Present and Future Position of Palm and Palm Kernel Oils in World Supply and Trade

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ABSTRACT

The major production of palm oil has shifted from Nigeria to Malaysia following the program of encouragement instituted by the Malaysian government in the 1950's. Since then oil palm developments have risen dramatically to an estimated 6.6 million tons of palm and palm kernel oils in 1984. This is expected to expand to over 20 million tons in the year 2000. Before that time Indonesia will also become a major producer of palm oil. Palm and palm kernel oils are expected to become the major world fat and oil export, reaching 44% of world totals by 2000.

HISTORICAL BACKGROUND (1950-1968)

In the 1950's and 1960's palm oil products played only a minor and even a declining role in world production and trade of all oils and fats. Up to the end of the 1960's the oil palm was like the sleeping princess in the famous fairy tale. Bare of any dynamics, commercial world production of palm oil stagnated at 1.3 to 1.4 million tons annually in the 1950's and 1960's. Consequently its share in total world production and trade of all major oils and fats had a tendency to decline continuously. In 1958 it was 4.8% of production and 13.5% of exports. These shares declined to 3.8% and 9.2%, respectively, by 1968. It was indeed a forgotten commodity, with only a few insiders paying attention to it. This was true even more so for its by-product, palm kernel oil.

Figure 1 shows that the production share lost by oil palm products was taken up by soybean oil. The combined share of the other fourteen oils and fats remained virtually unchanged at almost 83%.

In world markets the importance of palm oil products was declining during the 10-year period 1958-68. In 1968 their share of total world exports reached its historical low of 11%. But for soybean oil the great time had not yet come. During these ten years the big winners were sunflower oil, tallow, fish oil and coconut oil. These products led the world markets for oils and fats at that time, with palm oil products following behind.

The role of the prince kissing the princess awake was played by the Malaysian government. In fact, the story began back in the 1950's. At that time the Malaysian economy was almost solely dependent on three commodities – rubber, tin and timber – and this was considered detrimental. The idea was to rouse the country's

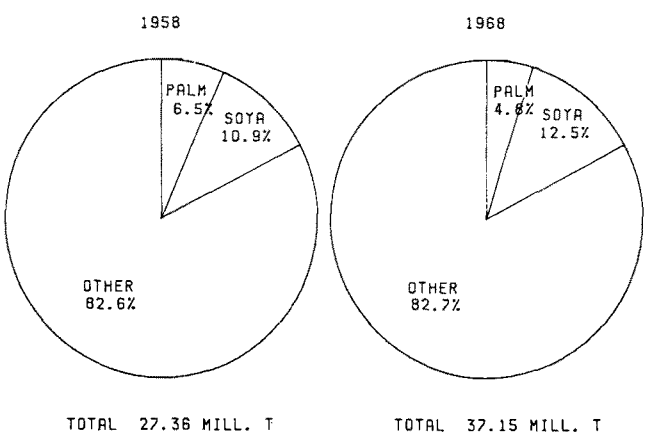

FIG. 1. World production of palm and palm kernel oil, soybean oil and 14 other oils and fats: shares of world total (%).

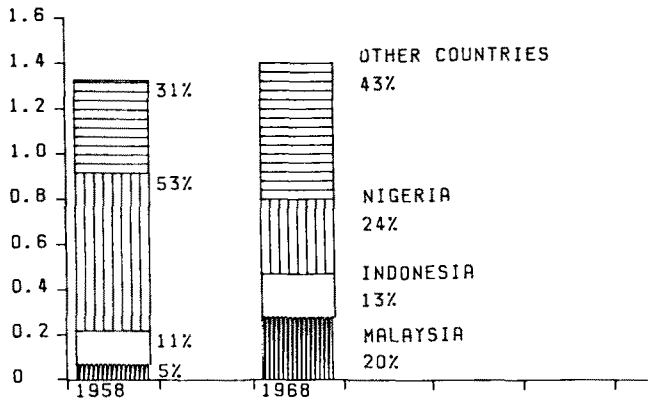

FIG. 2. World palm oil production by major countries 1958 and 1968 (million tons).

sleeping resources, namely its excellent climate and the excellent, partly virgin soil, coupled with a largely free economic system. The Malaysian government thus began to help financing research and investment in the oil palm industry during the 1950's. Indonesia and other Southeast Asian countries soon followed.

Of course, this development began almost at zero, so that even large rates of increase at first meant little in terms of quantity. Up to 1968 the increase in the palm oil output of Malaysia and Indonesia combined was not even sufficient to offset the decline in Nigeria (Fig. 2).

METEORIC RISE (1968-1984)

The meteoric rise of the world palm oil industry began in 1968; the increase has been 276% in the 16 years up to 1984. This is the largest growth rate of any oils and fats.

This is without precedence in our vast field. No other oil or fat has ever achieved such a phenomenal growth. Certainly soybean oil has not lost any headway; during the 16 years ending in 1984 its production has increased by 190%, driven mostly by the very strong demand for soybean meal, of which oil was the byproduct. But this growth was far outpaced by palm oil, the world production of which has risen by 315% over the same period. Even if we add the more slowly growing palm kernel oil, the combined world output of the two palm oil products has still increased by 276%.

However, as the growth of palm oil and palm kernel oil production started from a rather low level, the quantitative increase was smaller and, therefore also, the increase in the palm oil production share was smaller than in the case of soybean oil: from 4.8% in 1968 it has risen by 6 percentage points to the present 10.8% for palm oil and palm kernel oil combined. As compared with this, the soybean oil share of total world production has risen from 12.5% to almost 22% this year (see Fig. 3).

In world trade, however, the growth of oil palm products has been considerably stronger than that of soybean oil, both quantitatively and percentagewise, in the past 16 years (Fig. 4). In the current calendar year the world exports of palm oil and palm kernel oil combined will reach almost 5 million tons of 26% of the total world exports of all oils and fats. This compares with almost 4 million tons or 21% for soybean oil. But compared with 1968 all three oils enjoyed an outstanding growth in all respects.

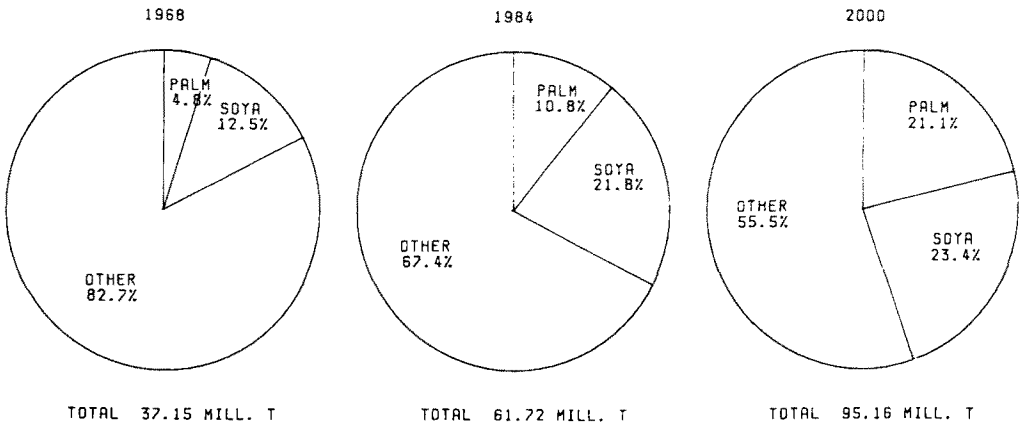

FIG. 3. Production of palm and palm kernel oil, soybean oil and 14 other oils and fats: shares of world total (%).

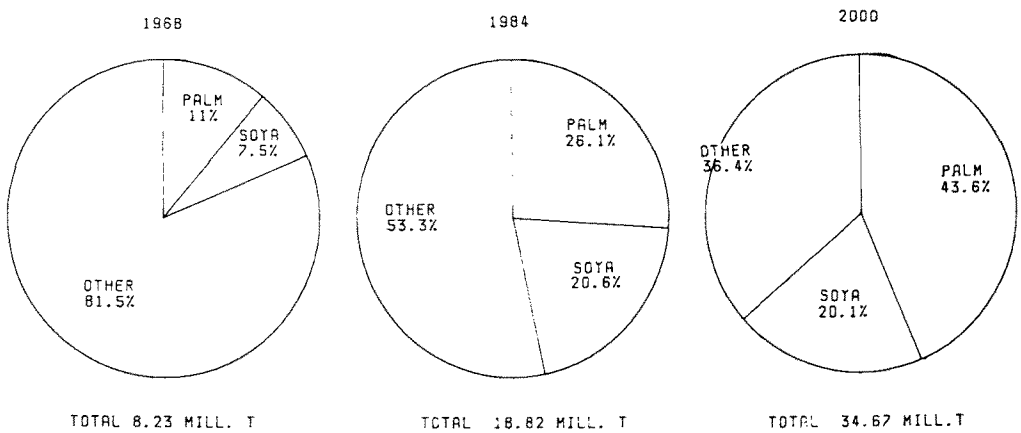

FIG. 4. Exports of palm and palm kernel oil, soybean oil and 14 other oils and fats: shares of world total (%).

Figure 3 shows that the excellent growth in world production and exports of palm oil products and soybean oil was at the expense of (or should I better say, because of the decline in) production and export of the other 14 oils, taken as a group. Within this group the major production and world market share losers have been peanut oil (the production of which even declined during the past 16 years), olive oil, coconut oil and the important byproduct oils and fats, namely cotton oil, animal fats and fish oil. In fact, apart from palm oil products and soybean oil, only one other oil was able to extend its share of world production and exports, namely rapeseed oil.

What have been the reasons behind the meteoric rise of the palm oil industry? We have already stated that the initial phase included the decision of the Malaysian government to diversify its economy, to utilize better the country's resources and to provide financial help in research and investment in order to reach these goals. But it is obvious that neither the government of Malaysia nor that of any other country of the world is financially strong enough to enforce the growth of an industry unless that industry is profitable.

We must therefore conclude that the unusual profitability of the palm oil industry of Malaysia, Indonesia and other countries of Southeast Asia is the real reason behind its meteoric rise. The governments did no more than provide the spark for development. Oil palms produce much higher yields than other oil crops and are much more profitable than other competing crops in the tropics. In West Malaysia, for instance, the normal palm oil yield per hectare now is about 4.0 tons (T) (4.1 T in 1982). In addition, about 0.4 T palm kernel oil and 0.55 T meal are produced per hectare. The normal U.S. soybean yield per hectare is about 2.15 T. This is equivalent to only 0.4 T of oil and 1.7 T of meal. The normal rapeseed yield in the EEC now is about 2.5 T, yielding at best 1.0 T of oil and 1.45 T of meal. In the lower yielding areas of the world the seed oil and meal yields per hectare are considerably less than in the U.S. and in the EEC. It is therefore obvious that oil palms produce much higher yields per hectare than oilseeds.

Likewise, the *profitability* per hectare is far higher than for all the major competing crops in the tropics themselves. A recent West Malaysian study has shown that already at palm oil prices of M$700-850 per ton F.O.B. mill and a fresh fruit bunch (FFB) yield of 18.5 T, the profit per hectare is M$1100-1695. In all the years since 1974 the crude palm oil price averaged between M$880 and 1225 and during September/December 1983 it was far above that range. The normal FFB yield, too, now is higher than the 18.5 T assumed in the above-mentioned profit calculation, viz. around 20 T. But already the yields and prices used in the above calculation result in a much higher profit per hectare than for rubber. For that similarly important crop of West Malaysia a price of 200-265 cents per kilo generates a profit of only M$340-860 per hectare.

The high profitability has been a strong motor for the sharp expansion of oil palm acreage and yields, above all in Southeast Asia but also in Africa as well as South and Central America. In Malaysia, for instance, the harvested oil palm area has increased an average of 61,000 hectares annually during the 16 years ending 1984 and now totals about 1.1 million hectares.

At the same time the palm oil yield per hectare was increased from 3.1 T in 1968 to 3.9 T in 1982. The setback experienced in 1983 owing to the reaction of the trees to the overstress caused by the weevil has almost been overcome this year.

In addition to its top profitability, the phenomenal growth of the palm oil industry was helped secondly by the fact that the increase in world production of peanut, olive and coconut oils, as well as of most byproduct oils and fats, has remained far behind the increase in the *demand* for all oils and fats, taken as a group. And soybean oil output has not been able to increase even more because it *depends on the demand for meal.* Thus the meteoric rise of the palm oil industry has been necessary also from the point of view of covering the demand for all oils and fats. In fact, a pronounced supply tightness has developed in the oil and fat market in the course of this calendar year in spite of the rise. Of course, special factors such as the payment in kind (PIK) program, the drought in the U.S. and the reaction of the palm trees to the weevil in Malaysia last year combined to bring about this tightness.

FUTURE LEVELS (1984-2000)

A further sharp increase in world production of palm oil and palm kernel oil by over 200% is in prospect by the year 2000.

As the above three reasons are very likely to remain in force and some additional reasons to come into play, we expect world production of palm oil to reach almost 18 million tons and that of palm kernel oil over 2 million tons by the year 2000. The combined output of over 20 million tons will be a little over 200% above the 1984 level. Such a rate of growth will again be far above that of soybean oil (66%) and of the other 14 oils and fats taken as a group (27%).

The development of world production during the three periods discussed in this paper is expressed in the form of indices (1958 = 100) in Figure 5. The continued sharp increase in palm oil production in the next 16 years is expected to be due to:

- The three factors we just found to be responsible for the boost in the past 16 years – the high profitability of oil palm growing, the inability of the production of peanut, olive and coconut oils as well as most byproduct oils and fats to keep abreast with the increase in demand for all oils and fats taken as a group, and the dependence of soybean oil production on meal demand – are expected to continue operating for the remainder of this century.
- Palm oil yields are expected to continue to rise due to improved cultivation techniques and varieties, including, from the 1990's onward, cloned palms.
- The competition from soybean oil is likely to become less keen for two major feasons: first, because the demand for soybean meal is expected to slow due to relatively high meal prices and consequently slower growth of meat consumption; and second, there is a growing competition from grains with a higher protein content. The relatively high meal prices will be supported by the pressure exerted on the general price level for edible oils by the sharp increase in palm oil production. This will require a higher meal share of the combined product value in order to give the soybean crushers the margin necessary to continue operations. This, of course, will make it easier for high-protein grains to take market shares away from soybean meal, which shows the highly interdependent nature of the vegetable oil, meal, oilseed, grain and meat markets.

The results of the World Soybean Research Conference that took place in the U.S. in August 1984 have shown that a breakthrough in soybean yields through the application of biotechnology in general and genetic engineering in particular is unlikely to appear before the middle of the 1990's.

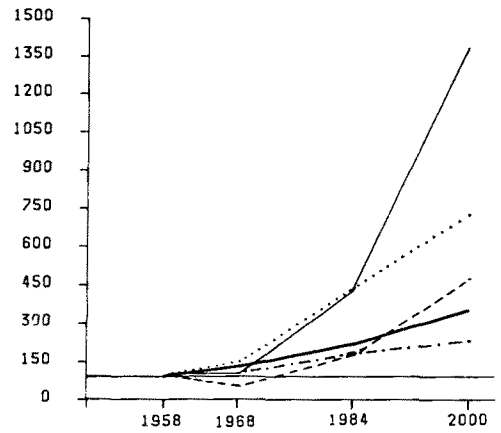

FIG. 5. Index of world production of palm and palm kernel oils, soybean oil and all oils and fats (index 1958 = 100). ——— = palm oil; ..... = soybean oil; - - - - - = palm kernel oil; ——— = all oils and fats, and —·—·— = 14 other oils and fats.

Before discussing the palm oil and kernel oil prospects in greater detail, let us look at the factors that could negatively influence the oil palm industry during the remainder of this century. Here we see chiefly the following:

(a) The possibility that the pressure on vegetable oil prices referred to above could mean the loss of profitability of oil palm growing. I do not think that this will come true during the remainder of this century. The production of all oils and fats will have to grow by over 33 million tons or 54% between 1984 and 2000 in order to cover the expected demand (implying a somewhat slower growth rate for per capita consumption than in the past 16 years). Soybean oil production is expected to grow by a little less than 9 million tons or about two-thirds. This is not much above the rate of 54% at which the total demand for all oils and fats is expected to grow. But the production of all oils and fats other than soybean, palm and palm kernel oils is expected to increase only by a little over 11 million tons or 27%. Thus the production of palm oil and palm kernel oil will have to rise by over 13 million tons or around 200% in order to cover the increasing consumption plus the higher pipeline requirements associated with it. In fact, we expect only a moderately larger than required increase in vegetable oil stocks by the end of the century.

(b) A shortage of farm labor is threatening in Malaysia. Some consider this to be the decisive factor that will limit the growth of the Malaysian palm oil industry in the future. However, while we consider this to be a very important factor, we do not expect it to limit growth significantly. We think so because the continuing profitability of oil palm growing will make it possible through a combination of higher wages and increased farm mechanization to prevent the (possibly continuing) labor tightness from really meaning any noteworthy loss of FFB. The recent improvement of the legal position of imported labor should further help to solve this problem.

(c) The limited availability of acreage suitable for oil palm growing is often cited as another factor limiting future expansion of palm oil production in Malaysia. It is estimated that in this country over 7 million hectare of land suitable for agriculture is still unused. Of that about 1.6-2.0 are considered to be very suitable for oil palm cultivation and much of the remainder suitable. We therefore feel that this argument will not apply, at least not up to the year 2000. We thus expect the harvested area of all Malaysia to double to about 2.2 million hectare by 2000 and to produce 11.5 million tons of crude palm oil.

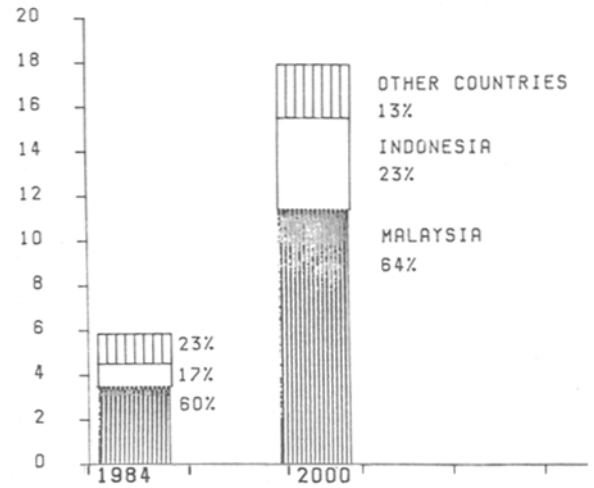

FIG. 6. World palm oil production by major countries 1984 and 2000 (million tons).

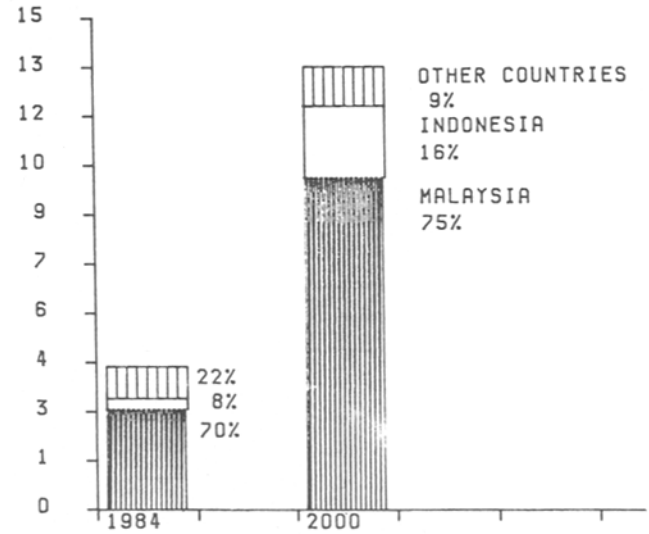

FIG. 7. World exports of palm oil (million tons).

TABLE I

17 Selected Oils and Fats: World Production and Exports 1958-2000 (1000 T)

	World Production				World Exports			
	1958	1968	1984E	2000F	1958	1968	1984E	2000F
Palm oil	1325	1406	5839	17950	613	757	4380	13560
Palm kernel oil	446	365	812	2117	79	150	525	1540
Soybean oil	2985	4641	13442	22253	558	620	3886	6960
Other	22608	30741	41627	52838	3306	6707	10030	12606
17 oils & fats	27364	37153	61720	95158	4556	8234	18821	34666

E = estimated. F = forecasts.

Where else will the continued phenomenal growth of oil palm production take place? Even more than in the past 16 years, we expect Indonesian production to show the sharpest increase outside Malaysia during the remainder of the century (Fig. 6). The opening-up of new large acreage has already started in Kalimantan and will continue at a rapid pace. But we expect substantial growth also in South and Central America, especially in Brazil and Colombia, and in West Africa.

It is the combination of several factors that will make the outstanding growth in Malaysia and Indonesia possible: The availability of enough land suitable for oil palm cultivation, the best possible climate and know-how as well as extensive government help in research, organization and financing.

Similar combinations of factors are available also in other countries, but in virtually all of them at least one or even two of the factors are less favorable or effective than in Malaysia and Indonesia.

Where will all these larger amounts of palm oil and palm kernel oil be consumed? In the case of palm oil we expect Indonesia to become the largest single consumer as the large population is accustomed to palm oil, while production of coconut oil – the only major competitor – is only slowly expanding. But a large increase in domestic disappearance is anticipated also for the other big producer, Malaysia. Of course, our Malaysian domestic disappearance data include palm oil exported in the form of secondary products such as ghee, other compound fats and salad oil (which are not included in the exports of crude and processed palm oils). These secondary product exports are of growing importance in Malaysia but may gain in importance also in Indonesia.

Yet domestic disappearance is expected to absorb only about 13% of the production of Malaysia in the year 2000, but it will then probably be as much as 46% in the other important producing country – Indonesia. And almost all of the production of the remaining countries – only some small producing countries being an exception – will be consumed domestically.

Therefore we expect world palm oil exports in the year 2000 to be, at 13.6 million tons, equivalent to about three quarters of the world production (Fig. 7). This compares with much lower exports of only 4.4 million tons in the calendar year 1984, but with this palm oil ranks first in the world markets for oils and fats. And this amount, too, represents about three quarters of the world production.

Of probably greater importance are the prospects that palm oil and palm kernel oil will have to get 44% of the total world market for all oils and fats by the year 2000 compared with about 26% in the current calendar year and only 11% in 1968.

The soybean oil share of total world exports, after very sharp growth in the past 16 years, is expected to stagnate during the remainder of this century. And above all, the world market share of the other 14 oils and fats, taken as a group, is likely to continue to decline sharply to only 36% by the year 2000, and that generally not because of the competition from palm oil. This, of course, is the major explanation why the share of palm oil and palm kernel oil can realistically be expected to grow so sharply.

It is therefore probably no big surprise when we forecast

the Malaysian share of total world gross exports of palm oil and palm kernel oil to continue to rise by the year 2000. In the case of palm oil we expect it to reach 75% compared with 70% this year and in the case of palm kernel oil 76% compared with 72% this year.

However, substantial increases in exports are expected also from Indonesia, namely to about 2.2 million tons in the case of palm oil (from the present level of around 0.3 million tons) and to 0.2 million tons in the case of palm kernel oil (from the present level of only 13,000 tons) (Fig. 7).

CONCLUSION

Expressed in numbers, the development of world palm oil and palm kernel oil production and exports from 1958 to 1984 and the prospects for the year 2000 are as shown in Table I. These numbers as well as virtually all others have been taken from *OIL WORLD – The Past 25 Years and the Prospects for the Next 25 in the Markets for Oilseeds, Oils, Fats and Meals,* published by ISTA Mielke GmbH, 2100 Hamburg 90, West Germany. That 150-page book contains many additional details on this subject.

Present and Future Position of Coconut Oil in World Supply and Trade

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ABSTRACT

Coconut oil will remain available in quantities enough to meet the needs of industrial, institutional and household consumers in market countries at least throughout this century. Principal producing countries have restructured their domestic consumption formulations to make this commodity available to its users at more steady supply levels. This is being coupled by rejuvenation of tree stands, productivity measures and expanded hectarage. At the same time, parallel sources of similar oils are being explored in coconut-producing countries like Papua, New Guinea, which now is a coconut and palm oil supplier nation.

The availability of coconut oil to its major consuming countries in North America, the EEC and industrial nations of Asia and the Pacific has been assured by domestic production and imports.

In the case of the United States, this was the pattern at the time two coconut oil mills were crushing copra on the West Coast–Baker Commodities in Los Angeles and Cargill in San Francisco. When the two oilmills ceased to crush the coconut oilseed in 1972 (Baker) and 1974 (Cargill), the U.S. depended solely on imports mainly from producing countries like the Philippines and Malaysia (whose copra is sometimes processed in Singapore and re-exported to the U.S.).

For the European Economic Community, most of its member countries depend on supplies from oilmills in The Netherlands, West Germany, the United Kingdom and Italy. Other West European countries like Sweden (Karlshamn Oljefabriker) and France (Unipol Marseilles) crush copra for its coconut oil needs. This sytem was at its peak in 1976 when the Common Market produced 547,000 metric tons (MT) coconut oil out of 851,700 MT copra imported from the Philippines; Papua, New Guinea; Mozambique, Malaysia, Vanuatu, Solomon Islands and Western Samoa. In that year, the EEC imported only 390,400 MT coconut oil.

However, in subsequent years, owing mainly to the policy of the Philippines to encourage domestic processing of its exportables, the EEC has been importing its coconut oil needs from the coconut-producing countries. By 1981, its imports reached a peak 518,000 MT, while copra imports were down to a minimal 120,900 MT. This raw material volume was not enough to sustain a large sized copra crushing unit. While their coconut oil imports dropped to 496,000 MT and 470,100 MT in 1982 and 1983, the drop in copra import was more dramatic, to only 65,000 MT in 1983.

The same pattern now prevails in other West European countries, although Portugal and Sweden still import only copra. The same is true for Japan, the Republic of Korea, Pakistan and the USSR. The People's Republic of China and Australia, on the other hand, always have imported coconut oil in crude or semi-refined form (Refined/Bleached or RB), and this year RBD coconut oil.

This is expected to be the pattern for the rest of this decade, as coconut-producing countries strive to maximize utilization of their own oilmilling capacities. It would be only when the supply/crushing capacity gap is bridged that this pattern could change. Today, the Philippines has an installed milling capacity of 3.293 million MT copra/yr while copra production peaked at only 2.7 million MT in 1976 and is expected to average only 2.2 million MT in the next 5 yr (1985-86) for a 31% utilization gap (Fig. 1). Figure 2 shows copra and coconut oil ports of loading in the Philippines.

Thus, the drastic drop in the availability of copra to West Europe's oilmills has prompted them to concentrate on other oilseeds like soybean and rapeseed.

Basic Philippine oilmilling capacity is divided into solvent extraction (1.260 million MT copra p.a. or 38.3% of total) and expeller or mechanical process (2.033 million MT or 61.7% of total). In addition, it has 1.34 million MT copra throughput refinery capacity capable of producing 109 thousand MT Cochin-type coconut oil (semi-refined or neutralized and bleached) and 704,000 MT fully refined edible coconut oil (neutralized, bleached and deodorized or RBD).

The Philippines also has a growing oleochemical capacity with a throughput of 190 thousand MT crude coconut oil capable of producing 32.3 thousand MT methyl ester, 88 thousand MT fatty alcohol, 50,000 MT fatty acid and 1 thousand MT alkanolamide, mainly for export. It also produces and exports crude and refined glycerin, crude cocoa fatty acid and acid oil.

LONG TERM AVAILABILITY

The shape of production, import/export, consumption/disappearance of coconut, palm kernel and palm oils vis-a-vis five other heavily traded and consumed oils in the world can be drawn from a study of *Oil World* on the past and prospective quarter centuries (Tables I and II).

The study shows the current (1983-87) average world import/export of coconut oil at 1.435 million MT while consumption/disappearance is at 2.938 million MT, indicating consumption of net exporting countries at approximately 1.43 million MT considering a beginning stock of 0.080 million MT. Going into the next decade (1988-92),