

# The Potential Significance of Palm Oil Products in China

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The oil palm produces two types of oil, palm oil from the flesh of the fruit and palm kernel oil from the seed. In 1985 palm oil formed 10.2% of the total world supply of oils and fats of 67.9 million tonnes. Malaysia is by far the largest producer of palm oil, with an output in 1985 of 4.1 million tonnes (along with 512 000 tonnes of palm kernel oil).

The oil palm is economically productive from the age of 3 years to about 25 years, and in Malaysia the crop is little subject to damage by weather or disease. Furthermore, palm oil is mainly produced as an export crop. The supply is therefore very reliable, and it is increasing in volume every year.

Malaysia's production of palm oil in 1986, was 4.5 million tonnes, while the forecasts for 1990 and 2000 are 5.55 and 7.55 million tonnes respectively. Based on a population growth rate in Malaysia of 2.7% per year, a per capita consumption of 16.4 kg/per year of oils and fats, and the present population of 14.7 million people, the amount of palm oil, available for trade would be 5.26 million tonnes in 1990 and 7.17 million tonnes in 2000. Thus future availability of palm oil, especially from Malaysia, is assured. In consequence palm oil products are favourably priced in relation to competing oils. *Table 1* shows prices for some palm oil products and competitive oils in 1984 and 1985, and the price differentials.

It may be noted that palm oil is available from Malaysia fully processed, and also in the fractionated forms, palm olein (an oil liquid above 20°C) and palm stearin (the higher melting fraction). Because palm oil is exported in a fully refined form, which requires only a mild

'clean-up' on delivery, it offers further economies in comparison with crude oils, which require treatment, especially when a hydrogenated oil is required.

*Table 2* shows a typical cost summary, comparing palm oil with sunflower and soybean oil hydrogenated to a melting point of 36°C. Hydrogenation costs are very dependent on the cost of electricity, which in *Table 2* was taken as 4.6 pence (U.K.) per kilowatt hour.

The above discussion shows palm oil to be an economical and reliable source of supply for anyone who needs to import oils and fats, whether for edible or for technical purposes. How does this apply to the requirements of China?

Some 30 or 40 years ago China was known as an exporter of good quality oils such as groundnut oil and teaseed oil. More recently the increase in local demand has meant that these exports have been much reduced or have ceased. In general it is well established that the demand for oils and fats is related to two main factors: size of population and per capita income. *Figure 1* is plotted from World Bank data for more than 100 countries, which show that as per capita income grows the demand at first increases very strongly, and then more slowly until a saturation level is reached. The latter position already exists in Western Europe and the USA, but most Asian countries including China are at the lower levels of consumption, and their demand can be expected to increase in accordance with increases in per capita income. A recent graph (*Figure 2*) taken from the Beijing Review of 29 September 1986 does indeed show that national income in China is

TABLE 1. AVERAGE CIF PRICES OF OILS AND FATS AND PREMIUMS/DISCOUNTS TO PALM OIL PRODUCTS, 1984 – 1985

Product	Average CIF Price US\$/Tonne		Premiums/Discounts 1985*				
			RBD Palm Olein	RBD Palm Oil	Crude Palm Oil	RBD Palm Stearin	Palm Kernel Oil
	1984	1985					
RBD Palm Olein	786	543	–	NR	NR	NR	NR
Soyabean Oil	794	637	94	70	136	NR	NR
Cottonseed Oil	829	710	167	143	209	NR	NR
Rapeseed Oil	756	604	61	37	103	NR	NR
Sunflower Oil	839	668	125	101	167	NR	NR
Groundnut Oil	1 017	905	362	338	404	NR	NR
Palm Kernel Oil	1 037	551	NR**	NR	NR	NR	–
Coconut Oil	1 155	590	NR	NR	NR	NR	3.9
RBD Palm Stearin	595	445	NR	NR	NR	NR	NR
Tallow, Fancy Bleached	531	421	NR	NR	NR	–24	NR
RBD Palm Oil	821	567	NR	–	NR	NR	NR
Palm Oil, Crude	729	501	NR	NR	–	NR	NR
Crude Palm Stearin	526	435	NR	NR	–	–10	NR
Lard, Refined	575	553	NR	10	–	108	NR

Source: PORLA, PORAM and Oil World.

\* Premiums are indicated by a negative sign; the other figures are all discounts.

\*\*NR – not relevant.

TABLE 2. SUMMARY OF COSTS/BENEFITS

Items	Sunflower Oil US\$	Soyabean Oil US\$	RBD Palm Oil US\$
Price per tonne	668.00	637.00	567.00
Cost differential per tonne (Table 1)	101.00	70.00	–
Added cost of process losses	16.78	18.26	4.93
Cost of chemicals	21.43	21.43	4.28
Cost of hydrogenation	22.31	21.93	–
TOTAL	172.42	131.62	9.21
Savings from using palm oil	+163.21	+122.41	–

rising strongly, and this may lead to a requirement for imports of oils.

Apart from the general advantages noted above, there are several specific applications in which palm oil products show better technical performance than other oils.

- 1) The manufacture of instant noodles as a convenience food is increasing rapidly. This product was invented in Japan some 20 years ago and is manufactured there on a large scale. The process involves steaming and then frying of the noodles in a continuous production line. While initially the frying was carried out in beef tallow, experience showed in Japan and elsewhere, that the use of palm oil gave a better product with a longer shelf life. Palm oil is already in use for this purpose in China, and this use is likely to grow.
- 2) The fats used in confectionery products such as chocolate, chocolate-type coatings on biscuits, and filling creams for wafers, need to have special properties. They must be solid at room temperature and completely melted at mouth temperature. The natural fat of the cocoa bean has these properties and in consequence is always very highly priced. However, several alternative speciality fats are now being manufactured in Malaysia which satisfy the technical criteria, and they are all much cheaper than cocoa butter. The main types are:
  - (a) Cocoa butter equivalent fat based on a palm oil 'mid-fraction' obtained by double fractionation. This product can be mixed with cocoa butter in any proportion.
  - (b) Hydrogenated or fractionated palm kernel oil, which has very good properties for chocolate bars,

but cannot be mixed with cocoa butter because the texture would become too soft.

- (c) A special type of hydrogenated olein.

- 3) The Muslim minority population of China, which uses a proportion of solid fats, may prefer a naturally solid fat of vegetable origin.
- 4) In recent years China has imported some tallow and coconut oil for high-grade toilet soap, which is then exported. Coconut oil is required because of the functional properties of its medium chain-length fatty acids, principally lauric acid. Palm kernel oil has an equivalent fatty acid content and can be directly substituted for coconut oil in soap, with a saving in foreign currency as indicated in *Table 1*. Tallow can be partly or wholly replaced with palm stearin. The prices of these two fats are generally close, but the processing costs with palm stearin are much lower, because it does not need the clean-up required with tallow. The costs for this may amount to as much as US\$ 30 – 40 per tonne. Furthermore, palm stearin usually enables less perfume to be used – another significant saving since this is an expensive ingredient.
- 5) Palm kernel oil is also a suitable alternative to coconut oil in the oleochemicals industry. Owing to minor differences in composition, the mixture of fatty acids obtained by fractional distillation contains slightly less of the short chain acids and more oleic acid than that from coconut oil.
- 6) Palm olein from Malaysia has proved a great success in the world market. In 1984 exports totalled 1.44 million

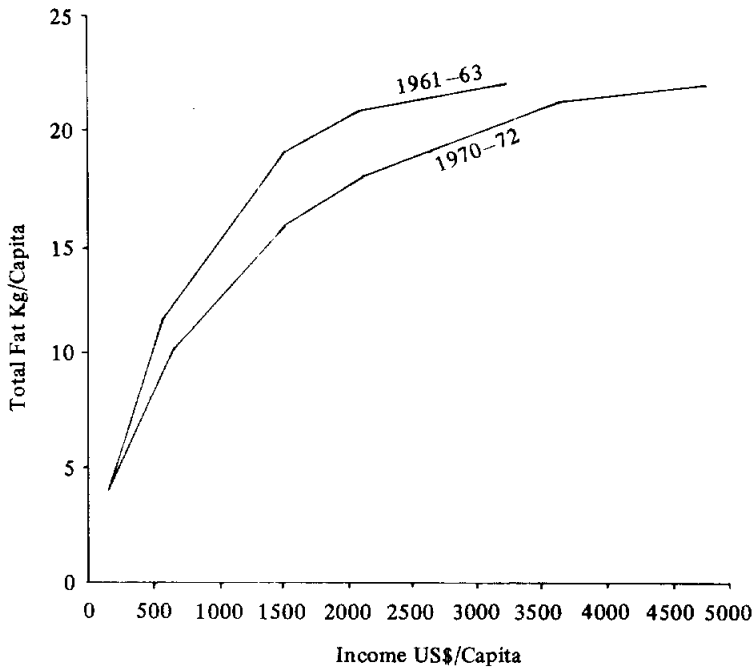


Figure 1. Fat Consumption and Income.

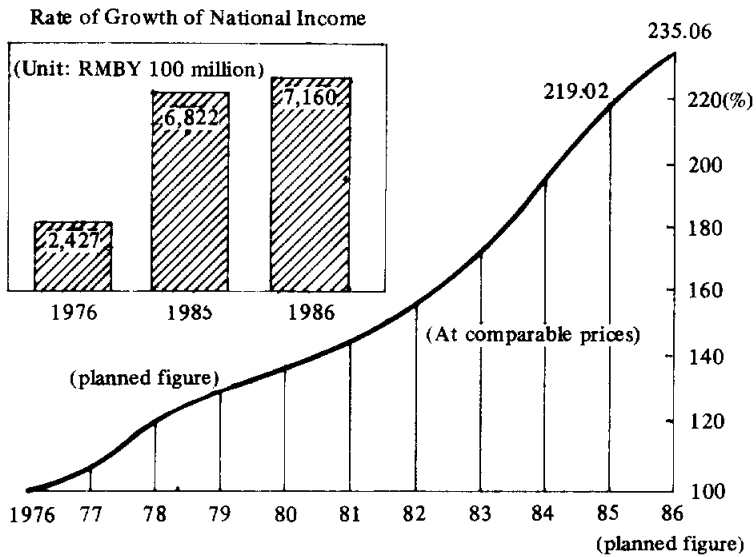


Figure 2. Growth of National Income in China.

tonnes, representing 45% of all palm oil products, while in 1985 the volume was 1.74 million tonnes, 51% of the total exports. In warm climates this product remains liquid at all times and is used as a salad and cooking oil. Its stability at high temperatures makes it very suitable for frying, where it is widely judged on technical criteria to be as good as groundnut oil. Where ambient temperatures fall below 20°C, palm olein starts to deposit some solid components. This is not significant for performance, but makes the oil cloudy in appearance. This disadvantage can be overcome by blending with another oil. Blends of palm olein with rapeseed, soya and other oils are being marketed successfully in a number of

countries.

Palm olein presents an important opportunity for foreign exchange earnings in China. It could be made available in the local market with the specific objective of releasing quantities of groundnut oil for export. The price differential is more than US\$300 per tonne. The exact procedure would have to be worked out by trials and assessment of the consumer's reactions. Based on experience elsewhere it is considered that a 50:50 mixture of palm olein with groundnut oil would be a good starting point.

It is hoped that the above suggestions will stimulate readers to consider the advantages of palm oil from their own point of view.