CHAPTER 8 - AGRICULTURAL DEVELOPMENT

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Agricultural Development

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8 AGRICULTURAL DEVELOPMENT

I. INTRODUCTION

8.01 During the Seventh Plan period, the agriculture sector remained as one of the major sectors of the economy after manufacturing and services, contributing to national income and export earnings. In line with the Third National Agricultural Policy (NAP3), the sector contributed not only as a supplier of raw materials to the resource-based industries, but also in terms of food production. The increase in earnings of major commodities, particularly palm oil and pepper as well as food commodities enabled the sector to retain its workforce and withstand the economic downturn of 1997-1998.

8.02 During the Eighth Plan period, new and innovative measures will be undertaken to increase the contribution of the agriculture sector to the national economy. Domestic food production will be further enhanced by encouraging large-scale and organized farming, intensifying land use, improving agronomic practices as well as using modern technologies and management. Production of primary commodities will be reoriented to improve productivity and competitiveness through an integration programme with livestock, wider crop mix practices and mechanization. In addition, production of specialty natural products such as medicinal plants as well as non-wood forest products will be promoted as new sources of growth.

II. PROGRESS, 1996-2000

8.03 During the Plan period, the agriculture sector performed favourably as reflected by the growth in value added, productivity per worker as well as export earnings, despite labour shortages, competition for suitable land and higher input prices. The sector, through its various programmes and activities, also facilitated efforts to upgrade the standard of living of rural communities.

Growth Performance

8.04 Total agricultural value added grew by 1.2 per cent per annum compared with the Plan target of 1.9 per cent, as shown in *Table 8-1*. However, palm oil grew at 7.9 per cent exceeding the target set and remained as the most significant contributor to the growth in value added. Other subsectors that recorded an increase in value added included, livestock, fisheries, padi and other food crops, although their growth was lower than targeted. The contribution of the agriculture sector to Gross Domestic Product (GDP) decreased from 10.3 per cent in 1995 to 8.7 per cent in 2000. Agricultural export earnings in current value increased by 1.1 per cent per annum from RM21.6 billion to RM22.9 billion, particularly as a result of palm oil exports. Despite this increase, the proportion of agricultural exports to total exports declined from 11.7 per cent to 6.1 per cent during the period.

8.05 In line with the emphasis to increase domestic food production and reduce the import bill, the relative contribution of food to total agricultural value added increased, particularly livestock, fisheries, fruits and vegetables. On the other hand, the contribution of industrial commodities to total agricultural value added declined due to a reduction in the value added of rubber and forestry products.

Employment

8.06 Employment in the agriculture sector decreased further during the Plan period, from 1.5 million in 1995 to 1.4 million in 2000, a decline of 1.2 per cent per annum, as shown in *Table 8-2*. Productivity gains were recorded in several subsectors, particularly padi, tobacco, vegetables and poultry, through the application of various labour-saving technologies and better farming practices in large-scale commercial production. Value added per worker in the agriculture sector improved further by 2.4 per cent per annum, from about RM11,500 in 1995 to about RM12,900 in 2000. This was slightly lower than the Plan target of 3.3 per cent per annum due to the relatively slow process of mechanization in several subsectors such as oil palm, rubber and cocoa.

8.07 Labour shortages continued to be prevalent in the agriculture sector, especially for industrial commodities. In particular, the estate subsector relied substantially on foreign labour with about 190,200 foreign workers with work permits in 2000, accounting for 13.4 per cent of total agricultural employment.

TABLE 8-1

AGRICULTURAL VALUE ADDED, 1995–2005
(RM million in 1987 prices)

Commodity	*1995*	*%*	*2000*	*%*	*2005*	*%*	*Average Annual Growth Rate (%)*		
							7MP Target	*7MP Achieved*	*8MP Target*
Rubber	2,129	*12.4*	1,178	*6.5*	1,025	*4.9*	*-4.1*	*-11.2*	*-2.7*
Palm Oil	4,235	*24.7*	6,199	*34.1*	7,364	*35.0*	*4.2*	*7.9*	*3.5*
Forestry and Logging	4,139	*24.2*	3,395	*18.7*	3,038	*14.5*	*-8.5*	*-3.9*	*-2.2*
Cocoa	1,225	*7.3*	1,159	*6.4*	1,192	*5.7*	*-1.9*	*-1.6*	*0.6*
Padi	516	*3.0*	532	*2.9*	673	*3.2*	*0.9*	*0.6*	*4.8*
Livestock	953	*5.6*	1,109	*6.1*	1,454	*6.9*	*5.1*	*3.1*	*5.6*
Fisheries	1,964	*11.5*	2,375	*13.1*	2,998	*14.3*	*4.0*	*3.9*	*4.8*
Miscellaneous[1]	1,924	*11.2*	2,207	*12.2*	3,274	*15.6*	*7.9*	*2.8*	*8.2*
Total	**17,115**	***100.0***	**18,154**	***100.0***	**21,018**	***100.0***	***1.9***	***1.2***	***3.0***

Note: [1] Includes coffee, tea, coconut, tobacco, pepper, vegetables, fruits, flowers, herbs and others.

TABLE 8-2

EMPLOYMENT AND PRODUCTIVITY IN AGRICULTURE, 1995–2005

	1995	*2000*	*2005*	*Average Annual Growth Rate (%)*		
				7MP Target	*7MP Achieved*	*8MP Target*
Employment in Agriculture ('000)	1,493	1,408	1,307	*-3.6*	*-1.2*	*-1.5*
Percentage to Total Employment	*18.7*	*15.2*	*12.0*			
Value Added Per Worker (RM in 1987 prices)	11,466	12,898	16,088	*3.3*	*2.4*	*4.5*

Land Utilization

8.08 Agricultural land use increased from about 5.7 million hectares in 1995 to about 6.0 million hectares in 2000, as shown in *Table 8-3*, mainly due to the opening up of new land for oil palm cultivation in Sabah and Sarawak. Increase in hectarage was recorded for oil palm, pepper, tobacco, vegetables and fruits. However, about 430,800 hectares of rubber and cocoa land was converted for oil palm and other uses.

TABLE 8-3

AGRICULTURAL LAND USE, 1995–2005
(hectares)

Commodity	*1995*	*2000*	*2005*	*Average Annual Growth Rate (%)*		
				7MP Target	*7MP Achieved*	*8MP Target*
Agricultural Industrial Commodities						
Rubber	1,727,000	1,430,700	1,301,500	*-3.8*	*-3.7*	*-1.9*
Oil Palm	2,507,611	3,460,000	3,100,000	*1.1*	*6.7*	*-2.2*
Cocoa	234,538	105,000	105,000	*-1.9*	*-14.8*	*0.0*
Pepper	8,600	11,480	12,500	*-1.1*	*5.9*	*1.7*
Pineapple	9,081	10,233	16,000	*4.5*	*2.4*	*9.4*
Tobacco	10,539	15,000	12,500	*-1.0*	*7.3*	*-3.6*
Food Commodities						
Padi[1]	592,410	572,196	611,000	*-9.7*	*-0.7*	*0.6*
Coconut[1]	298,740	220,000	201,000	*-5.0*	*-5.9*	*-1.8*
Vegetables[1]	42,000	51,420	77,290	*3.0*	*4.1*	*8.5*
Fruits[1]	244,471	297,436	379,613	*7.1*	*4.0*	*5.0*
Others[2]	68,146	67,534	67,737	*-0.3*	*-0.2*	*0.1*
Total[3]	**5,743,137**	**5,949,934**	**6,314,977**	***-1.4***	***0.7***	***1.2***

Notes:

[1] Based on harvested area.

[2] Includes tea, coffee and other crops.

[3] Refers to physical area and excludes multi-cropping.

Agricultural Production

8.09 During the Plan period, the overall production in the agriculture sector recorded an improvement, as shown in *Table 8-4*. Production of palm oil, pepper and cut flowers showed remarkable growth due to favourable world prices and expanding markets. However, rubber and cocoa registered negative growth. In line with the policy to increase local food production and reduce imports, the food subsector recorded substantial growth in the production of all food commodities except pork and coconut.

Agricultural Industrial Commodities

8.10 Crude *palm oil* (CPO) production increased by 6.8 per cent per annum, from 7.8 million tonnes in 1995 to 10.8 million tonnes in 2000 due to improvement in yield and expansion in hectarage of matured trees. The price of CPO fluctuated from RM1,472 per tonne in 1995 to its highest peak at RM2,377.50 per tonne in 1998 before falling to RM1,000 per tonne in 2000 due to the increase in world production and build-up in stocks as well as competition from other vegetable oils. Consequently, the export earnings from palm oil declined by 3.0 per cent per annum, from RM11.7 billion in 1995 to RM10 billion in 2000.

8.11 *Rubber* production declined by 10.8 per cent per annum, from about 1.1 million tonnes 1995 to about 616,000 tonnes in 2000. Reduction in rubber production was attributed to the decrease in tapped area and yields, labour shortages as well as the high cost of production and protracted low rubber prices. The planted areas of rubber declined from 1.7 million hectares to 1.4 million hectares as a result of conversion to oil palm and other uses in the Plan period. The yield of rubber dropped from 1,000 kilogrammes per hectare to 970 kilogrammes per hectare mainly due to the lack of proper management and agronomic practices among smallholders. The price of rubber fell from RM3.90 per kilogramme in 1995 to RM2.50 per kilogramme in 2000 due to increase in production from other major producer countries and failure of the international stock piling mechanism.

8.12 *Cocoa* bean production declined from 131,000 tonnes in 1995 to 70,000 tonnes in 2000 due to a reduction in planted areas from 234,500 to 105,000 hectares, adverse weather conditions, labour shortages and the high cost of production. With the decrease in production, export earnings declined from

TABLE 8-4

AGRICULTURAL PRODUCTION, 1995–2005
('000 tonnes)

Commodity	*1995*	*2000*	*2005*	*Average Annual Growth Rate (%)*		
				7MP Target	*7MP Achieved*	*8MP Target*
Agricultural Industrial Commodities						
Rubber	1,089	616	560	*-1.7*	*-10.8*	*-1.9*
Crude Palm Oil	7,811	10,840	12,416	*3.2*	*6.8*	*2.8*
Palm Kernel Oil	2,396	3,220	3,774	*3.2*	*6.1*	*2.3*
Sawlogs[1]	31,842	23,898	18,864	*-3.5*	*-5.6*	*-2.4*
Cocoa	131	70.0	115	*0.5*	*-11.9*	*7.4*
Pepper	13.0	24.0	30.0	*-1.1*	*12.6*	*4.6*
Pineapple	140	184	264	*1.4*	*5.6*	*7.5*
Tobacco	10.0	11.0	15.0	*5.6*	*1.1*	*6.4*
Flowers[2]	365,070	501,697	686,010	*16.2*	*6.6*	*6.5*
Food Commodities						
Padi	2,127	2,235	2,813	*-2.1*	*1.0*	*4.7*
Fruits[3]	1,020	1,376	1,982	*8.5*	*6.2*	*7.6*
Vegetables[3]	718	1,019	1,390	*5.8*	*7.2*	*6.4*
Coconut[4]	1,389	550	824	*-2.0*	*-16.9*	*8.4*
Fisheries	1,241	1,511	1,860	*4.0*	*4.0*	*4.2*
Marine	1,108	1,256	1,360	*1.2*	*2.5*	*1.6*
Aquaculture	133	255	500	*20.1*	*14.0*	*14.4*
Livestock						
Beef	17.0	28.0	40.0	*3.6*	*10.5*	*7.5*
Mutton	0.8	1.0	1.5	*4.2*	*5.2*	*5.9*
Pork	283	150	183	*1.0*	*-11.9*	*4.0*
Poultry	687	1,050	1,329	*5.4*	*8.8*	*4.8*
Eggs[4]	6,242	8,221	9,974	*3.4*	*5.7*	*3.9*
Milk[5]	37.0	50.0	65.0	*2.1*	*6.1*	*5.5*

Notes:

[1] Measured in thousand cubic metres.

[2] Measured in thousand stalks.

[3] Refers to commercial cultivation.

[4] Measured in million units.

[5] Measured in million litres.

RM626 million in 1995 to RM493 million in 2000. However, the use of high-yielding clones and the adoption of good agronomic practices increased the yield of cocoa beans per hectare from 700 kilogrammes in 1995 to about 950 kilogrammes in 2000.

8.13 *Pepper* production increased by 12.6 per cent per annum, from 13,000 tonnes in 1995 to 24,000 tonnes in 2000 due to yield improvements from better farm management. Stimulated by higher prices, the planted area under pepper also increased from 8,600 hectares to 11,500 hectares in 2000.

8.14 Production of *tobacco* remained as an alternative source of income for farmers in the States of Kelantan, Terengganu, Kedah and Perlis, contributing about RM150 million additional revenue per year. The demand for local tobacco increased substantially from 10,000 tonnes in 1995 to 15,000 tonnes in 2000 and consequently, the planted area was increased by 8.6 per cent per annum, from 10,500 hectares to 15,000 hectares during the same period. However, due to adverse weather conditions in 1999 and 2000, the production increased only by 0.4 per cent per annum, from 10,000 tonnes to 11,000 tonnes, lower than the demand in the Plan period.

8.15 To ensure sustainable forest management, the annual allowable cut in permanent forests was reduced to 46,000 hectares in Peninsular Malaysia, 60,000 hectares in Sabah and 170,000 hectares in Sarawak during the Plan period. Consequently, the production of *sawlogs* declined by 5.6 per cent per annum, from 31.8 million cubic metres in 1995 to about 24 million cubic metres in 2000. Accordingly, the production of sawntimber decreased from 7.5 million cubic metres in 1995 to 5.2 million cubic metres in 2000. As a substitute, rubber wood became a major source of raw material in the furniture and other wood-based industries with total exports increasing from RM1.9 billion in 1995 to RM4.3 billion in 2000.

Food Commodities

8.16 The NAP3 focused on the need to increase domestic food production and sourcing of food strategically to ensure adequate supply and accessibility to safe, nutritious and high quality food at affordable prices. With the economic downturn, the subsector was given impetus to help revitalize the economy and improve the trade balance as well as strengthen food security. As a result, the self-sufficiency

levels (SSL) of several food commodities improved, as shown in *Table 8-5*. Despite the improvement in SSL, the food trade balance continued to widen in favour of imports. Food imports increased by 10.7 per cent per annum, from RM7.8 billion in 1995 to RM13 billion in 2000, mainly due to the depreciation of the ringgit as well as the varied taste of consumers, including for produce that cannot be grown locally. Nevertheless, exports increased by 8.1 per cent per annum, from RM4.4 billion to RM6.6 billion, as shown in *Table 8-6*.

TABLE 8-5

SELF-SUFFICIENCY LEVELS OF FOOD COMMODITIES, 1995-2005
(%)

Commodity	*1995*	*2000*	*2005*
Rice	*76.3*	*71.0*	*72.0*
Fruits	*88.9*	*91.3*	*98.6*
Vegetables	*71.6*	*88.5*	*95.6*
Fishery Produce	*92.0*	*89.0*	*90.0*
Beef	*19.2*	*22.7*	*23.2*
Mutton	*6.0*	*6.4*	*7.1*
Pork	*104.0*	*80.0*	*76.1*
Poultry	*110.7*	*127.8*	*143.2*
Eggs	*110.3*	*138.8*	*152.5*
Milk	*3.5*	*4.0*	*4.5*

8.17 *Padi* production increased from about 2.1 million tonnes in 1995 to about 2.2 million tonnes in 2000 through productivity improvements, recording a growth of 1.0 per cent per annum. Mechanization of padi production and the consolidation of smallholdings through group farming and estatization were intensified to promote commercialization and greater private sector involvement. By the end of the Plan period, almost all farming operations in the major padi growing areas were fully mechanized. As a result, the labour input per hectare

TABLE 8-6

EXPORTS AND IMPORTS OF FOOD, 1995–2005
(RM million)

Item	1995	%	2000	%	2005	%	Average Annual Growth Rate (%) 7MP	8MP
Exports	**4,466.0**	***100.0***	**6,599.0**	***100.0***	**9,268.6**	***100.0***	***8.1***	***7.0***
Live Animals	552.5	*12.4*	736.9	*11.2*	1,020.0	*11.0*	*5.9*	*6.7*
Meat & Meat Preparations	21.3	*0.5*	26.6	*0.4*	32.6	*0.4*	*4.6*	*4.1*
Dairy Products	245.8	*5.5*	403.1	*6.1*	575.3	*6.2*	*10.4*	*7.4*
Fruits & Vegetables	496.0	*11.1*	701.2	*10.6*	918.4	*9.9*	*7.2*	*5.5*
Rice	1.9	*0.0*	1.5	*0.0*	2.8	*0.0*	*-4.8*	*12.9*
Fish, Crustaceans, Mollusc & Preparations thereof	824.6	*18.5*	1,236.1	*18.7*	1,711.0	*18.5*	*8.4*	*6.7*
Feed stuff for Animals[1]	326.1	*7.3*	597.8	*9.1*	1,002.5	*10.8*	*12.9*	*10.9*
Others	1,997.8	*44.7*	2,895.7	*43.9*	4,006.0	*43.2*	*7.7*	*6.7*
Imports	**7,784.3**	***100.0***	**12,964.8**	***100.0***	**21,896.8**	***100.0***	***10.7***	***11.1***
Live Animals	142.0	*1.8*	205.8	*1.6*	354.2	*1.6*	*7.7*	*11.5*
Meat & Meat Preparations	279.0	*3.6*	465.6	*3.6*	767.2	*3.5*	*10.8*	*10.5*
Dairy Products	951.9	*12.2*	1,420.3	*11.0*	2,364.8	*10.8*	*8.3*	*10.7*
Fruits & Vegetables	1,127.8	*14.5*	1,913.6	*14.8*	3,255.0	*14.9*	*11.2*	*11.2*
Rice	356.1	*4.6*	500.7	*3.9*	764.8	*3.5*	*7.1*	*8.8*
Fish, Crustaceans, Mollusc & Preparations thereof	773.1	*9.9*	1,342.8	*10.4*	2,302.4	*10.5*	*11.7*	*11.4*
Feed Stuff for Animals[1]	582.3	*7.5*	1,219.7	*9.4*	2,166.1	*9.9*	*15.9*	*12.2*
Others	3,572.1	*45.9*	5,896.4	*45.5*	9,922.4	*45.3*	*10.5*	*11.0*

Note: [1] Excludes importation of whole grain maize and soya bean.

declined from 47 work days in 1995 to 15 work days in 2000, thus further reducing the cost of production. In addition, the average yield in these areas improved from 4.0 tonnes per hectare to 5.8 tonnes per hectare. The revision of the guaranteed minimum price of padi in 1997 further increased the income of the farmers. The minimum prices for long grains and short grains were increased from RM49.60 to RM55 per hundred kilogrammes and from RM46.30 to RM51.69 per hundred kilogrammes, respectively.

8.18 Production in the *fruit* and *vegetable* subsectors continued to increase to meet local demand and for export. Production of fruits registered an increase of 6.2 per cent annually from one million tonnes in 1995 to 1.4 million tonnes in 2000, while the harvested area grew by 4.0 per cent per annum, from 244,500 hectares to 297,400 hectares. A total of 15 fruit types was promoted for commercial cultivation including banana, papaya, pineapple, watermelon, starfruit, mango, durian, rambutan, guava and citrus fruits. The production of vegetables, mainly from leafy, root and fruit vegetables, also increased from 718,000 tonnes in 1995 to one million tonne in 2000, recording a growth of 7.2 per cent per annum. The harvested area under vegetables grew by 4.1 per cent annually from 42,000 hectares to 51,400 hectares. The increase in production of both fruits and vegetables was made possible through expansion in planted areas, the provision of basic infrastructure and inputs as well as the promotion of organized and commercial cultivation.

8.19 Responding to the promotional efforts by the Government, the *fishery* subsector became more commercially oriented with the active participation of the private sector and the use of new technologies. Fishery production increased by 4.0 per cent per annum, from 1.2 million tonnes in 1995 to 1.5 million tonnes in 2000, of which about 85 per cent was from marine catch and the balance from aquaculture. Inshore fish landings contributed more than 80 per cent of the total marine catch and employed more than 75 per cent of the 98,600 workforce in the subsector in 2000. Sustainable resource management was encouraged by promoting the Code of Conduct for Responsible Fisheries developed by the Food and Agriculture Organization (FAO) of the United Nations in 1997.

8.20 Aquaculture production, which involved about 19,700 farmers, increased from 133,000 tonnes in 1995 to 255,000 tonnes in 2000, registering an annual growth of 14 per cent. Shrimps and brackish-water fish, valued at RM840 million in 2000, involving a total area of 11,000 hectares, were the major products of the aquaculture subsector. Ornamental fish breeding was introduced as a commercial activity during the Plan period. Its production increased from

253 million in 1995 to 350 million in 2000 with a market value that doubled to reach RM90 million.

8.21 The *livestock* subsector recorded an improvement in terms of value added and grew at 3.1 per cent per annum, from RM953 million in 1995 to RM1.1 billion in 2000. The production of beef, mutton and milk recorded a high growth, ranging from 5.2 to 10.5 per cent per annum, mainly due to the integration of livestock rearing in oil palm and rubber plantations. Land development agencies namely, the Federal Land Development Authority (FELDA), Rubber Industry Smallholder Development Authority (RISDA) and the Federal Land Consolidation and Rehabilitation Authority (FELCRA) together with the Pahang State Farmers Organization (PASFA) and the Johor State Farmers Organization (PPNJ) participated in the integration programme and were rearing 15 per cent of the cattle population under the programme by 2000. In addition, credit facilities, infrastructure support and extension services were provided to smallholders to encourage their participation in the programme.

8.22 The poultry industry continued to be the main source of growth for the livestock subsector accounting for RM4.3 billion in current value or 67.1 per cent of the total livestock produce in 2000. During the Plan period, it registered 8.8 per cent growth per annum, whereby production increased from 687,000 tonnes in 1995 to one million tonne in 2000. The cost of production continued to rise mainly due to the increase in the price of imported animal feed and other inputs. In this regard, the Government introduced a price mechanism to ensure reasonable returns to producers and to protect consumers. Egg production increased from 6.2 billion units in 1995 to 8.2 billion units in 2000, a growth of 5.7 per cent per annum, to meet local and export markets. In addition, the commercialization of research and development (R&D) findings resulted in the production of better quality and cholesterol-free eggs.

8.23 Pork production reduced drastically from 283,000 tonnes in 1995 to 150,000 tonnes in 2000 due to the culling of pigs to control the outbreaks of the Japanese Encephalitis and the Nipah viruses. Promotion of exotic animals as an alternative meat source, especially for low-cholesterol meat to cater for niche markets was emphasized. The population of ostrich and deer increased from 2,400 birds and 94,300 heads in 1995 to 5,000 birds and 165,100 heads, respectively, in 2000. Besides the meat, by-products such as feather, leather and eggshells of ostrich and deer horn fetched high prices for quality accessories, crafts and home products.

Local Processing

8.24 With commercialization of various R&D findings and the provision of incentives such as tax relief, the downstream processing of agricultural products, especially food, increased during the Plan period. The processing of processed palm oil, rubber and pepper increased while that of sawlogs and cocoa decreased, as shown in *Table 8-7*. In the case of rubber, more than 80 per cent of the total domestic consumption was used by the gloves, thread and tyre and tube industries. Sawlogs used for timber-based products decreased from 24 million cubic metres in 1995 to 18.4 million cubic metres in 2000 due to the annual allowable coupe. Similarly, production of plywood and veneer decreased from 3.7 million cubic metres to 3.4 million cubic metres and from 2.2 million cubic metres to one million cubic metres, respectively, during the Plan period. The use of local cocoa beans also declined from 79,000 tonnes in 1995 to 59,000 tonnes in 2000 due to reduction in locally produced cocoa beans.

TABLE 8-7

LOCAL PROCESSING AND UTILIZATION OF AGRICULTURAL INDUSTRIAL COMMODITIES, 1995-2005
('000 tonnes)

Commodity	*1995*	*2000*	*2005*	*Average Annual Growth Rate (%)*	
				7MP	*8MP*
Processed Palm Oil (PPO)	7,654	10,623	12,195	*6.8*	*2.8*
PPO used for End-products	1,159	1,423	1,485	*4.2*	*0.9*
% of PPO used for End-products	*15.1*	*13.4*	*12.2*		
Rubber	1,089	616	560	*-10.8*	*-1.9*
Rubber used for End-products	327	375	490	*2.7*	*5.5*
% of Rubber used for End-products	*30.1*	*61.1*	*87.5*		
Sawlogs ('000 cubic metre)	31,842	23,898	18,864	*-5.6*	*-2.4*
Sawlogs used for End-products	23,978	18,394	19,000	*-5.2*	*0.7*
% of Sawlogs used for End-products	*75.3*	*77.0*	*89.9*		
Cocoa	131	70.0	115	*-11.9*	*7.4*
Cocoa used for End-products	79.0	59.0	70.0	*-5.7*	*3.5*
% of Cocoa used for End-products	*60.3*	*84.3*	*60.9*		
Pepper	13.0	24.0	30.0	*12.6*	*4.6*
Pepper used for End-products	0.95	2.0	3.0	*16.1*	*8.4*
% of Pepper used for End-products	*7.3*	*8.3*	*10.0*		

8.25 The processing of food, especially from fruits, vegetables, meat and fish continued to be promoted during the Plan period. The Malaysian Agricultural Research and Development Institute (MARDI) adapted new technologies in processing and packaging, such as dehydrating and vacuum-packing for local food products. The processing of local fruit juices such as carambola, mango, calamansi and tamarind; *coco de nata* from coconut as well as fish and meat-based products was further developed. Progress was also made in the processing of plants and aquatic-based organisms, particularly for food, health care and industrial uses. Among those successfully developed and promoted included noni juice, cosmetic and ointment from *gamat,* pills and medicated soap from goat's milk, herbal products, aromatic products and food flavourings. The value of the domestic market for herbal medicine in 1999 was around RM2 billion, with imports at RM430.5 million, compared with an export value of RM63.4 million. Insufficient and inconsistent supply of raw materials was identified as two major factors constraining the local processing industry.

Restructuring of Agricultural Agencies

8.26 With the view to further consolidating and improving the effectiveness of the agricultural institutions, several agencies were restructured during the Plan period. The Malaysian Rubber Exchange and Licensing Board (MRELB), Malaysian Rubber Research and Development Board (MRRDB) and the Rubber Research Institute of Malaysia (RRIM) were amalgamated into a single body, the Malaysian Rubber Board (MRB), responsible for the development of the rubber industry. Similarly, the Palm Oil Research Institute of Malaysia (PORIM) and Palm Oil Registration and Licensing Authority (PORLA) were merged to form the Malaysian Palm Oil Board (MPOB). Further, in order to rationalize and optimize resources, the Project Management Units (PMU) of the five Integrated Agricultural Development Projects (IADPs) outside the main padi growing areas were closed down and their functions reassigned to the respective line departments and agencies. With regard to land development, two regional development authorities (RDAs), namely the Development Authority of Pahang Tenggara (DARA) and Jengka Development Authority, were privatized. Meanwhile, FELDA, FELCRA and RISDA reorganized their management functions towards corporatization in order to improve their efficiency and effectiveness.

Agricultural Programmes

8.27 During the Plan period, agricultural programmes were carried out to modernize the sector and maximize the income of farmers. In this regard, the

modernization of the smallholders subsector was emphasized through promotion of group farming activities as well as provision of support services. *In-situ* development, through the rehabilitation and consolidation of existing agricultural land, continued to be the main strategy for agricultural development. However, new land development was also undertaken, mainly by the state and regional agencies as well as the private sector. In addition, the Government provided support services and appropriate incentives, including land, to facilitate private sector participation in large-scale commercial farming, especially for food production as well as floriculture and aquaculture activities.

In-situ and New Land Development

8.28 The *in-situ* land development approach continued to be adopted as a strategy to better utilize the land resources of smallholders and to overcome the limited availability of suitable land. As a result, about 395,500 hectares of land were replanted, consolidated and rehabilitated, as shown in *Table 8-8*, particularly through joint-ventures with the private sector or farmer groups. RISDA, FELCRA and Sarawak Land Consolidation and Rehabilitation Authority (SALCRA) helped farmers to consolidate their lands and replant with oil palm and rubber, using new clones and planting techniques including mixed farming. In addition, the Department of Agriculture (DOA), Farmers Organization Authority (FOA) and other public sector agencies actively promoted the cultivation of food crops on smallholdings using the nucleus estate and group farming concepts. With regard to cocoa, the Malaysian Cocoa Board (MCB) rehabilitated 1,100 hectares of cocoa holdings with the direct participation of smallholders.

8.29 During the Plan period, government agencies, with the involvement of private companies, developed a total of 132,500 hectares of *new land*, mainly for oil palm cultivation, as shown in *Table 8-9*. Among the government agencies, the State Agriculture Development Corporations (SADC) of Pahang, Perak and Selangor were the major developers of new land involving 47,200 hectares, mainly on a joint-venture basis with private companies. In addition, the state DOA of Sarawak and Sabah developed 46,000 hectares, while the RDAs developed 27,000 hectares.

Agricultural Support Services

8.30 The modernization of the agriculture sector was further accelerated through improvements in the delivery of agricultural support services. These services were provided to encourage farmers to venture into commercial farming, adopt

TABLE 8-8

REPLANTING, LAND CONSOLIDATION AND REHABILITATION PROGRAMMES BY AGENCY, 1996–2005

(hectares)

Agency	*7MP*			*8MP*	
	Target	*Achieved*	*% Achieved of Target*	*Target*	*% of Total*
Replanting	**234,423**	**214,530**	***91.5***	**532,354**	***55.8***
Rubber Industry Smallholder Development Authority	139,315	137,472	*98.7*	109,260	*11.4*
Federal Land Development Authority	54,548	43,963	*80.6*	111,682	*11.7*
State Economic Development Corporations/Authority	16,788	11,294	*67.3*	20,054	*2.1*
Department of Forestry, Sarawak	10,000	9,000	*90.0*	257,500	*27.0*
Sarawak Land Development Board	5,574	4,541	*81.5*	-	-
Sabah Rubber Fund Board	4,490	4,498	*100.2*	7,000	*0.7*
South Kelantan Development Authority	1,311	1,121	*85.5*	7,928	*0.8*
Department of Agriculture, Sabah	595	830	*139.5*	4,910	*0.5*
Department of Agriculture, Semenanjung Malaysia	1,600	1,609	*100.6*	7,800	*0.8*
Regional Development Authority	202	202	*100.0*	3,220	*0.3*
Sarawak Land Consolidation & Rehabilitation Authority	-	-	-	3,000	*0.3*
Land Consolidation & Rehabilitation	**292,724**	**180,995**	***61.8***	**422,057**	***44.2***
Department of Forestry, Sabah	250,000	138,433	*55.4*	258,000	*27.0*
Federal Land Consolidation & Rehabilitation Authority	27,500	25,237	*91.8*	25,097	*2.6*
Sarawak Land Consolidation & Rehabilitation Authority	12,154	11,687	*96.2*	50,398	*5.3*
Department of Agriculture, Semenanjung Malaysia	2,540	4,544	*178.9*	87,562	*9.2*
Malaysian Cocoa Board	530	1,094	*206.4*	1,000	*0.1*
Total	**527,147**	**395,525**	***75.0***	**954,411**	***100.0***

new technologies and increase productivity. These services included R&D, training, extension and support services as well as the provision of credit facilities and basic infrastructure.

8.31 R&D activities were carried out to remove constraints in the agriculture sector, particularly low productivity and the shortage of labour. In the case of palm oil, the MPOB improved productivity through mechanization and the development of high-yielding dwarf oil palm. In addition, new products such as enriched margarine and oil blends including products from the blending of palm oil with goat milk were developed. MPOB also commissioned an Experimental

TABLE 8-9

NEW LAND DEVELOPMENT, 1996–2005
(hectares)

Agency	*7MP*			*8MP*	
	Target	*Achieved*	*% Achieved of Target*	*Target*	*% of Total*
State Agriculture Development Corporations	87,114	47,202	*54.2*	100,932	*27.6*
Private Companies	85,800	n.a	*n.a*	84,294	*23.1*
State Department of Agricultures[1]	53,963	45,855	*85.0*	89,692	*24.6*
Sabah/Sarawak Land Development Agencies	34,977	5,241	*15.0*	30,000	*8.2*
Regional Development Authorities[2]	10,311	27,157	*263.4*	12,641	*3.5*
State Economic Development Corporations[2]	6,466	1,565	*24.2*	26,036	*7.1*
Sabah Rubber Fund Board	5,000	4,686	*93.7*	5,000	*1.4*
Forestry Department	1,206	779	*64.6*	3,900	*1.1*
Aborigines Affairs Department, Malaysia (*Orang Asli* reserve)	-	-	-	12,774	*3.5*
Total	**284,837**	**132,484**	***46.5***	**365,269**	***100.0***

Notes:
[1] Refers to Negeri Sembilan, Perlis, Sabah and Sarawak.
[2] Includes joint ventures with private sector.
n.a: not available

Palm Oil Mill for commercial operation in 1999 to provide facilities for R&D on cutting-edge milling technologies and training. In addition, a Field Mechanization Research Centre was commissioned in 2000 to carry out R&D on farm mechanization. With regard to rubber, MRB concentrated research efforts to develop and further promote latex-timber clones (LTC) of the RRIM 2000 series to ensure the supply of rubber and quality timber for the rubber- and wood-based industries.

8.32 R&D activities undertaken by the Forest Research Institute of Malaysia (FRIM) focused on sustainable forest management and development of timber and non-timber forest products including medicinal plants. Other R&D activities by FRIM included research on agro-forestry plantation involving integration of timber species with agricultural crops, as well as forest plantations. Meanwhile, MCB concentrated its research efforts on biological pest control and more pest and disease resistant clones as well as product development of cocoa-based food, beverages, cosmetic and pharmaceutical products.

8.33 During the Plan period, MARDI concentrated its research on product development to produce superior varieties of rice, fruits, vegetables, livestock and floriculture as well as the commercialization of its research findings. Bio-technological improvements of palm-kernel cake as poultry feed, bio-fertilizer production from agro-waste materials, development of herbal products for health care and processing technology for the heart of palm from coconut and oil palm were among the areas given special focus. Pilot projects for commercial cultivation of vegetables and fruits were carried out to promote commercialization. The use of a specially formulated chemical fertilizer in trial plots in Kedah, Perlis and Selangor was successful in doubling padi yield and producing better quality rice. A new breed of beef cattle named *Brakmas*, a cross between the Brahman and local Kedah-Kelantan cattle, and sheep named *Malin*, a cross between Australian and Indonesian breeds, were developed in order to increase local supply of beef and mutton. In addition, MARDI also undertook research on deer and ostrich to provide alternative meat sources.

8.34 The disbursement of agricultural credits to smallholders as well as commercial operators was increased, particularly by Bank Pertanian Malaysia (BPM) and the commercial banks. Total loans disbursed during the period was RM2.8 billion, an increase of 35 per cent. The allocation for the Fund For Food (3F) was increased from RM700 million to RM1 billion and some revisions were made to the eligibility criteria and eligible sectors in order to improve accessibility to the Fund. In addition, a soft loan scheme totalling RM60 million was introduced to facilitate the replanting of oil palm for smallholders as well as to provide an exit scheme for them to replace rubber with oil palm. For rubber smallholders, a special RM80 million fund was provided to further promote the use of the Low Intensity Tapping System (LITS) to increase productivity and reduce labour inputs. With regard to training and extension services, the delivery system of various agricultural agencies was strengthened to provide more effective training to farmers. New approaches in farm management, agronomic practices, marketing, post-harvest handling and processing as well as the diffusion of new agricultural technologies were given emphasis. Farmer and fishermen organizations, including cooperatives continued to be encouraged to participate actively in agricultural activities including marketing and downstream processing.

III. PROSPECTS, 2001-2005

8.35 The agriculture sector is expected to register a higher annual rate of growth and contribute significantly to the country's economic development. Towards achieving growth with resilience, the sector will be restructured and

reoriented to increase productivity and competitiveness. This will require a major shift from small-scale, monocropping and low technology farming to that of large-scale, integrated and high technology production. Towards this end, a greater involvement of the private sector and organized farming will be promoted, particularly in food production. To generate new sources of growth, activities and crops with commercial potential will be developed and greater linkages will be established with other sectors of the economy.

Policy Thrust

8.36 During the Eighth Plan period, the thrust will be to transform the agriculture sector into a modern, dynamic and competitive sector in line with the strategies of the NAP3. The main strategies for agricultural development for the Plan period will be:

- *expanding food production substantially to meet growing demand with a view to reducing imports and increasing exports;*
- *promoting private sector participation in medium- and large-scale commercial food production through the establishment of more permanent food production areas such as agro-technology and urban-horticulture parks as well as satellite farms;*
- *intensifying aquaculture development both inland and open sea;*
- *intensifying land use by enhancing a wider crop mix, integrating food production with plantation crops and promoting agro-forestry activities;*
- *enhancing competitiveness of agricultural produce by further promoting cost and labour-saving technologies and accelerating downstream processing;*
- *intensifying R&D, particularly in yield improvements and development of more end-products from agricultural by-products and waste;*
- *consolidating oil palm hectarage to rationalize production and establishing standards for Malaysian palm oil to increase competitiveness;*
- *reorienting rubber as a strategic crop supplying timber for the wood-based industry as well as latex for the rubber-based industry;*
- *utilizing natural resources, particularly forestry resources, on a sustainable and environment-friendly basis and promoting linkages with other activities such as manufacturing, eco- and agro-tourism;*

- *developing activities and crops with commercial potential including specialty natural products, other non-timber forest products, biotechnology products, floriculture and ornamental fish;*

- *strengthening human resource development by promoting new skills such as those related to information and communications technology (ICT) and new technologies to generate skilled workers in line with the knowledge-based economy as well as by enhancing the skill and knowledge of agricultural frontliners; and*

- *enhancing the income of farmers and smallholders by strengthening support services, improving the delivery mechanism, increasing the accessibility of credits and establishing insurance coverage as well as increasing their direct involvement in downstream processing.*

Agricultural Production

8.37 The sector is expected to grow by 3.0 per cent per annum, as shown in *Table 8-1,* compared with a growth of 1.2 per cent per annum in the Seventh Plan. The improved forecast is attributed to the aggressive implementation of food and other commodities production programmes. In addition, the intensification of land use, improvements in agronomic aspects, farming methods and management will also contribute to the growth. However, commodities such as sawlogs and rubber are projected to experience a negative growth as less forest will be available for logging in line with sustainable forest management practices and a decline in the planted hectarage for rubber.

Food Commodities

8.38 Food production will be expanded substantially to cater for the growing demand in the domestic market and with the objective of reduction in the import bill as well as for exports. Value added of the subsector is expected to grow, mainly due to the increase in the production of major food commodities, namely fisheries, livestock, padi as well as fruits and vegetables. The increase in production will be achieved through new hectarage, greater land intensity as well as improvements in efficiency and productivity. In addition, a wider adoption of new technologies and the use of high yielding seeds and biotechnology will also contribute to the increase in food production. Toward this end, the participation of private sector in medium- and large-scale commercial operations will be enhanced through the establishment of more permanent production areas such

as agro-technology and urban-horticulture parks as well as satellite farms. Supporting infrastructure facilities and services such as farm collection and distribution centres, packing house facilities, cold rooms and wholesale markets as well as transportation services will be upgraded.

8.39 *Fisheries* production is expected to increase from 1.5 million tonnes in 2000 to 1.9 million tonnes in 2005, registering a growth of 4.2 per cent per annum. The potential of medium- and large-scale aquaculture, both inland and open sea will be harnessed by establishing more production areas and greater participation of the private sector. To improve the income of farmers and fishermen, they will be encouraged and organized to venture into commercial aquaculture. Infrastructure such as modern landing and processing facilities together with other supporting services will be expanded to encourage private sector participation. In addition, ornamental fish rearing will be actively promoted as a new source of income for the subsector.

8.40 *Livestock* value added is projected to grow by 5.6 per cent per annum, from RM1.1 billion in 2000 to RM1.5 billion in 2005, particularly through the adoption of new technologies and upgrading of existing production technologies. To meet the expanding local and export markets, the production of chicks and ducklings, processing and marketing of poultry and higher value added products will be further integrated. Poultry production is expected to increase by 4.8 per cent per annum, from one million tonne in 2000 to 1.3 million tonnes in 2005. The production of eggs is targeted to increase from 8.2 billion units to ten billion units with a growth of 3.9 per cent per annum during the same period. The production of beef and mutton is estimated to increase by 7.5 per cent per annum and 5.9 per cent per annum, respectively, from 28,000 tonnes and 1,000 tonnes in 2000 to 40,000 tonnes and 1,500 tonnes in 2005, due to improvements in the management system, breeding and disease control. The new breeds, namely *Brakmas* and *Malin*, will be promoted, particularly through the existing integration programmes with plantation crops to boost the local meat production. Pig production will be confined to pig farming areas (PFA) to control pollution and disease outbreaks.

8.41 *Padi* production is estimated to increase by 4.7 per cent per annum, from 2.2 million tonnes in 2000 to 2.8 million tonnes in 2005, contributing about 3.2 per cent of the growth in the food subsector. This will be achieved through productivity improvements where the average yield is targeted to improve from 4.5 to 7.0 tonnes per hectare for the granary areas and 3.5 to 5.5 tonnes per hectare for the non-granary areas. The participation of the private sector in opening up new land for commercial cultivation, particularly in Sabah and Sarawak, will further increase padi production.

8.42 *Fruits* and *vegetables* will continue to be given special focus because of their high development potential. Production of fruits and vegetables will be increased to meet domestic and export markets as well as to meet the demand of processing industries. Local demand for high quality fresh fruits and vegetables is expected to increase with the expanding population and higher purchasing power, while external demand is expected to increase due to promotional efforts in existing and new export markets. Permanent production areas including agro-technology parks, urban-horticulture parks, satellite farms and rubber-based integrated farming areas will be promoted to increase production. During the Plan period, the production of fruits is estimated to grow by 7.6 per cent per annum, from 1.3 million tonnes to two million tonnes, where priority will be given to nine types of fruits, namely mandarin orange, pineapple, jackfruit, papaya, carambola, mango, watermelon, guava and durian. The planted area for fruits is expected to increase by 5.0 per cent per annum, from 297,400 hectares in 2000 to 378,600 hectares in 2005. Efforts will also be taken to increase the production of quality vegetables through more intensive utilization of modern farming techniques such as rain shelters and insect proof structures, hydroponics, aeroponics, fertigation as well as post-harvest handling technology. Production of vegetables is expected to increase by 6.4 per cent per annum, from one million tonne in 2000 to 1.4 million tonnes in 2005, in tandem with the expected growth in planted area by 8.5 percent per annum, from 51,400 hectares to 77,300 hectares.

Agricultural Industrial Commodities

8.43 The agricultural industrial commodity subsector is expected to register a moderate growth during the Plan period. Production of CPO and palm kernel oil (PKO) is expected to increase at a rate of 2.8 per cent and 2.3 per cent per annum to 12.4 million tonnes and 3.8 million tonnes, respectively. The increase in production is attributed to the expansion in the matured area and improvements in the yield and oil extraction rate (OER). The planted area for *oil palm* is expected to decline at a rate of 2.2 per cent per annum to reach 3.1 million hectares in 2005 in line with the Government's policy to rationalize oil palm cultivation. Malaysian palm oil standards will be established to market the unique and high quality Malaysian palm oil.

8.44 The production of *rubber* is expected to decline by 1.9 per cent per annum, from 616,000 tonnes in 2000 to 560,000 tonnes in 2005, with the expected reduction in planted area due to conversion to other users as well as unfavourable prices. However, rubber cultivation will still be a significant contributor to the

sector's growth through the production of rubber wood for the wood-based industry. The subsector will be reoriented by encouraging the involvement of large-scale plantation in the downstream processing of rubber wood. A minimum of 20,000 hectares per year will be replanted with LTC to sustain the supply of rubber wood for the wood-based industry. The replanting and new planting of LTC will be integrated with other economic activities such as livestock rearing and fruit farming. The implementation of the mixed farming system, together with the wider utilization of LITS is expected to boost the income of land owners and rubber tappers. In this regard, funds for replanting and adoption of LITS will be provided.

8.45 *Cocoa* production is expected to increase by 7.4 per cent per annum, from 70,000 tonnes in 2000 to 115,000 tonnes in 2005 due to improved productivity. Export earnings from cocoa and cocoa-based products are also expected to increase to RM615 million in 2005. Domestic demand for cocoa beans is anticipated to increase due to expansion in downstream activities, in particular cocoa grindings.

8.46 *Pepper* production is expected to increase by 4.6 per cent per annum, from 24,000 tonnes in 2000 to 30,000 tonnes in 2005 due to better maintenance of farms and an expansion in planting areas to 12,500 hectares. The development and wider acceptance of end-products from pepper such as pepper sauce, sweets and confectionery as well as other food seasonings is expected to increase the demand for pepper.

8.47 Production of *tobacco* is expected to increase by 6.4 per cent per annum, from 11,000 tonnes in 2000 to 15,000 tonnes in 2005, while the area under cultivation is expected to decline by 3.6 per cent to 12,500 hectares. The increase in production is mainly due to yield improvements, which is estimated to reach about 1,900 kilogrammes per hectare in 2005. However, with market liberalization under the Common Effective Preferential Tariff (CEPT) of the ASEAN Free Trade Area (AFTA), the tobacco industry will be restructured and alternative crops promoted to generate additional income to growers and curers.

8.48 The conservation of biological diversity will continue to be given emphasis during the Plan period by expanding sustainable forest management practices. With the conservation efforts, *sawlogs* production is expected to decline by 2.4 per cent, from 23.9 million cubic metres in 2000 to 18.9 million cubic metres in 2005. The national guideline for tracking sawlogs and timber products as required in the timber certification system, will be further improved to meet international requirements. Greater focus will be given to increasing the productivity of forest resources to meet the expanding demand for raw materials from the timber-based industries. This will be undertaken through improved silvicultural

treatment, forest rehabilitation, afforestation as well as more intensified R&D and support services. In addition, the promotion and development of agro-forestry and forest plantations especially for rubber and other selected timber species will be intensified. The development of non-timber forest products including bamboo and rattan and timber by-products, will be promoted to increase value added and provide new sources of growth for the sector. Similarly, eco-tourism and related services will also be promoted to capitalize on the uniqueness of the tropical rain forest for recreation and education.

8.49 *Floriculture* is expected to register an annual growth of 6.5 per cent per annum during the Plan period with the production of cut flowers increasing from 500 million stalks in 2000 to 686 million stalks in 2005. The main increase in production will be from highland flowers and ornamental plants. Measures will be undertaken to improve the production of flowers at the farm level through high-tech farming methods and improved facilities in handling and transportation, particularly through the provision of larger air cargo capacity.

Specialty Natural Products

8.50 The emergence of various specialty natural product industries such as for health, cosmetics and flavour as well as fragrances, is expected to contribute to the development of high value added specialty natural resources. In this respect, R&D efforts will focus on the development of products from plants and aquatic-based organisms. To further develop the industry, a pool of researchers and support personnel will be trained in several key areas, particularly pharmaceutical, biotechnology, medicinal and industrial chemistry.

Employment

8.51 Employment in the agriculture sector is expected to decline by 1.5 per cent per annum, from 1.4 million in 2000 to 1.3 million in 2005. The value added per worker is projected to increase by 4.5 per cent per annum during the Plan period. Several subsectors will continue to experience labour shortages due to the slow adoption of mechanized and automated production systems and processes as well as other labour-saving technologies. With the changing structure and focus towards modernization of the agriculture sector, the demand for workers with technical competence and managerial skills, as well as techno-prenuership among farmers is expected to increase.

Restructuring of Agricultural Agencies

8.52 The restructuring of agricultural agencies will be continued to enhance their professionalism in providing technical and regulatory services, particularly to facilitate private sector involvement in medium- and large-scale agriculture production as well as to augment the income of their clientele. Corporatization of agencies such as FELDA, FELCRA and RISDA will be reviewed to ensure that the interest of the settlers and smallholders will not be effected. Measures will be taken to ensure that settlers and smallholders benefit from the involvement of these agencies in downstream and related industries through their subsidiaries and associated companies.

8.53 In addition, various departments under the Ministry of Agriculture (MOA) will be restructured in line with the newly developed MOA Incorporated (MOA Inc.) model, which among others, emphasizes the role of MOA frontliners in supporting the participation of the private sector. In this regard, the delivery systems of agencies such as FAMA, DOA, the Department of Veterinary Services (DVS) and Department of Fisheries (DOF), which are directly interfacing with the target groups will be enhanced. FAMA will be reoriented to strengthen agricultural marketing and will take a leading role in organizing farmers and smallholders involvement in marketing through establishment of contract farming and creating better lingkages with supermarkets and retailers.

Agricultural Programmes

In-situ and New Land Development

8.54 A total of 954,400 hectares of land will be developed *in-situ* through replanting, land consolidation and rehabilitation programmes by various agencies, as shown in *Table 8-8*. From this amount, a total of 532,300 hectares will be under replanting programmes and the remaining 422,100 hectares under the land consolidation and rehabilitation programmes.

8.55 During the Plan period, a total 365,000 hectares *new land* will be developed, as shown in *Table 8-9*. Of this total, SADCs and RDAs will develop 100,900 hectares or 27.6 per cent and 12,600 hectares or 3.5 per cent, respectively, which will mostly be developed jointly with the private sector. A big proportion of this land development will be in Sabah and Sarawak.

Agricultural Support Services

8.56 During the Plan period, agricultural support services, which include R&D, extension services, marketing, training, credit facilities as well as institutional support, will be further strengthened. R&D efforts will emphasize the development of more end-products from agricultural by-products and waste. In addition, R&D will focus on establishing means to increase the local processing of agricultural produce and on modern technologies to improve productivity and quality, as well as on commercialization of R&D findings. Managerial and organizational skills of the marketing institutions will be strengthened to further improve marketing services of agricultural produce in order to increase income of farmers and smallholders. In addition, an income augmentation mechanism as well as more income generating activities will be introduced to assist farmers and smallholders. Professional advisory and consultancy services, training and credit facilities as well as infrastructure will be extended to smallholders to increase their participation in commercial agricultural activities. Similarly, incentives and advisory services will also be extended to the private sector to encourage their involvement.

8.57 In the food subsector, R&D efforts will concentrate on developing new technology packages ranging from production to post-harvest handling and downstream processing. MARDI will focus on priority research areas including genetic improvement and pest management using biotechnology; post-harvest technology and mechanization; and development of value added products including end-products from agricultural by-products and waste such as coconut trunks, fronds and shells, coupled with attractive product packaging. In the fishery subsector, research efforts will emphasize genetic improvement, product development, new culture systems such as open and deep-sea cage culture, and treatment of water and effluents. R&D in livestock will be reoriented towards meeting the needs of the industry through collaborative research with the private sector, particularly in the area of automation in intensive livestock production, breed improvement as well as feed from local alternatives. MARDI, FRIM and other research institutions will also carry out research on commercial cultivation of kenaf, jojoba, herbs, spices and medicinal plants and development of herbal products for health care, food colouring and flavours, essential oils, phytomedicine and other specialty natural products.

8.58 In the industrial commodity subsector, MPOB will continue its research on oil palm, including breeding, harvesting, milling and refinery technologies, biotechnology, product development as well as utilization of oil palm waste and biomass. Likewise, MRB will continue to enhance research on a viable planting and crop-mix system, integrating rubber with other agricultural activities. As

part of the efforts to reorientate rubber as a strategic crop, a RM1 billion fund will be launched to provide allocation to smallholders to replant rubber using LTC, which will be integrated with food production activities. R&D for cocoa and pepper will concentrate on modern farming technology, new end-products and commercialization of research findings.

8.59 In the forestry subsector, R&D efforts in sustainable forest management and forest product development, including utilization of under-utilized species such as bamboo and rattan, as well as wood-waste and by-products, will be continued. In this regard, research activities will focus on diversifying the utilization of forest resources and promoting higher operational efficiency in the production system through the introduction of innovative and environment-friendly production and processing technologies.

8.60 In line with the knowledge-based economy, agricultural extension services and training will emphasize modern agronomic practices, management and techno-preneurship incorporating the use of ICT and modern technologies to improve productivity. In this respect, the new skills and knowledge required will be incorporated in formal and non-formal training programmes. At the tertiary level, courses on modern agriculture, especially estate management of mixed-farming enterprises will be introduced. In addition, training programmes and curricula of existing agricultural training institutes will be reorganized to train agricultural frontline workers in the latest technology and management techniques.

8.61 Agricultural investment is expected to increase during the Plan period, particularly in food production. The Government will undertake measures to increase accessibility of credit as well as introduce insurance coverage and services to support agricultural activities. In addition, the Government will continue to provide incentives such as soft loans to encourage investment in small-, medium- and large-scale operations, particularly by the private sector. BPM will continue to extend credit to encourage small farmers in food production, promote mechanization and automation as well as encourage the commercialization of R&D findings and development of new ventures. In addition, the terms and conditions of 3F will be reviewed to enable more farmers to benefit from the fund.

8.62 The Government will continue to provide basic physical infrastructure to modernize the agriculture sector as well as to encourage the participation of farmers in commercial food production. The drainage and irrigation system will be further upgraded to increase the efficiency of water utilization in the granary areas. In the fishery industry, the establishment of fishery complexes at Tanjung

Gemok in Pahang, Tok Bali in Kelantan and Batu Maung in Pulau Pinang will be accelerated to support the integrated fishery industry. At the same time, a new fishery complex will be developed at Tanjung Manis, Sarawak to cater for the potential fishing industry in the state.

IV. ALLOCATION

8.63 The total allocation of the various public agencies involved in agricultural development in the Eighth Plan is RM7.9 billion, as shown in *Table 8-10*. This allocation represents 7.1 per cent of the total Plan allocation of RM110 billion. The various provisions for extension and support services and infrastructure

TABLE 8-10

DEVELOPMENT ALLOCATION FOR AGRICULTURE, 1996–2005
(RM million)

Programme/Subsector	*7MP Allocation*	*7MP Expenditure*	*8MP Allocation*
New Land Development	475.9	475.9	274.2
Regional Development	812.9	807.0	570.1
In-Situ Land Development[1]	3,115.4	2,941.9	2,265.1
Forestry	144.4	143.8	225.2
Fishery	495.8	465.3	414.3
Livestock	223.6	176.3	127.5
Support Services[2]	409.5	354.3	719.0
Irrigation and Flood Mitigation	1,715.6	1,929.9	2,170.2
Other Programmes	893.8	844.9	1,094.4
Total	**8,286.9**	**8,139.3**	**7,860.0**

Notes:
[1] Includes IADPs, replanting scheme and land consolidation and rehabilitation programme.
[2] Includes agricultural credits, R&D (excluding allocation under IRPA), marketing and extension and other services.

programmes under the MOA, including *in-situ* development and irrigation and flood mitigation will receive significant allocations, reflecting the greater emphasis given to food production. The allocation for the industrial commodities subsector will concentrate on strenghening R&D as well as support services to increase the competitiveness of the commodities.

V. CONCLUSION

8.64 During the Seventh Plan period, the agriculture sector recorded an improvement in real value added and proved to be a resilient sector during the economic downturn. The thrust of agricultural development during the Eighth Plan period will continue to be guided by the NAP3 to become a modern, dynamic and competitive sector. While efficiency and productivity improvements will be achieved through modernization and mechanization of agricultural activities as well as through the active participation of the private sector, focus will be given on food production to meet growing demand and reduce the import bill. Specialty natural products from forest and other sources will be developed on a sustainable basis in line with the effort to conserve resources. In the industrial commodities subsector, oil palm cultivation will be rationalized while rubber will be reoriented as a strategic crop.