm leaped to second place at 22% share. Soya bean, rapeseed and sunflower oils remained at 11%. While Linseed and castor oils declined to 10% and others increased to 5 per cent.

In relation to the geographical position of the consumption pattern of oils and fats for technical uses in 1992/93, South East Asia gained the top position with 39% share as compared to only 15% share ten years ago. The EU held second at 19% while the USA's share declined from 15% to 7 per cent.

World consumption of oils and fats for animal feeds in 1992/93 was 5.7 million tonnes, while 4.3 million tonnes went to the oleochemicals sector (excluding soap). In general oleochemicals held a much larger share than petrochemicals in every sector of the market except fatty alcohols where the division was 56/44 in favour of petrochemicals.

Technical Uses of Oils and Fats

by
B A Elias and T P Pantzaris

Oils and fats in general are used in three sectors of the market: edible, oleochemicals (including soaps) and animal feeds. Details of the edible uses such as production, imports, exports and disappearance of each oil for each country of the world are easily available from journals such as Oil World and others. But details of their uses in the other sectors are not easy to find.

An interesting article headed "La demande non-alimentaire des huilles et graisses" (The demand for non-edible uses of oils and fats), in the French chemical journal OCL., December 1994, gives useful statistics on the market share of various oils in oleochemicals, the position of palm oil, changes over the last ten years and the geographical split in the use of oils for oleochemicals.

In the ten years to 1992/93, the world total demand for oils and fats has risen by 27% to reach 81 million tonnes (excluding maize oil), but the demand for oleochemicals uses has risen even faster to reach 10.7 million tonnes or 13% of the total. The market share held by various oils is shown in *Table 1*.

TABLE 1. MARKET SHARE OF VARIOUS OILS & FATS FOR OLEOCHEMICAL USES (%)

	1992/93	1982/83
Animal fats	32	43
Palm Oil	22	9
Laurics	20	20
Soyabean, rapeseed, sunflower	11	11
Linseed, castor	10	13
Others	5	4

Source : USDA

The most notable feature of the statistics, has been the rapid growth in the importance of palm oil which has overtaken the combined seed and laurics oils to reach second position. Nearly all the market share gained by palm oil has been at the expense of the animal fats.

The use of palm oil in three market sectors is shown in *Table 2*.

TABLE 2. USE OF PALM OIL BY MARKET SECTOR (%)

	1992/93	1982/83
Edible	86	79
Oleochemicals	10	19
Animal Feeds	4	7

In considering *Table 2*, it should be borne in mind that in the ten- year period under consideration, world palm oil production increased by 124%.

TABLE 3. GEOGRAPHICAL SPLIT IN THE OLEOCHEMICAL USE OF VEGETABLE OILS & FATS (%)

	1992/93	1982/83
South East Asia	30	15
EEC	19	23
USA	7	15
South Asia	7	10
Africa	5	3
Others	32	34

It is seen from *Table 3* that the use of oils for oleochemicals production, South East Asia has double its share in the last ten years, and displaced the EEC from its first position. The EEC has suffered considerable share loss and USA is even worse. Africa however, has nearly double its share but from a low base.

TABLE 4. NON-EDIBLE USES OF OILS AND FATS 1992/93 (Million Tonnes)

Animal Feeds	5.7
Oleochemicals (excl. soap)	4.3
Total	16.3

Many classes of chemicals can be made either from oils/fats feedstock (oleochemicals) or from petroleum feedstocks (petrochemicals). Traditionally, Europe having no indigenous petroleum but with strong connections in Asia and Africa, preferred the oleochemicals route, while the USA with abundant petroleum resources of its own, available cheaply, preferred the petrochemical route. *Table 5* gives the split between the two feedstocks for the four major groups of chemicals on world-wide basis and it is seen that in every case except fatty alcohols, the oleochemicals are larger. But even here the position is likely to be reversed soon, for currently nearly all the expansion in oleochemical production, is taking place in South East Asia and this region is all for the oleochemical route.

TABLE 5. WORLD MARKET SHARE OF OLEOCHEMICAL AND PETROCHEMICAL PRODUCTS IN 1992/93 (%)

	Oleoche-micals	Petroche-micals
Fatty Acids (C10+)	100	0
Fatty Alcohols (C10+)	44	56
Fatty Amines	90	10
Glycerol	74	26

Research Highlights

Palm Oil and Olive Oil have Similar Effects on Blood Lipids in Normocholesterolemic Individuals

In a study conducted at the University of Sydney by Professor A S Truswell - Professor of Human Nutrition and a renowned nutritionist, a comparison was made on the effects of palm olein and olive oil on plasma lipids in twenty one healthy Australian adults, the majority of whom were science students, health conscious and highly motivated.

The subjects were divided into two groups - one group was fed a diet enriched with palm olein and the other group olive oil. Their fat consumption was about 30-35% of the total energy intake. Palm and olive oils provided about 17% of the energy and 55% of the total fat intake. The energy intakes were relatively constant in the two diets. After four weeks, the two groups were switched over and the diets continued for another four weeks. The plasma lipid profiles were analysed at varying periods.

The fatty acid composition (%) of the two diets were as follows :-

	Palm Olein	Olive Oil
Palmitic acid	40	10.5
Oleic acid	43	77
Linoleic acid	10.5	6.5

With both the test oils, there was a significant decrease in total cholestrol (TC) and a non-significant decrease in LDL-cholesterol (LDL-C) compared with baseline levels. At the end of the two test oil periods, total cholesterol and triglyceride levels were almost the same. Although not significant, HDL-cholesterol (HDL-C) was slightly higher on the palm olein while LDL-C was slightly higher on the olive oil diets. The vitamin E levels were also significantly higher on the palm oil diets.

When compared with the normal Australian diet, these results showed that both palm olein and olive oil resulted

in a favourable plasma lipid profile with no difference between their two effects. The results also confirm that when 50% of the usual dietary fat is replaced by either palm olein or olive oil the effects of these oils on lipids and lipoproteins are essentially similar. Both oils decrease total cholesterol, triglycerides and HDL-C relative to the subjects usual diet. Serum total cholesterol fell by 19% on palm olein and 19.5% on olive oil.

The results of this study are at variance with those of Keys, and some others who conclude that palmitic acid elevated LDL-C and TC. The discrepancy has been attributed to several factors, principal among them is that the earlier studies used hospitalized or institutionalized subjects with higher age range, hypercholesterolemia, those on medications *etc.* Many also used modified or synthetic diets, liquid formulae diets and some used extreme fatty acid exchanges *e.g.* more than 15% of energy from a single fatty acid. The present findings however are in agreement with these of Ng *et al.* who showed that palmitic acid or oleic acid exert similar effects on LDL-C and HDL-C metabolism.

The present study once again reaffirms what has been known for sometime that palm oil is not hypercholesterolemic, but on the other hand it is a versatile edible oil with cholesterol lowering qualities. The low CHD rate in Mediterranean people is attributed, among other factors to the high consumption of olive oil. It seems that similar effects are possible with palm oil which has a desirable level of oleic acid at 43 per cent.

TABLE 1. PLASMA LIPID LEVELS WITH PALM OLEIN AND OLIVE OIL DIETS IN NORMO-CHOLESTEROLEMIC ADULT AUSTRALIANS

	Normal diet		Palm olein diet		Olive oil diet	
	Mean	SD	Mean	SD	Mean	SD
Total cholesterol (mmol/l)	5.54	1.11	4.65	1.26	4.63	0.99
Triglyceride	1.18	0.53	0.97	0.56	0.95	0.41
HDL-C	1.28	0.57	0.91	0.33	0.80	0.19
LDL-C	3.63	1.37	3.33	1.13	3.41	0.96

Contributed by Dr Chandrasekharan

Source: N Choudhury et al American J. Clin. Nutrition 1995;61

Fluidised Bed Combustion Technology For Heat & Power Generation in the Palm Oil Industry

A project on fluidised bed combustion technology for low quality fuels was carried out in Universiti Kebangsaan Malaysia (UKM) by Dr Abd Halim Shamsuddin. The project was successful and it has shown that palm oil solid wastes can be burnt efficiently using the technology developed. According to Dr Abd Halim, a typical mill processing 10.16 tonnes/hr fresh fruit bunches produces about 565 kilogrammes of shells, 1106 kg fibres and 831 kilogrammes empty fruit bunches, dry basis. With efficient combustor and boiler system, these solid wastes can be exploited to produce 1.09 mW of electricity. With milling electricity requirement of 0.15 mW, a mill of this size has the potential of supplying 0.94 mW excess electricity. The palm oil industry has about 270 mills through out the country. With an average capacity of 40 tonnes/hr, the industry has the capacity of producing 1015 mW excess electricity, thus making them a significant independent power producer (IPP). Dr Abd Halim suggested that an industrial demonstration project be undertaken to convert an existing mill with fluidised bed boiler to improve energy production and exploit fully the potential for producing energy from mill wastes.

Contributed by Isa Mansor

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PILOT SCALE PRODUCTION OF ACTIVATED CARBON

In a recent Seminar on Oil Palm Research in Universities and Research Institutes it was reported that a pilot plant for production of activated carbon has now been developed by the Universiti Teknology Malaysia. The pilot plant is able to produce 30% - 35% yield of activated carbon from the raw feed. Initial studies showed that the activated carbon produced is of high quality and is comparable with a commercial activated carbon. The design of the plant is suitable for cottage size industry.

According to Ms Normah Mulop, the pilot plant uses agricultural wastes such as coconut and palm oil shell as the input. Production of activated carbon from the tank was also tested. The preparation of the activated carbon is carried out in two consecutive steps. The first step is the carbonization of the raw material to the intermediate char.

This is then followed by the activation process. Steam is used as the activating medium. During the carbonization process about 60% of the raw material is evolved as volatile matter gases. These gases contain numerous compounds such as tar, phenolic compounds, acetic acids, etc. Volatile matter traps were innovatively designed and incorporated in the pilot plant to remove the volatile gases. As a result, air pollution was greatly reduced when the pilot plant is in operation. Otherwise, the volatile gases can be used as a fuel in the carbonization process.

Contributed by Johari Minal

COCOA BUTTER AND VEGETABLE FATS

Organisations representing the cocoa exporting countries have been alarmed by reports that the European Union is to allow 5% of the cocoa butter to be substituted by vegetable ghee in chocolate, in line with UK practice.

The chocolate industry of the EU accounts for some 40% of the world's cocoa disappearance and the application of the 5% rule would mean a drop in world cocoa exports of about 63 000 to 125 000 tonnes. It is feared that such a move by the EU may have repercussions in the USA, which accounts for 30% of cocoa imports. If the US were to adopt the same rule as the EU, then the combined drop in cocoa demand could reach 200 000 tonnes, or 10% of world cocoa production.

At a press conference called by the cocoa producers, they pointed out that such substitution would go against the 5th International Cocoa Organisation agreement signed by the EU in February 1994. The agreement required all signatories to take all necessary steps to increase cocoa consumption in their countries by eliminating or reducing obstacles to cocoa consumption.

On the other hand, the adoption of the 5% rule would be highly beneficial to Malaysian palm oil specialty fats manufacturers, since in practice the vegetable fat in chocolate has to be a CBE.

Contributed by J R Santhiapillai.

IN BRIEF

European Palm Oil Prices are in Downward Trends

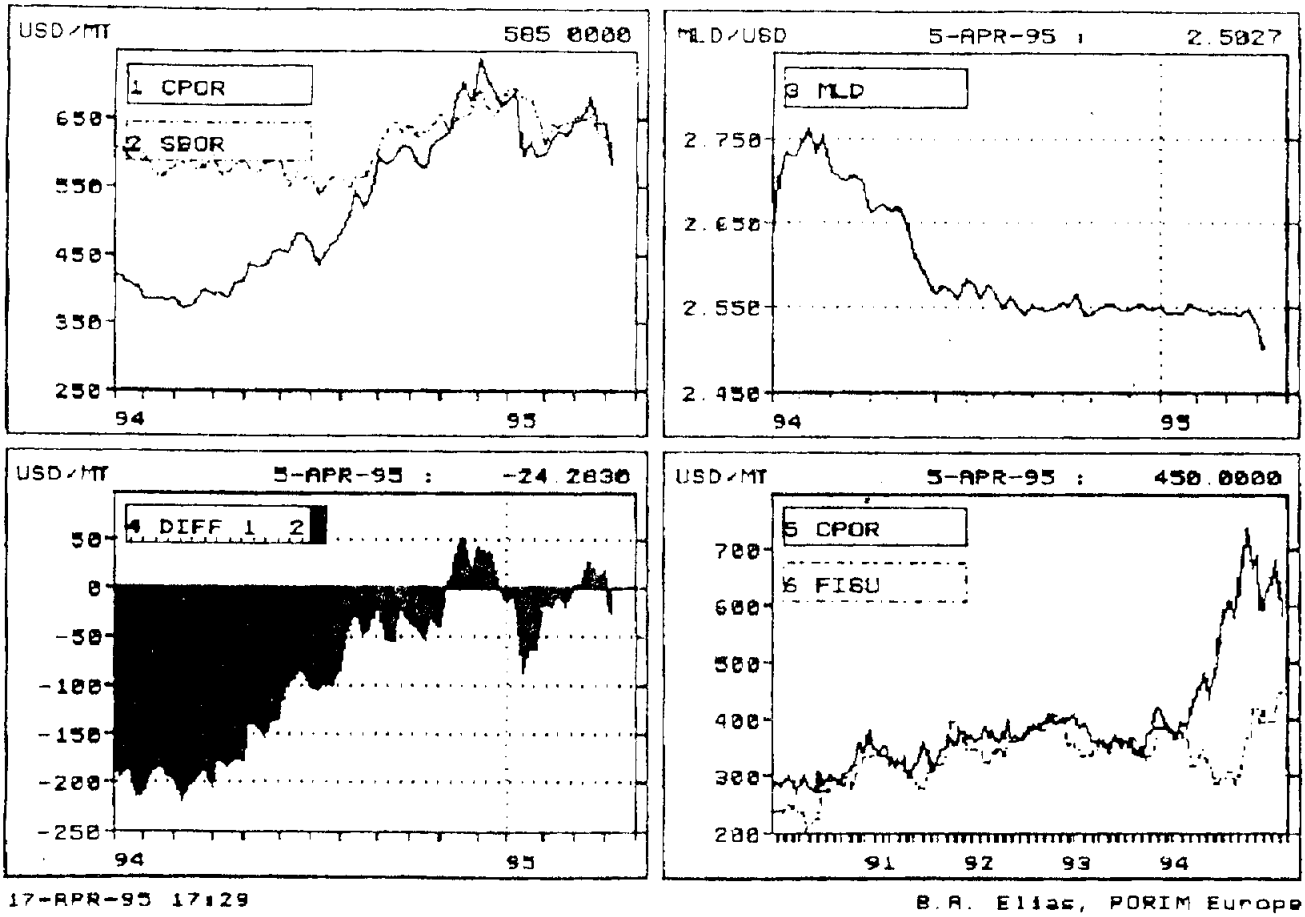
by
Dr B A Elias

Crude palm oil price (CIF Rotterdam) continues its downward trend after peaking at about US$ 50.00 premium over crude soya bean oil (ex-tank Rotterdam) in November 1994 (see attached figures). In January 1995 it went downward to as much as US$ 100.00 discount below soya bean oil. Soon after, the price picked up gain and was at premium during most of the month of March. As of April '95 however, it was back at a discount of about US$ 24.2830. From the figures it can be seen that the price of palm oil is now in a phase of a general downward trend. With the easing of the supply situation in Europe the downward trend may be here to stay. The present price situation for palm oil has not only discouraged more users from switching from palm oil but is a welcome relief for ardent users in East Europe which badly need palm oil to make up their dwindling local supply of vegetable oils.

Crude palm oil was as competitive as crude fish oil (US Menhaden) between the period 1990 to the end of 1993. It was only from 1994 that saw the price of palm oil deviating steeply upwards. Crude fish oil is still much cheaper than palm oil and as at 5 April 1995 it was at a discount of US$ 135.00 to palm oil.

Palm oil ability to sustain the market at current high prices has been rather remarkable. This can only be attributed to its suitability and versatility in many of its uses, whether edible or non-edible. Its technical superiority in most of its uses is non-substitutable without undesirable repercussion on the quality of the final product. On further examination however, palm oil stability to sustain the market can also be partly attributed to the weakening of the US dollar against major currencies such as the Pound Sterling, the Deutsch Mark, the Dutch Florin and the Malaysian Ringgit. The steep decline in the US dollar which started in early 1994 was almost simultaneous with the steep increase in the price of palm oil. While the weakness of the US dollar has also made other vegetable oils as competitive as palm oil the value of the Ringgit which has often been maintained rather low provided the marginal added advantage.

Price Trends of CPO vs CSBO & CFO, and Dollar trend against Ringgit



We invite readers to send in comments, suggestions and technical news which could be published in this newsletter.

For more information please contact :

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