Palm Oil Industry in Malaysia

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1. Introduction

Palm oil is the second most significant source of oils and fats in the world at the moment.[1] In 1994, it accounted for 16 per cent of the world oils and fats production in a quantity base, following soya bean oil with 21 per cent (Table 1). Malaysia has been the leading producer of palm oil since the early 1970s and produces more than half of the total production at the

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Table 1 World production of 17 oils and fats: 1990-1994

unit: thousand tonnes

Oils/Fats	1990	1991	1992	1993	1994	(%)
Soya bean oil	16,079	15,960	16,976	17,538	18,455	21.0
Cottonseed oil	3,782	4,199	4,280	3,832	3,580	4.1
Groundnut oil	3,897	3,941	4,027	4,095	4,182	4.8
Sunflower oil	7,869	8,123	8,273	7,648	7,649	8.7
Rapeseed oil	8,160	8,931	9,430	9,182	9,952	11.3
Corn oil	1,477	1,522	1,587	1,607	1,662	1.9
Coconut oil	3,387	3,046	2,861	2,920	2,941	3.3
Palm oil	**11,014**	**11,465**	**12,056**	**13,686**	**13,956**	**15.9**
Palm kernel oil	**1,454**	**1,462**	**1,545**	**1,784**	**1,863**	**2.1**
Olive oil	1,855	1,795	2,284	1,946	1,850	2.1
Castor oil	438	484	453	437	447	0.5
Sesame oil	612	664	656	689	688	0.8
Linseed oil	653	672	625	556	619	0.7
Total vegetable oils	60,677	62,264	65,053	65,920	67,844	77.1
Butter	6,500	6,070	5,974	5,965	5,734	6.5
Tallow	6,813	6,834	6,944	7,235	7,411	8.4
Fish oil	1,378	1,367	1,039	1,188	1,464	1.7
Lard	5,509	5,397	5,366	5,513	5,589	6.3
Total animal oils/fats	20,200	19,668	19,323	19,901	20,198	22.9
Grand total	80,877	81,932	84,376	85,821	88,042	100.0

Source: Ministry of Primary Industries (1994). *PORLA Palm Oil Statistics 1994.*

Table 2 World major producers of palm oil: 1990-1994

unit: thousand tonnes

Country	1990	1991	1992	1993	1994	(%)
Malaysia	**6,091**	**6,141**	**6,371**	**7,403**	**7,222**	**51.7**
Indonesia	2,413	2,658	2,910	3,300	3,630	26.0
Nigeria	580	646	633	645	638	4.6
Colombia	226	254	286	324	350	2.5
Ivory Coast	270	280	309	320	320	2.3
Thailand	226	234	270	297	316	2.3
Papua New Guinea	145	180	206	240	250	1.8
Ecuador	120	129	153	151	170	1.2
Zaire	101	105	105	108	109	0.8
Others	842	838	813	898	951	6.8
Total	11,014	11,465	12,056	13,686	13,956	100.0

Source: Ministry of Primary Industries (1994). *PORLA Palm Oil Statistics 1994.*

present moment (Table 2). The country, therefore, contributes approximately one-tenth of the world production of oils and fats.

In addition to that, it should be noted that Malaysia's palm oil takes a more crucial responsibility in the international market of oils and fats. In a quantity base, about 38 per cent of the export originated from palm oil and Malaysia supplies approximately 66 per cent of the palm oil export, which means to say that the share of Malaysian palm oil in the export of oils and fats amounted to over one-fifth of the total quantity of 26,450 thousand tonnes in 1994 (Tables 3 and 4).

Furthermore, although the agricultural sector is declining in a situation where the manufacturing and industrial sectors are dominating the

Table 3 World export of 17 oils and fats: 1990-1994

unit: thousand tonnes

Oils/Fats	1990	1991	1992	1993	1994	(%)
Soya bean oil	3,294	3,053	3,755	3,623	4,845	18.3
Cottonseed oil	302	258	295	176	239	0.9
Groundnut oil	318	285	287	284	273	1.0
Sunflower oil	2,126	2,028	2,155	1,633	1,781	6.7
Rapeseed oil	1,614	1,619	1,413	1,275	1,806	6.8
Corn oil	360	408	418	550	510	1.9
Coconut oil	1,617	1,292	1,503	1,477	1,456	5.5
Palm oil	**8,207**	**8,415**	**8,103**	**9,162**	**10,041**	**38.0**
Palm kernel oil	**904**	**870**	**764**	**896**	**845**	**3.2**
Olive oil	287	359	358	367	416	1.6
Castor oil	178	169	154	195	183	0.7
Sesame oil	22	20	19	19	21	0.1
Linseed oil	184	150	162	83	131	0.5
Total vegetable oils	19,413	18,926	19,386	19,740	22,547	85.2
Butter	625	759	638	716	635	2.4
Tallow	2,071	2,084	2,261	2,115	2,259	8.5
Fish oil	694	609	478	611	840	3.2
Lard	269	254	211	174	169	0.6
Total animal oils/fats	3,659	3,706	3,588	3,616	3,903	14.8
Grand total	23,072	22,632	22,974	23,356	26,450	100.0

Source: Ministry of Primary Industries (1994). *PORLA Palm Oil Statistics 1994.*

Table 4 World major exporters of palm oil: 1990-1994

unit: thousand tonnes

Country	1990	1991	1992	1993	1994	(%)
Malaysia	**5,727**	**5,573**	**5,555**	**6,117**	**6,654**	**66.3**
Indonesia	1,163	1,628	1,304	1,719	1,890	18.8
Ivory Coast	156	152	169	175	165	1.6
Papua New Guinea	143	166	202	243	245	2.4
Others	1,018	896	873	908	1,087	10.8
Total	8,207	8,415	8,103	9,162	10,041	100.0

Source: Ministry of Primary Industries (1994). *PORLA Palm Oil Statistics 1994.*

Malaysian economy, the importance of the palm oil industry in the economy should not be ignored. Palm oil and its related products still account for more than 40 per cent of value added in the agricultural sector and together they make up one-tenth of Malaysian export earnings.

The above facts clearly indicate that the palm oil industry in Malaysia plays a vital role in the world oils and fats supply as well as in the Malaysian economy. This article aims to trace the long-term development of the palm oil industry, and the trends in production, price and export of palm oil in Malaysia. In the second section, a brief summary of the early history of the palm oil industry before the 1960s will be presented. The third to seventh sections analyse the trends in oil palm area, production, export, the price of palm oil, and the evolution of the processing industry. In the last section, an attempt will be made to analyse the future prospects of the Malaysian palm oil industry.

2. Early History of the Palm Oil Industry

Genesis of the Palm Oil Industry

Oil palm (*Elaeis guineesis*), originated from Central and West Africa, was introduced into the British Malaya in the 1850s as an ornamental plant

(Andaya and Andaya 1982 : 216).[2] The inaugural step to introduce oil palm as a commercial venture was undertaken by the Department of Agriculture of the Federated Malay States in Batu Tiga, Selangor, in 1903, but no further efforts were followed up at that time (Zulkifli 1991; Ministry of Agriculture and Co-operatives 1966). In 1912, a research was restarted by the Department in a 15-acre trial oil palm farm in Kuala Lumpur and several different types of the plant were brought in from various places (*ibid.*).

Although, in 1917, the first commercial oil palm plantation was established, the growth of the palm oil industry was stunted. This was caused by the notion that palm oil was of less importance since its potential as a source of economy was not yet to be fully realised and was overshadowed by the rubber industry which was a major income source for the British plantation companies and country alike at that time.[3] Although the price of palm oil was stable, it was too low to convince the producers to convert from rubber to oil palm farming.[4] Moreover, unlike the rubber industry, there was a need for specialised managerial expertise and investment in infrastructure such as processing facilities and transportation since fresh fruit bunch (FFB) must be extracted and processed as soon as possible to prevent oils from quality deterioration as a consequence of oxidisation.

After 1924, when several companies under the renowned Guthrie group jointly established the Oil Palms of Malaya Ltd., large-scale development occurred (Andaya and Andaya 1982 : 216). In fact, palm oil production in Malaya increased over ten-fold in the 1930s and accounted for 10 per cent of world production right until before the outbreak of the Second World War. At the moment, similar to the rubber plantations, the initially developed oil palm plantations were mostly located in the western part of the Malay Peninsula where British investment in infrastructure was concen-

trated.

Rapid Development after the Second World War

After the span of the Japanese occupation in 1942-1945, the palm oil industry quickly recovered and was much more buoyant than it had ever been. The government emphasised the development of the palm oil industry as a way to diversify the economy as it was heavily dependent upon rubber and tin. Moreover, the stability of the natural rubber industry, and hence, the country's economy was shaken by the increasingly threatening development of synthetic rubber in the United States and the collapse of the rubber market after the Korean Peninsula War. In the meantime, a steady price of palm oil in the international market resulted in the rapid expansion of oil palm estates[5] in terms of both number and area.

Coincidentally, the indisputable existence of indigent landless and petty Malay farmers provided an occasion for the newly-born government[6] to launch large-scale land development and resettlement schemes with a view to helping them come out of poverty. Under the schemes managed by government agencies such as the Federal Land Development Authority (FELDA), the Rubber Industry Smallholders Development Authority (RISDA), and the Federal Land Consolidation and Rehabilitation Authority (FELCRA), the farmers were each allocated a piece of land for resettlement. Previously, the plantation or estate sector monopolised oil palm farming, but smallholders under the government schemes had emerged since the 1960s. The new land development schemes launched by the government agencies were concentrated in the eastern (Pahang) and southern part (Johor and Negeri Sembilan) of Peninsular Malaysia where vast virgin jungle forests suitable for new land development existed.

3. Area Development

Estate Sector

Since the independence, the palm oil industry was much more buoyant than it had been before. Within 34 years, from 1960 to 1994, total area planted with oil palm in Peninsular Malaysia increased rapidly from 54.6 thousand ha to 1,837.2 thousand ha (Table 5). This rapid increase, as pointed out in the previous section, was partly because the government encouraged the rubber estate sector to plant oil palm in a move to diversify the agricultural sector and to minimise risks of depending on one major commercial crop, which was rubber at that moment. In the world commodity market, the price of rubber began to plunge in the 1960s, while the price of palm oil was relatively stable during the same period (Table 6). The downward trend of the rubber price resulted in a threat to the rubber estate sector and the dominance of pessimistic prospects towards the next decade, since the returns on investments in the rubber industry were no longer remunerative. This made the producers convert to the palm oil industry that showed a more promising economic potential.

Coincidentally, in the 1960s, chaos along with independent wars and persistent political struggles among politicians and military personnel stunted the growth of the palm oil industry in the then major producers of Central Africa. This situation provided an occasion for Malaysian estate sector to penetrate the world palm oil market without any stiff competition.

As a result, the estate sector began allocating more land to oil palm farming and putting emphasis on new land development for oil palm planting. Areas of oil palm estates in Peninsular Malaysia increased dramatically from 57.1 thousand ha in 1961 to 749.6 thousand ha in 1990. On

Table 5 Total planted area under oil palm

unit: ha

	Peninsular Malaysia	Sabah	Sarawak	Total
1931	22,864			22,864
1940	31,443			31,443
1950	38,849			38,849
1960	54,634			54,634
1961	57,143			57,143
1962	62,079			62,079
1963	71,030			71,030
1964	83,200			83,200
1965	96,947			96,947
1966	122,703			122,703
1967	153,610			153,610
1968	190,765			190,765
1969	231,176			231,176
1970	261,199	28,947	1,117	291,263
1971	294,149	32,058	2,614	328,821
1972	248,741	35,769	5,241	289,751
1973	412,070	39,779	7,345	459,194
1974	500,244	49,405	8,197	557,846
1975	568,561	59,139	14,091	641,791
1976	629,558	69,708	15,334	714,600
1977	691,706	73,303	16,805	781,814
1978	755,525	78,212	19,242	852,979
1979	830,536	86,683	21,644	938,863
1980	906,590	93,967	22,749	1,023,306
1981	983,148	100,611	24,104	1,107,863
1982	1,048,015	110,717	24,065	1,182,797
1983	1,099,694	128,248	25,098	1,253,040
1984	1,143,522	160,507	26,237	1,330,266
1985	1,292,399	161,500	28,500	1,482,399
1986	1,410,923	162,645	25,743	1,599,311
1987	1,460,502	182,612	29,761	1,672,875
1988	1,556,540	213,124	36,259	1,805,923
1989	1,644,309	252,954	49,296	1,946,559
1990	1,698,498	276,171	54,795	2,029,464
1991	1,744,615	289,054	60,359	2,094,028
1992	1,775,633	344,885	77,142	2,197,660
1993	1,831,776	387,122	87,027	2,305,925
1994	1,837,224	426,247	95,413	2,358,884

Sources: Ministry of Primary Industries. *PORLA Palm Oil Statistics*; Department of Statistics. *Buku Maklumat Perangkaan Kelapa Sawit, Koko, Kelapa dan Teh,* various years.

the contrary, total area for rubber decreased drastically from 783.1 thousand ha to 348.8 thousand ha in the same period of time (Table 7). This suggests that the rubber industry was in some way sacrificed to pave the way for the rapid development of the oil palm estates.

As shown in Table 8, spatially, a huge development in the estate sector occurred in Johor, Perak, Pahang, Selangor and Negeri Sembilan. In 1994, the first three states accounted for 67.8 per cent of the total oil palm area on estates in Peninsular Malaysia.

However, it should be noted that the growth of estate area of oil palm in Peninsular Malaysia was slowing down in the 1990s

Table 6 Average prices of rubber and palm oil

unit: RM/tonne

	RSS1 (a)	Palm oil (b)	(b)/(a) 1970=100
1960	2,098.9	620.9	46.7
1961	1,844.2	645.6	55.3
1962	1,726.3	606.6	55.3
1963	1,598.7	590.7	58.3
1964	1,504.2	643.3	67.5
1965	1,545.7	748.8	76.5
1966	1,143.3	649.9	89.8
1967	1,193.8	614.0	81.2
1968	1,171.1	435.3	58.7
1969	1,539.3	428.9	44.0
1970	1,243.1	787.2	100.0
1971	1,016.3	790.1	122.8
1972	935.1	606.1	102.4
1973	1,656.1	917.3	87.5
1974	1,794.4	1,573.9	138.5
1975	1,366.9	1,002.2	115.8
1976	1,990.6	1,025.4	81.3
1977	2,027.6	1,315.7	102.5
1978	2,299.9	1,414.7	97.1
1979	2,794.1	1,425.6	80.6
1980	3,212.5	1,221.5	60.0
1981	2,578.2	838.0	51.3
1982	2,011.3	741.0	58.2
1983	2,472.1	1,000.0	63.9
1984	2,245.5	1,355.0	95.3
1985	2,245.5	1,046.0	73.6
1986	2,084.2	579.0	43.9
1987	2,486.9	774.0	49.1
1988	3,099.9	1,029.0	52.4
1989	2,617.3	822.0	49.6
1990	2,333.7	701.0	47.4
1991	2,267.2	836.8	58.3
1992	2,189.2	917.8	66.2
1993	2,143.3	888.0	65.4

Notes: RSS1 denotes the price of the first grade of the smoked sheet at Kuala Lumpur market. Prior to 1975, the price of palm oil is in Malaysian ringgit equivalent to the c.i.f. London price quoted in pound sterling. From 1975 to1980, the price refers to the c.i.f. North-West Europe price quoted in United States dollar. After 1981, the price refers to local PORLA.

Sources: Jabatan Perangkaan. *Siaran Perangkaan Bulanan;* Bank Negara Malaysia. *Buletin Perangkaan Bulanan,* various issues.

Table 7 Planted acreage under rubber and oil palm on estates

unit: thousand ha

	Rubber	Oil palm
1961	783.1	57.1
1962	778.7	62.0
1963	775.8	70.9
1964	765.2	75.5
1965	752.3	84.0
1966	733.9	103.5
1967	706.8	129.3
1968	678.2	153.9
1969	663.2	177.2
1970	646.6	193.2
1971	631.6	213.9
1972	610.3	245.4
1973	589.4	274.8
1974	574.2	324.5
1975	563.3	355.2
1976	553.3	377.4
1977	538.9	404.4
1978	523.2	438.9
1979	508.1	463.5
1980	491.6	495.4
1981	479.0	551.0
1982	465.5	574.6
1983	461.1	606.5
1984	443.6	657.0
1985	418.1	691.9
1986	390.6	736.6
1987	373.4	762.8
1988	371.1	782.9
1989	361.0	788.5
1990	348.8	749.6

Sources: Jabatan Perangkaan. *Buku Maklumat Perangkaan Getah;* Jabatan Perangkaan. *Buku Maklumat Perangkaan Kelapa Sawit, Koko dan Teh;* Kementerian Pertanian. *Buku Maklumat Perangkaan Pertanian,* various years.

in almost all states. For instance, acreage of oil palm in Johor managed to increase only 0.5 per cent or 1.4 thousand ha in 1990-1994. This is due mainly to the conversion of oil palm estates to housing, industrial and commercial areas in several states such as Selangor and Johor, insufficient suitable land for development under conditions of rapid urbanisation/industrialisation, and severe labour shortage in the whole estate sector. Under such circumstances, some estate companies are shifting their oil palm plantations from the Peninsula to Sabah and Sarawak where vast areas of forests suitable for development are still available. Indeed, the acreage of oil palm in these states is increasing rapidly. It is almost certain that they will emerge in the palm oil sector in the near future.

New Land Development and Resettlement Schemes by the government

The new land development and resettlement schemes by the government were launched by the establishment of FELDA in 1956. After that, FELCRA and RISDA were also established in 1966 and 1973 respectively, although these authorities were mainly entrusted to carry out other functions - the former to consolidate uneconomic farm size and rehabilitate idle land (tanah terbiar) irrespective of planted crops and the latter to facilitate smallholders in replanting high yielding rubber trees. As mentioned earlier, these schemes mainly aimed to improve the livelihoods of indigent Malay farmers. From the initial stages of the schemes, FELDA played a vital role. In Peninsular Malaysia, it developed approximately three-quarters of the total oil palm area opened for resettlement by the year 1980 (Table 8). Under the FELDA schemes, every settler was allocated farm land which varied from 4 ha to 20 ha depending on his settlement time and the type of resettlement project.[7] The settler is entitled to acquire the land title from the state government[8] after the outstanding development

Table 8 Area under oil palm by state in Peninsular Malaysia

unit: thousand ha

	1970				1980			
	Estates	FELDA	Others	Total	Estates	FELDA	Others	Total
Johor	74.0	16.1	3.4	93.5	178.7	80.5	33.1	292.3
Kedah and Perlis	2.7	0.0	0.1	2.8	8.8	0.0	0.1	8.9
Kelantan	3.8	0.0	0.5	4.3	7.6	10.8	0.5	18.9
Melaka	2.4	0.0	0.1	2.5	9.2	0.0	0.7	9.9
Negeri Sembilan	9.8	0.0	0.4	10.2	29.0	10.5	0.0	39.5
Pahang	12.0	35.0	8.0	55.0	69.8	159.3	28.6	257.7
Pualu Pinang	2.0	0.0	0.5	2.5	4.4	0.0	0.7	5.1
Perak	26.0	3.1	3.1	32.2	73.5	14.1	11.3	98.9
Selangor	50.3	5.6	1.8	57.7	83.1	5.6	11.0	99.7
Terengganu	10.2	5.1	3.9	19.2	31.3	26.8	17.6	75.7
Total	193.2	64.9	21.8	279.9	495.4	307.6	103.6	906.6
	1990				1994			
	Estates	FELDA	Others	Total	Estates	FELDA	Others	Total
Johor	278.1	117.5	137.3	532.9	279.5	124.9	162.5	566.9
Kedah and Perlis	22.0	0.3	7.0	29.3	24.3	0.3	8.7	33.3
Kelantan	11.2	36.6	12.7	60.5	12.3	39.7	16.3	68.3
Melaka	19.6	0.8	6.4	26.8	25.6	0.4	6.8	32.8
Negeri Sembilan	50.2	23.9	12.4	86.5	56.6	24.7	16.3	97.6
Pahang	100.6	258.0	81.1	439.7	117.3	278.1	93.9	489.3
Pualu Pinang	7.4	0.0	6.7	14.1	8.1	0.0	7.5	15.6
Perak	144.0	24.0	68.5	236.5	150.5	21.3	74.3	246.1
Selangor	91.1	9.5	49.0	149.6	91.1	9.4	46.5	147.0
Terengganu	34.7	41.2	46.8	122.7	41.8	40.4	58.2	140.4
Total	758.9	511.8	427.9	1,698.6	807.1	539.2	491.0	1,837.3

Notes: Due to different sources, figures in this table are slightly different from tables 5 and 7.

Sources: Jabatan Perangkaan. *Buku Maklumat Perangkaan Kelapa Sawit, Koko dan Teh*; Ministry of Primary Industries. *Statistics on Commodities*, various years.

loan has been fully reimbursed, which normally extends to over two decades. Mills operated by FELDA are located in or nearby oil palm land so that the settlers can benefit more from the schemes without having to invest in processing facilities and transportation.

The land development for oil palm cultivation by FELDA is concentrated in Pahang, Johor and Negeri Sembilan, which account for more than 70 per

cent of the total developed land for oil palm by FELDA in Peninsular Malaysia (Figure 1). However, in the 1990s, similar to the estate sector, the FELDA land development is stagnant even in the above states. This is firstly because the government reviewed the schemes due to heavy financial burden through large amounts of grant to the government agencies, and secondly the same reasons with the estate sector. It seems that, like the estate sector, FELDA will put much more emphasis on the development of Sabah where it developed approximately 140 thousand ha of oil palm land in a short span from the mid-1980s to mid-1990s. It seems almost certain that oil palm area developed by FELDA in Sabah will catch up with that of Johor in a few years time.

It is not an exaggeration to say that the new land development and resettlement schemes by the government contributed, to some extent, to eradicate the root of poverty among Malay farmers and it could be one of the most successful land development and resettlement projects in Asia (World Bank 1989, cited in Sutton and Amriah 1995).[9] In fact, the incidence of poverty among oil palm smallholders is much lower than that of rice farmers, which a majority of the former belonged to before joining the schemes. Although the volatile trends in the price of palm oil give some negative impact on the oil palm smallholders, it is clear that they are better off in their livelihood after the resettlement. FELDA settlers earn monthly incomes ranging from RM491 to RM1,374 per month, which are higher than those of farm families (RM450-RM780) under the Integrated Agricultural Development Projects (IADP) (Malaysia 1996 : 239).[10] In addition, the FELDA settlers not only enjoy higher earnings, they have also been very successful in creating cohesive communities after resettlement (Rokiah 1992 : 108).

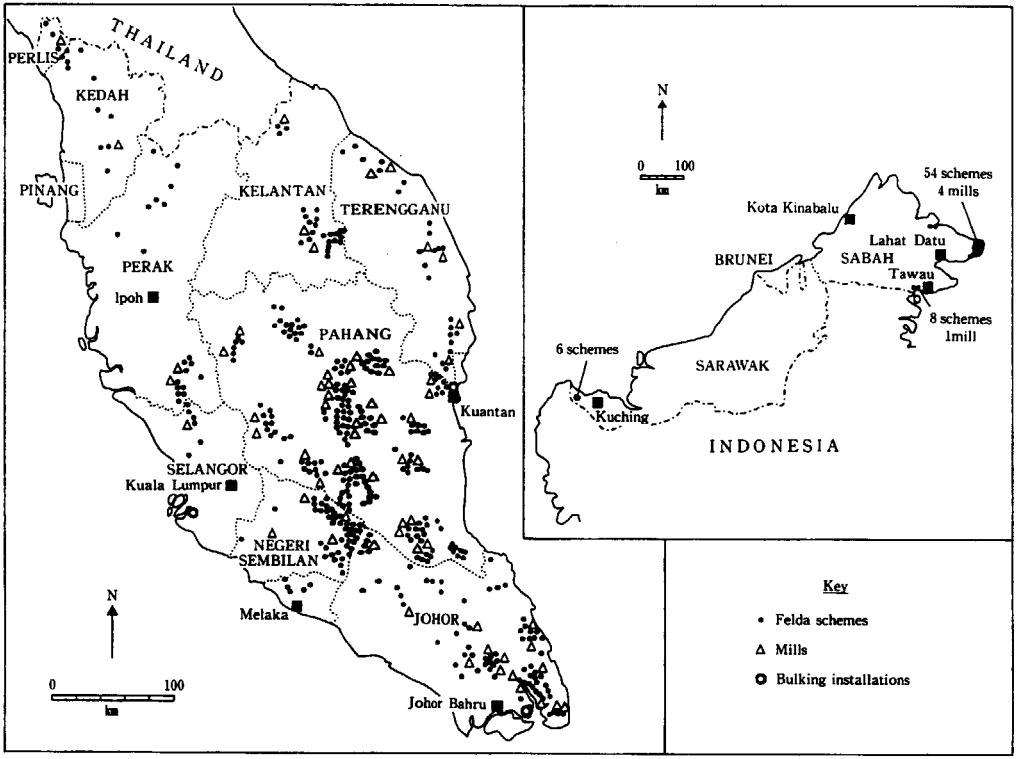

Figure 1 FELDA schemes and installations, early 1990s

Source: Adapted from Sutton and Amriah(1995).

4. Production

Before the emergence of Malaysia as the main palm oil producer in the 1970s, the world production of palm oil was dominated by several African countries, such as Nigeria, Ivory Coast and Zaire. However, persistent political upheavals consequent upon independent wars and stiff rivalries among politicians and military personnel occurred. As a result, oil palm plantations operated by Europeans were abandoned or not managed properly, and Malaysia filled up the vacancy that was left by the African producers in the world market (Zulkifli 1991).

Oil palm normally bears its first fruit bunches in the fourth year after being planted. The FFB production grows rapidly as the plant matures and

Table 9 Production of the FFB, crude palm oil and extraction rate

Age of tree	FFB production (tonnes)	Extraction rate (%)	Production of crude palm oil (tonnes)
1	0.0	0.0	0.0
2	0.0	0.0	0.0
3	0.0	0.0	0.0
4	0.0	0.0	0.0
5	11.3	12.0	1.4
6	17.6	12.0	2.1
7	21.3	16.5	3.5
8	23.9	18.0	4.3
9	24.6	19.0	4.7
10	25.1	20.0	5.0
11	24.1	20.5	5.1
12	23.3	20.5	4.9
13	23.1	20.5	4.8
14	22.9	20.5	4.7
15	22.6	20.5	4.7
16	22.3	20.5	4.6
17	22.1	20.5	4.6
18	21.8	20.5	4.5
19	21.6	20.5	4.5
20	21.3	20.5	4.4
21	21.1	20.5	4.4
22	20.8	20.5	4.3
23	20.6	20.5	4.3
24	20.3	20.5	4.2
25	20.1	20.5	4.1

Sources: Zulkifli Senteri(1991). Industri Kelapa Sawit di Malaysia. In Redzuan Othman and Mohd. Sheffie Abu Bakar (eds.) *Kmoditi Utama Malaysia: Kepentingan, Masalah dan Prospek.* Kuala Lumpur: Dewan Bahasa dan Pustaka.

Table 10 Production of crude palm oil

unit: tonnes

	Peninsular Malaysia	Sabah	Sarawak	Total
1960	91,793	n.a.	n.a.	91,793
1961	94,846	n.a.	n.a.	94,846
1962	108,171	n.a.	n.a.	108,171
1963	125,634	57	n.a.	125,691
1964	122,034	879	n.a.	122,913
1965	148,682	1,729	n.a.	150,411
1966	186,337	3,350	n.a.	189,687
1967	216,827	8,931	n.a.	225,758
1968	264,871	18,113	n.a.	282,984
1969	326,062	26,034	n.a.	352,096
1970	402,307	28,762	n.a.	431,069
1971	550,846	38,244	n.a.	589,090
1972	657,003	71,955	n.a.	728,958
1973	739,296	73,318	n.a.	812,614
1974	942,330	102,771	874	1,045,975
1975	1,136,796	116,248	4,529	1,257,573
1976	1,260,608	123,559	7,798	1,391,965
1977	1,483,591	116,529	12,627	1,612,747
1978	1,640,311	126,587	18,627	1,785,525
1979	2,032,025	135,704	20,970	2,188,699
1980	2,400,000	175,000	25,000	2,600,000
1981	2,645,225	158,223	21,016	2,824,464
1982	3,252,864	226,095	35,210	3,514,169
1983	2,782,954	202,660	32,719	3,018,333
1984	3,407,578	266,105	42,056	3,715,739
1985	3,799,289	285,044	49,061	4,133,394
1986	4,119,305	367,519	56,060	4,542,884
1987	4,079,620	396,313	57,140	4,533,073
1988	4,513,299	435,050	81,818	5,030,167
1989	5,422,196	540,028	94,275	6,056,499
1990	5,307,976	678,995	107,651	6,094,622
1991				6,141,353
1992				6,373,461
1993				7,403,498
1994				7,220,631

Sources: Jabatan Perangkaan. *Buku Maklumat Perangkaan Kelapa Sawit, Koko dan Teh*; Ministry of Primary Industries. *PORLA Palm Oil Statistics*, various years.

attains in the 8th-13th years the optimum potential amounting to 23-24 tonnes/ha of the FFB (Table 9). The duration of economic farming of oil palm is as long as rubber with approximately 25-30 years. Similar to the production of the FFB, the rate of oil extraction increases with age; hence, the productions of crude palm oil and its by-product, palm kernel oil, depend upon the extent of maturity of the oil palm.[11] Therefore, the rapid increase in palm oil production in the initial stage results from the maturity of the plant.

In line with the increase of palm oil cultivation area, Malaysia's production increased dramatically from 91.8 thousand tonnes in 1960 to 7,220.6

thousand tonnes in 1994, which was equivalent to an average annual growth rate of about 13.7 per cent (Table 10). Another crucial factor resulting in the rapid increase in production was the steady improvement in yield. Although the yield of the FFB was low between 15 and 17 tonnes per ha in the first half of 1970s, it increased to a range of 17-20 tonnes per ha after the mid-1980s (Table 11). Considering the rigorous research into oil palm done by government research institutes and universities, the yield appears to be increasing steadily.

Table 11 Yield of fresh fruits bunches, crude palm oil and palm kernel

unit: tonne/ha

	Fresh fruits bunches	Crude palm oil	Palm kernel oil
1970	15.72	3.00	0.65
1971	17.07	3.23	0.70
1972	16.48	3.44	0.72
1973	15.34	3.19	0.67
1974	16.82	3.49	0.72
1975	17.95	3.66	0.74
1976	16.16	3.48	0.71
1977	16.32	3.54	0.74
1978	16.25	2.95	0.68
1979	17.76	3.65	0.79
1980	18.72	3.78	0.81
1981	19.16	3.76	0.79
1982	19.50	3.83	0.80
1983	17.45	3.43	0.72
1984	21.80	4.25	1.19
1985	22.15	4.33	1.28
1986	22.15	4.41	1.28
1987	17.10	3.39	1.01
1988	17.52	3.47	1.04
1989	19.57	3.88	1.15
1990	18.53	3.64	1.10
1991	17.85	3.48	1.01
1992	17.83	3.43	0.99
1993	20.26	3.78	1.16
1994	18.42	3.43	1.05

Sources: Ministry of Primary Industries. *PORLA Palm Oil Statistics*, various years.

The share of Sabah and Sarawak is still trivial in the total production of palm oil, accounting for only about 10 per cent. However, a large-scale shift of cultivation from the Peninsula to Sabah and Sarawak will lead to an increase in their importance in Malaysia's palm oil industry in the next decades.

5. Trends in Palm Oil Price[12]

The price of palm oil in the 1960s was considerably stable, within a narrow range of, on the average, US$222 per tonne (Tables 6 and 12). However, prices for the following years showed immense fluctuations. The price increased dramatically to US$669 (RM1,574) per tonne in 1974 owing to shortage of oils and fats - especially soya bean oil - in the world market. Although the price stayed high until the early 1980s, great turmoil occurred in 1986 and 1990 when the prices plunged to US$257 (RM579) per tonne and US$290 (RM701) per tonne respectively. It should be noted that the share of processed palm oil with more value added, compared with crude palm oil, increased drastically in the mid-1970s due to the government policy, and therefore, the negative impact of the downward trends in price in the mid-1980s was lessened to some extent.

Exchange rates between the US Dollar and the Malaysian Ringgit influence, to some extent, the domestic producers and processors of the palm oil industry in Malaysia.[13] After the introduction of the floating exchange rate system in 1973, the exchange rates in favour of Malaysian currency, to a certain extent, gave some negative impact on producers and processors. In order to minimise risks resulting from price instability and maximise profits, diversification of value-added end-products could be a remedy.

The price of palm oil is the lowest among those of major vegetable oils (Table 12). Furthermore, the similar physical and chemical traits between palm oil and other vegetable oils enable them to replace one another with little additional costs, since no major changes in processing are necessary for producing the same quality of end-products. Hence, the highly price-competitive palm oil will penetrate the international oils and fats market

Table 12 Prices of selected oils (North West Europe)

unit: US$ per tonne

	Palm oil	Soya bean oil	Sunflower oil	Rapeseed oil
1960	228	219	243	228
1961	232	279	310	278
1962	216	223	246	217
1963	223	215	236	215
1964	240	229	255	251
1965	273	270	294	262
1966	236	262	264	245
1967	223	216	212	207
1968	168	178	172	160
1969	185	198	213	199
1970	259	290	331	293
1971	262	304	375	300
1972	218	243	327	223
1973	372	439	485	395
1974	669	839	982	785
1975	435	563	731	551
1976	396	438	586	415
1977	536	576	647	584
1978	600	607	664	597
1979	654	662	767	636
1980	586	598	633	571
1981	570	507	639	484
1982	445	447	528	418
1983	502	527	573	496
1984	729	724	767	687
1985	501	572	602	540
1986	257	343	373	308
1987	342	330	360	305
1988	437	463	476	427
1989	350	432	482	413
1990	290	447	489	422
1991	339	454	474	414
1992	394	429	452	420
1993	378	480	539	466
1994	528	615	636	616

Note: Prices refer to the c.i.f. North-West Europe price.
Sources: Ministry of Primary Industries. *PORLA Palm Oil Statistics*, various years.

further, if no unpredictable disturbances - for instance, the stiff anti-palm oil campaign by the American Soya Bean Association in the early 1990s - crop up.

6. Export

Similar to the production and area growth, palm oil export rose over time (Table 13). The export increased from 97.6 thousand tonnes in 1960 to 6.65 million tonnes in 1994, which is equivalent to an average growth rate of 13.2 per cent a year. Before the mid-1970s, palm oil was exported in a crude form. At the beginning of 1975, due to the drastic decrease in export tax levied on processed palm oil, a move in line with the government policy to encourage the processing industry to export more value added products, export of crude palm oil was almost replaced by processed

Table 13 Annual export of oil palm products

unit: tonnes

	Crude palm oil	Processed palm oil	Total
1960	97,568	n.a.	97,568
1970	401,911	n.a.	401,911
1975	957,411	215,515	1,172,926
1980	197,659	2,073,563	2,271,222
1985	13,051	3,420,974	3,434,025
1990	93,949	5,633,502	5,727,451
1994	55,113	6,599,689	6,654,802

Sources: Ministry of Primary Industries. *PORLA Palm Oil Statistics*, various years.

Table 14 Exports of palm oil by major countries of destination, Malaysia

unit: tonnes

	1960	1970	1980	1990	1994
China	—	—	50,000	798,000	1,341,000
Pakistan	—	99	117,000	690,000	1,143,000
Singapore	34,771	126,266	654,000	770,000	377,000
Egypt	—	—	0	344,000	359,000
Japan	254	11,002	142,000	278,000	339,000
India	17,795	128	398,000	530,000	217,000
USA	—	19,937	120,000	153,000	169,000
UK	30,718	91,961	132,000	57,000	138,000
Iraq	2,543	65,276	560,000	143,000	0
Others	11,483	87,242	111,000	2,064,000	2,581,000
Total	97,564	401,911	2,284,000	5,827,000	6,664,000

Sources: Ministry of Primary Industries (1995). *Statistics on Commodities*; Ministry of Agriculture (1988). *Perangkaan Pertanian-Siri Masa.*

palm oil. The total quantity of crude palm oil export declined to only 55.1 thousand tonnes or 0.8 per cent of total palm oil export in 1994.

The government policy[14] to increase export of processed palm oil contributed a lot to the stability of the Malaysian palm oil industry. Approximately 70-80 per cent of crude palm oil export is concentrated in January even though the price of the oil is the lowest at that time. However, processed palm oil can be stored with less quality deterioration and be used for end-products production ; hence, its export management is much easier than crude palm oil.

Recently, the government allowed free or discounted export tax of crude palm oil for Malaysian joint-venture companies operating overseas. The rapid increase of crude palm oil import by Egypt was a result of the joint-venture regarding palm oil refinery by Sime Darby in that country.

The palm oil industry has successfully contributed to the country's export revenue, due to the large proportion of palm oil export. Contribution of palm oil and its end-products towards the export revenue is approximately 10 per cent. Although the importance of the palm oil industry will decrease over time due to rapid development of the manufacturing sector, the industry will still contribute, to some extent, to the country's economy.

In the beginning, Malaysia's palm oil export destination was mainly confined to several European countries especially the United Kingdom (Table 14). This was simply because the oil palm plantations were owned by British capitals in the early history in order to meet the demand for raw materials in the country. In the 1960s, Singapore was the major importer of palm oil for the purpose of re-export. At that time, port facilities in Malaya/Malaysia were so poor that some British plantation companies transported their products to Singapore, where well-managed port facilities were available. However, after the Malaysian government improved port

facilities and warehouses in Klang (Selangor) and Pasir Gudang (Johor), the quantities of direct export from Malaysia to final destinations increased rapidly and the importance of Singapore gradually declined. In the 1970s and 1980s, India, Pakistan, Japan, the USA, Netherlands and Iraq emerged as main importers. After the mid-1980s, developing countries, such as Myanmar, Egypt, Turkey, Brazil and China, joined in. In particular, Chinese import has been drastically increasing with rapid economic growth and 20 per cent of Malaysian palm oil is exported directly to the country. Considering a possible surge in oil demand in China as a result of income enhancement, there is a possibility that Chinese import will increase as fast as it had been in the 1980s.

7. Processing Industry

As mentioned earlier, the FFB must be extracted immediately after being harvested since long-distance transportation of the FFB is almost impossible economically. As a result, capacities of the government approved mills are well matched with the FFB production not only in the country but also at each state levels. In 1994, there were 243 mills in the Peninsula, 49 in Sabah and 13 in Sarawak (Table 15). The total milling capacity was 51.3 million tonnes per year (including 3.3 million tonnes by mills under construction and planning) or 133 per cent of the FFB production of 38.6 million tonnes in 1994.

On the contrary, it is a well-known fact that refineries are over the capacity at the current production level. Competition among refineries is so tough indeed that, in 1994, only 36 out of 51 refineries in Peninsular Malaysia were in operation and 12 ceased operation (three under planning or construction, see Table 16). Total refinery capacity reached 12.3 mil-

lion tonnes of crude palm oil per year in 1994, which meant that more than 70 per cent was idle. However, this stiff competition made several companies more efficient and competitive. Indeed, several groups, such as FELDA (government), Kuok (Malaysian Chinese), Pan Century (Malaysian

Table 15 Number of mills approved by PORLA and their capacities: 1994

unit: tonne FFB/year

State	Mills approved		Total mills approved in 1994 Existing mills		Not in operation		Mills under planning and construction		Total	
	No.	Capacity	No.	Capacity	No.	Capacity	No.	Capacity	No.	Capacity
Johor	2	336,000	66	12,370,600	2	192,000	2	224,800	70	12,787,400
Kedah			4	432,000					4	432,000
Kelantan			8	1,100,800					8	1,100,800
Pahang			60	11,635,400			1	60,000	61	11,695,400
Pualu Pinang			4	494,400					4	494,400
Perak	1	60,000	37	5,650,120	1	48,000	3	228,000	41	5,926,120
Slangor			28	3,880,800					28	3,880,800
Terengganu			11	2,420,800			1	144,000	12	2,564,800
NS&Melaka			15	2,482,000					15	2,482,000
P.Malaysia	3	396,000	233	40,466,920	3	240,000	7	656,800	243	41,363,720
Sabah	3	466,000	34	5,895,400			15	1,974,000	49	7,869,400
Sarawak	4	586,000	8	1,316,400			5	716,000	13	2,032,400
East Malaysia	7	1,052,000	42	7,211,800	0	0	20	2,690,000	62	9,901,800
MALAYSIA	10	1,448,000	275	47,678,720	3	240,000	27	3,346,800	305	51,265,520

Source: PORLA.

Table 16 Number of refineries approved and their capacities: 1994

unit: tonnes CPO/year

State	In operation		Ceased operation		Under planning		Total	
	No.	Capacity	No.	Capacity	No.	Capacity	No.	Capacity
Johor	16	5,412,000	1	25,200	1	264,000	18	5,701,200
Penang	3	630,000	4	151,200	0	0	7	781,200
Perak	4	573,000	4	234,000	0	0	8	807,000
Selangor	9	1,875,000	0	0	2	340,000	11	2,215,000
Other states	4	885,000	3	952,800	0	0	7	1,837,800
P.Malaysia	36	9,375,000	12	1,363,200	3	604,000	51	11,342,200
Sabah/Sarawak	5	637,800	0	0	2	343,000	7	980,800
Malaysia	41	10,012,800	12	1,363,200	5	947,000	58	12,323,000

Source: PORLA.

Indian), Socteck (Malaysian Chinese), Cargill (American) and Palmex (Malaysian Chinese), are successfully operating efficient refineries due mainly to scale economies, and they are also venturing into other business opportunities, especially downstream activities including the oleo-chemical industry.

8. Prospects of the Palm Oil Industry

At the present moment, it appears that, in Peninsular Malaysia, the palm oil industry is not as buoyant as it has been before, and the increase in palm oil production through the expansion of oil palm area will be slow in the near future, due to the following reasons.

Firstly, insufficient suitable land in Peninsular Malaysia is pushing up the development and would-be running costs drastically. As mentioned above, it is necessary that nearby oil palm mills are built to enable the FFB to be extracted immediately after being harvested, otherwise the quality of oil will deteriorate due to increased composition of free fatty acid.[15] In order to cover the high costs of building oil palm mills and to maximise milling efficiency, therefore, developers need large oil palm areas, which are harder to find especially in the west coast of Peninsular Malaysia.

Secondly, the demand for land for the purpose of residential, industrial, commercial and resort areas, especially in Selangor and Johor, is high under rapid economic growth, so much so that a part of oil palm areas are being converted to serve the above purposes. Many estate based companies and their wholly or partly owned subsidiaries put more emphasis on venturing into property developments and other ventures as an effort to diversify their business. For instance, Sime Darby Bhd., which originated from a plantation company, is now engaged in the distribution of heavy equipment and motor

vehicles, property development and financial services, except the management of plantations. Plantations are the fourth venture in the company's operating profit, following financial services, heavy equipment and motor vehicle distribution, and property for the time being. One of the other many examples is Highlands & Lowlands Bhd. under Kumpulan Guthrie Bhd. which is targeted to become a player in the property development sector (*Corporate Handbook Malaysia,* December 1996). A majority of 66 companies categorised as the plantation sector in the Kuala Lumpur Stock Exchange (KLSE) currently intends to or has already launched large-scale land development projects for residential, commercial, recreational and other property purposes not only in Malaysia but also overseas.

Thirdly, severe labour shortage consequent upon rapid economic growth pushed up wages for labourers, which constitute approximately two-fifths of total costs in the oil palm estate. In an effort to overcome labour shortage, a shorter or dwarf oil palm variety, which was only one metre in height and therefore required less labour for harvesting the FFB, was developed by the Palm Oil Research Institute of Malaysia (PORIM) recently. Further mechanisation is also being done to improve labour productivity. However, the tight conditions of the labour market will persist as the government is reluctant to accept more cheap foreign workers from Indonesia, Bangladesh and other neighbouring countries. This is because of the fear of increasing negative effects due to their existence, which include increasing criminal cases and vice activities involving them and the possible racial tensions between Malaysians and foreign workers.[16]

Finally, the decrease in priority of new land development by government agencies after the 1990s is mainly due to high costs of new land development,[17] and a large amount of financial deficits in the government agencies as a result of inefficient management. Since 1989, no further new land

developments by the agencies have been encouraged; indeed, no intakes of settlers in Peninsular Malaysia have been done since the year. In spite of that, the government encourages the agencies to enter into joint-venture projects with the private sector for the purpose of improving managerial efficiency and hence, the turnover of the projects. However, some private estate companies put more emphasis on ventures other than the cultivation of commercial crops, and therefore joint projects between the government agencies and private companies for the purpose of new land development is not expected to be carried out widely. Hence, the growth of the areas developed by FELDA in the 1990s is declining rapidly (Table 8).

As mentioned above, countries such as Indonesia, Papua New Guinea and Thailand are trying to increase their oil palm production. In addition, several Malaysian estate companies are seeking suitable land and cheap labour force for oil palm farming outside Malaysia, and indeed, some of the companies are carrying out joint-ventures for palm oil production with Indonesian and other foreign counterparts. For instance, Golden Hope Plantations Bhd. (formerly known as Harrison & Crosfield Ltd.) is involved in the development of 34,000 ha of oil palm plantation and associated processing facilities in West Kalimantan; Kumpulan Guthrie Bhd. has an agreement with PT Pecconina Baru to provide support services in the form of expertise and management for the development of an oil palm estate and palm oil processing facilities on 27,000 ha of land in South Sumatra of Indonesia; the company will also be in a joint-venture to develop a 60,000 ha oil palm estate in Palembang, South Sumatra; Consolidated Plantations Berhad entered an agreement with PT Sapya Sakti of Indonesia to acquire agricultural land of 8,000 ha in West Kalimantan in February 1996 for the development of oil palm plantation; Kuala Sidim Berhad has a plan to convert a 7000-ha leasehold land in West Sumatra into an oil palm planta-

tion under a joint-venture project; in addition, Kulim is acquiring the fifty per cent share of the New Britain Palm Oil Ltd. (NBPO), which is a Papua New Guinean company accounting for approximately half of that country's palm oil production (*Corporate Handbook Malaysia,* December 1996). Summing up the above cases, in Indonesia only, the total oil palm area involved by Malaysian companies in overseas will reach over 135 thousand ha which is equivalent to the oil palm area in Selangor.

It is widely accepted that, in the first half of the next century, Indonesia, with advantages in the availability of almost infinite cheap labour force and vast suitable land for development in Kalimantan and Sumatra, will replace Malaysia's position as the main producer and exporter of crude palm oil. However, Malaysia will still be a main actor in the world palm oil production in the next century. This is because Malaysia has highly efficient managerial skills, large amounts of accumulated capital and advanced technologies to refine crude palm oil, none of which is available in other major palm oil producing countries.[18]

However, there is a need for Malaysia to further increase its productivity and managerial efficiency through continuous research and development in order to compete with other producers. Although the efficiency in those countries does not match Malaysia's, each country has its own advantages, for example, cheap labour. Efficiency can be upgraded over time. Therefore, it is estimated that in the next couple of years, the Malaysian palm oil industry will face tremendous competition from other producers, especially the neighbouring countries.

In addition, the position of palm oil in the world's oils and fats market is still volatile since it is easily threatened not only by supply-demand changes but also international affairs. As for the latter case, consumption of palm oil in the United States drastically fell when the American Soya Bean Associa-

tion launched a fierce anti-palm oil campaign on the grounds that the oil was harmful to the consumers' health (Jamal, Houston and McIntosh 1993).

In order to develop the palm oil industry in Malaysia, further research and development efforts in downstream ventures should be encouraged in order to develop more value added end-products, especially non-food application of the oil, and thereby increasing the utilisation of palm oil. Although many new products have already been discovered from palm oil, it is felt that these findings are still not enough to enable the oil to be more stable and flexible. As Zulkifli (1991) pointed out, an increase in palm oil usage flexibility will help to increase the price stability, and thereby strengthen the palm oil industry.[19] Further research should be given priority.

Notes

1. It is estimated that palm oil might replace the position of soya bean oil as the major vegetable oil in the next century (*Nihon-Keizai-Shinbun,* 16 January 1997).
2. Several books pointed out that the history of oil palm in Malaya started from the time when the plant was brought in from the Botanical Gardens of Singapore in 1870 (Zulkifli 1991 ; Ministry of Agriculture and Co-operatives 1966). It is said that the first attempt to plant oil palm in Southeast Asia was done in the Bogor Botanical Gardens in Indonesia in 1848.
3. At that time, although palm oil contained a variety of useful fatty acids, it was mainly used in detergents and soaps.
4. In order to protect the British plantation companies, the government introduced the Rice Lands Enactment and the Coconut Preservations Enactment in the 1910s to prevent smallholders from planting rubber which required little care but was quite profitable. However, without

any government intervention against oil palm farming by smallholders, the British plantation companies enjoyed monopoly of the palm oil industry in the early period of Malaya, due to the need for large amounts of investment and specialised managerial skills.

5. This article uses 'plantation' and 'estate' interchangeably for convenience.
6. For the evolution of Malaysian politics, see Means (1991). Present Malaysian political stability under the 14-coalition party, the National Front (Barisan Nasional), is stubborn. The party won an unprecedented landslide victory with 65 per cent of vote casts in the 1995 general election (Ishida 1996a).
7. FELDA developed 899,120 ha of land, and a total of 114,412 families had been settled in 308 schemes (*Information Malaysia 1996 Yearbook:* 163). Each initial settler was usually allocated a 4 ha farm land and a residential plot. However, with the introduction of the controversial block or group land ownership system, settlers were allocated to groups of 15 to 20 people on blocks ranging from 40 to 80 ha (Sutton and Amriah 1995 : 127)
8. In Malaysia, since land was (and is) a state matter, the Federal government and FELDA have to undertake land development schemes with the consent of the state government.
9. It must be borne in mind that, despite certain contribution of FELDA to poverty alleviation, several studies pointed out a few problems, such as considerable dependence on the government grants to cover high costs of land development and management (Sivalingam 1993), deterioration of ethnic factionalism (Osman 1987) and politicians' interference in general administration of FELDA schemes (Thillainathan 1976).
10. Although poverty among rice farmers in the IADP is persistent, it should

be noted that the government policy largely eradicated poverty in some areas such as the Northwest Selangor IADP area (Ishida 1996b). As for the evolution of the rice policy during the Seventh Malaysia Plan Period (1996-2000), see Ishida and Azizan (1996).

11. Palm oil and palm kernel oil are extracted from husk and kernel of the fruits respectively. This paper does not deal with palm kernel oil; however, it should be noted that the importance of the oil will increase in a situation where production of coconut oil is stagnant.
12. As for econometric analyses on the price of palm oil, see Fatimah and Ghaffar (1986), Kanbur (1991), Mad Nasir *et al.* (1988), and Mad Nasir and Fatimah 1993. In addition, readers who are interested in Malaysian palm oil market model, refer to Mad Nasir et al. (1994).
13. Ahmad Zubaidi and Muzafar (1993) found that the export prices of Malaysian major commodities, such as rubber, palm oil, cocoa and timber, are affected by foreign exchange rates.
14. The government provides a low-interest export loan, the Export Credit Refinancing, in order to facilitate palm oil export.
15. As an exceptional case, Hyman (1990) reported that local consumers in Cameroon have a preference for the sharp taste of local oil with a high free fatty acids content rather than the milder oil produced by large mills.
16. In 1995, the number of legal foreign workers in Malaysia was 1.2 million, which was equivalent to approximately 6 per cent of the country's population, and the agricultural sector absorbed about 41 per cent of the total foreign workers (Fatimah 1997 : 13).
17. The costs of resettlement per each family reached RM55,000 in 1990, up from RM26,500 in 1976 (Sutton and Amriah 1995 : 127).
18. For instance, since large mills in Cameroon cannot compete with South-

east Asian producers, most of the production is sold on the domestic market where the price of palm oil is officially set above the international market level (Hyman 1990 : 456).

19. For the purpose of reducing water pollution, crude palm oil processors are required to bear the costs of pollution abatement for the time being. As for the impact of imposing stringent effluent regulations on the palm oil industry in Malaysia, see Khalid and Braden (1993).

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〔要　旨〕

マレーシアのパーム油産業

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1960年代以降生産量が急増しているパーム油（palm oil）は，1994年時点において，世界の油脂生産量の約16%，油脂貿易量の約38%を占めており，大豆油と並ぶ重要な植物油脂原料である。パーム油の最大生産・輸出国はマレーシアであり，世界のパーム油生産量の半分以上，輸出量の約6割を供給している同国は，世界の油脂需給バランスに大きな影響力を持っている。そこで，本稿では，同国のパーム油産業の発展，生産・価格・輸出の諸動向，パーム油加工産業の現状等を検討し，パーム油生産の将来展望を行う際の基礎資料を提供することを目的としている。主な内容は次の通り。

パーム油産業の発展－栽培面積・生産の動向

マレーシアにおいて今世紀初頭に始まった油ヤシの商業的栽培は，パーム油の消費目的が限定されていたこととパーム油価格が低かったことから，1920年代中頃まで停滞していた。しかし，1920年代中頃以降特に1960年代以降，パーム油の生産量は飛躍的な増加を遂げた。この背景としては，次の諸点が考えられる。1)合成ゴムの開発や朝鮮戦争終結後のゴム需要の減退によって，油ヤシの代替作物であるゴムの国際市場価格が下落したため，パーム油価格のゴム価格に対する交易条件が改善されたこと。2)ゴム産業に大きく依存したモノカルチャー経済からの脱却を図る政府が，農業部門の多様化を図るために，民間大規模農園（プランテーション或いはエステート）による油ヤシ栽培を積極的に奨励したこと。3)連邦土地開発公団（FELDA）などの政府機関がマレー人農民の貧困軽減を主要目的とした大規模なパーム農園への入植計画を実施したこと。4)1960年代に入り，当時パーム油の主要生産国であった中央アフリカ諸国では，独立戦争後の政情不安定化による外国資本の撤退が相次いだ。この結果として上記諸国のパーム油生産は停滞・衰退基調にあったため，マレーシアのパーム油産業は国際市場に比較的容易に進出することができたこと。

油ヤシ栽培の分布は，民間大規模農園と政府機関の入植計画の両方とも，主に港湾や交通網が整備されているマレー半島西部（ジョホール州やペラ州など）と新規土地開発に適した広大な森林地域を有するマレー半島東部（パハン州）に集中している。しかし，マレー半島部における新規土地開発に適した森林地域の減少などから，最近では東マレーシア（サバ，サラワク両州）での油ヤシ栽培が盛んになりつつある。

パーム油価格の動向

国際市場におけるパーム油価格は，1960年代には安定的に推移したが，1970年代以降は大きな価格変動が見られる。しかし，パーム油は，他の植物油脂と比較して相対的に安価であり，かつそれらと容易に代替可能であることから，国際市場ではかなりの競争力を有する。

パーム油輸出の動向

パーム油生産の拡大に伴い輸出量も急増した。また，1970年代中頃以降，マレーシア国内の食品産業育成のために加工パーム油の輸出税が大幅に引き下げられたことから，パーム原油の輸出が減少し加工パーム油の輸出が急増した。

当初パーム油の輸出先は，欧州やシンガポールが主であったが，1970年代以降，南アジア諸国，日本，米国，そして中国，ミャンマー，エジプトなどの開発途上国への輸出シェアが急増している。中でも中国への輸出増加は顕著であり，現在では総輸出量の20%程度が直接同国に輸出されている。

加工産業の現状

油ヤシの果房（fresh fruit bunch）は，収穫後，遊離脂肪酸の増加による品質低下を防止するために速やかに搾油する必要があり，果房の長距離運搬はできない。従って，搾油工場は計画的に油ヤシ園内に建設されるのが一般的である。このため，搾油産業全体の処理能力は，果房の生産量を若干上回る程度である。

これに対し，パーム油の精製産業は明白なオーバー・キャパシティーである。事実，1994年時点において，51の精製工場の内12工場が休止中であり，精製産業全体の処理能力のわずか30%程度しか稼働していない状況にある。しかし，かかる精製過程における熾烈な生存競争は，精製産業全体の効率性を向上させたと同時に，主なパーム油関連企業による川下産業（オレオ・ケミカル等）への事業拡大を促進した側面もある。

パーム油産業の将来展望

現時点では，マレーシアは，油ヤシ園の栽培管理，パーム油の精製技術，マーケティング等の諸点において，他の主要生産国を圧倒的に凌駕している。しかし最近，急速な経済発展を遂げているマレーシアの半島部では，新規土地開発に適した土地の減少，非農業部門による土地需要の拡大，深刻な労働力不足とそれに伴う労賃の高騰，政府機関による新規土地開発の大幅縮小などのために，パーム油生産の増加が急速に鈍化すると予想される。また最近，マレーシアの主なパーム油関連企業は，広大な土地と安価かつ豊富な労働力を有するインドネシア（特にカリマンタンとスマトラ）における油ヤシ栽培に力を入れており，来世紀前半には，油ヤシ栽培を奨励しているインドネシアがマレーシアを抜いて世界最大のパーム油生産・輸出国になるであろう。

マレーシアのパーム油産業の発展のために，より高付加価値のパーム油関連製品の開発が必要であり，パーム油関連の試験研究がより一層重要になるであろう。