

CHAPTER VII

Agriculture and Rural Development

249. The development of agriculture will continue to be given strategic importance by the government, for progress in this sector is crucial to the overall development of the economy. The primary reason for this is that agriculture presents significant opportunities for generating increases in national income and employment. A considerable extent of undeveloped land, sizable unexploited forest reserves and a wide range of possibilities for new and improved lines of production in the rural economy all contribute to these opportunities. Furthermore as a majority of the population depends on agriculture for a livelihood, significant increases in *per capita* income and purchasing power in this sector will lead to a rise in total effective demand which in turn will contribute to accelerated growth in economic activity throughout the country. Concurrently, a prosperous and rapidly growing agricultural sector will lead to increases in food and raw material supplies which will help enhance export capacity and enlarge opportunities for viable industrial development. Significant expansion of food supplies will also raise nutrition levels and insure against increases in the cost of living.

I.—PROGRESS DURING 1960-65

250. Efforts exerted in the recent past both by government and private enterprise have resulted in a considerable degree of agricultural development. A brief review of the progress which has been achieved in the last five years serves to indicate the positive strides which have been made in agricultural development.

251. The growth in production of a number of commodities in the agricultural sector is shown in Table 7-1. Agricultural production grew at the rate of 4.8% per annum between 1960 and 1965. This is 1.8% higher than the rate of population growth but 1.6% lower than the rate of growth of gross domestic product at constant factor cost.

TABLE 7-1
MALAYSIA: PRODUCTION INDICES, 1960-65

(1960=100)

Commodity	Weights* (%)	1961	1962	1963	1964	1965	Annual growth rate 1960-65 (%)
Rubber	62	103	105	110	114	117	3.2
Palm oil and kernels	2	103	117	135	132	149	8.3
Copra	4	94	84	81	76	71	-7.0
Padi	8	108	103	111	99	112	2.3
Pineapples	11	100	109	118	139	152	8.7
Tea		103	110	106	111	117	3.4
Sago flour		122	156	180	222	241	9.2
Pepper		210	239	228	180	236	18.8
Hemp		111	92	97	108	116	3.0
Fresh fruit		n.a.	n.a.	n.a.	n.a.	120	3.6
Fresh vegetables		n.a.	n.a.	n.a.	n.a.	118	3.4
Tobacco		n.a.	n.a.	n.a.	n.a.	122	4.1
Livestock (including poultry)	4	112	124	133	142	154	9.1
Fish	5	109	122	132	138	144	7.5
Timber (round)	4	107	114	137	155	166	10.8
Aggregate production index	100	105	107	115	120	127	4.8
Export production index	75	104	107	115	122	128	5.1
Domestic production index	25	107	108	114	111	121	3.8

252. The growth of production of domestically consumed products was in the region of 3.8% per annum, indicating that production not only kept pace with population growth but that there was some import substitution. The output of livestock and fish products expanded at impressive rates: 9.1% and 7.5% per annum respectively. The rate of growth in the output of export commodities was 5.1% per annum. In this group, oil palm production expanded at 8.3%, pineapples at 8.7% and round timber at 10.8% per annum. With regard to the last item, the most rapid increases took place in Sabah and Sarawak as a result of growth in export demand.

253. The structure of the agricultural sector, however, remains heavily biased towards natural rubber. The fall in the unit price of rubber from 107 cts per lb in 1960 to 69 cts in 1965 reduced value-added in rubber production from \$1,233 million to \$1,015 million in Malaya. Although the encouraging rate of growth of output of other commodities is gradually reducing the relative importance of rubber in the sector, the

* The weights selected are the value-added by each commodity expressed as a proportion of the total net output of the agricultural sector in 1960.

rise in value-added of these other commodities was barely sufficient to offset the decline in rubber. Consequently value-added in current prices by the entire agricultural sector grew at a rate of only 0.3% per annum. Progress in each major line of agricultural activity is discussed in the following paragraphs.

RUBBER

254. The output of rubber, the most important agricultural commodity in the economy, increased from about 778,000 tons in 1960 to an estimated 913,000 tons in 1965. Despite the substantial increase in physical production, however, the value of exports declined from about \$2,000 million in 1960 to an estimated \$1,455 million in 1965, reflecting the drop in unit price during the same period.

255. This drop in the export unit price was brought about by strong and increasing competition from synthetic rubber. The intensity of this competition is evidenced by decreases in the cost of production of synthetic rubber and the widening range of uses in which synthetic rubber can be substituted for natural rubber. In fact, synthetic rubber has since the end of World War II accounted for an increasing share of total rubber consumption outside the Communist countries. This share expanded from 47% in 1960 to 55% in 1964.

256. Output in Malaya increased from about 706,000 tons in 1960 to an estimated 824,000 tons in 1965. This increase was due primarily to the attainment of maturity by high-yielding rubber trees planted during the 1950s under the rubber replanting programme. Taking estates and smallholdings together, the average annual yield per acre increased from 545 lbs in 1960 to about 675 lbs in 1965.

257. The total annual acreage planted and replanted increased from 192,000 acres in 1960 to 251,000 in 1963. In the last two years, it dropped to about 220,000 acres in 1964 and 200,000 acres in 1965 because of the substantial completion of replanting by estates. Smallholders' planting and replanting increased from 95,000 acres to 140,000 acres during 1960-65. This increase has been primarily the result of the smallholders rubber replanting programme and the activities of the Federal Land Development Authority (FLDA), as well as those of fringe alienation and other programmes in opening up new land for rubber cultivation. It is estimated that about 80% of total estate acreage and about 50% of smallholding acreage will be under high-yielding material at the end of 1965.

258. Prior to 1962 the replanting grant for smallholders was \$600 per acre. In view of the insufficiency of the grant for a substantial proportion of smallholders, it was raised to \$750 per acre for smallholders with more

than five acres and \$800 for those with five acres and under. The increased number of smallholders wishing to plant and replant with the assistance of the increased grant has been most encouraging.

259. Rubber output in Sarawak fluctuated between 44,000 tons and 50,000 tons during the period. Output in 1965 is estimated at 49,000 tons. The industry consists almost entirely of smallholders. The average yield is about 350 lbs per acre and management and cultivation practices are poor. A subsidized rubber planting scheme was introduced in 1956. Subsidies are at the rate of \$400 per acre for new planting and \$600 per acre for replanting. About 80,000 acres will be planted with high-yielding material by the end of 1965 under the scheme, making up about 30% of total acreage.

260. The output of rubber in Sabah increased slightly from 22,000 tons in 1960 to 25,000 tons in 1965. However, planting and replanting with high-yielding material have been widespread under the impetus of subsidized government schemes. Grants are at the rates of \$120 per acre for new planting and \$550 for replanting. Acreage under high-yielding material increased from 65,000 acres in 1960 to 131,000 in 1964, thus making up about 54% of total acreage. Much of the high-yielding material planted should come into production in the next five years. A difficult problem which confronts the industry and which must be solved as a matter of urgency is the acute shortage of labour for tapping. It is estimated that 10,000 more workers are needed.

PADI

261. Padi, the staple food of the population, occupies the largest acreage planted in the agricultural sector after rubber. Output increased from about 940,000 tons in 1960 to 1,050,000 in 1965, an annual rate of 2.3%. About 80% of total output is produced in Malaya.

262. Production of padi in Malaya increased from 760,000 tons in 1960 to 860,000 tons in 1965, although it fell significantly from 850,000 tons in 1963 to 730,000 tons in 1964 because of abnormal weather conditions during the latter year. Domestic output satisfies about three-fifths of total consumption. Increased production over the five-year period has been brought about by a number of factors. The acreage harvested increased from 800,000 acres to 840,000 between 1960 and 1965, while the acreage double-cropped rose from 11,000 acres to an estimated 57,000 acres. There has also been an increase in average yields per acre. The average yield of wet padi rose from 399 gantangs per harvested acre in 1960 to 420 in 1965. The expansion of drainage and irrigation facilities together with the provision of subsidies for fertilizers and improved seeds have played a

major role in the above achievements. With the recent introduction of new varieties such as Malinja and Mashuri, further notable advances in the productivity of padi cultivation can be expected in the years ahead. Significant progress was also made in improving storage and milling facilities. 263. In Sabah the rate of output growth was 2.8% per annum, while in Sarawak production appears to have grown at 1.5% per annum. Headway was made in increasing wet padi cultivation as part of the policy of settling hill people and coastal and riverine people, whose lot can be improved by giving them a secure basis on wet padi land. However, both States will continue for some time to depend on imports for about half of their consumption requirements.

COCONUTS

264. Unlike the other major agricultural products in the economy, which experienced some degree of growth in output, overall copra production declined from about 141,000 tons in 1960 to 107,000 tons in 1965. This decline is entirely attributable to the fall in Malayan output, since production in the Borneo States increased during the period. The output decline in Malaya was due to decreasing yields as a result of the deterioration of coconut holdings, poor management and the high proportion of unproductive palms. However, attention was given during the period to the initiation of programmes for the rehabilitation of the industry and the replacement of old coconut palms with new high-yielding varieties. Increases in production should be achieved by the end of the 1960s as a result of these efforts. Some progress was also effected in the inter-cropping of coconuts with other crops, such as pineapples, bananas and maize.

OIL PALM

265. The cultivation of oil palm is at present concentrated in Malaya. The estate acreage in Malaya expanded from 135,000 acres in 1960 to about 200,000 acres in 1965; in addition about 26,000 acres were planted in FLDA land settlement schemes. Production of this crop grew more rapidly than that of any other agricultural commodity, increasing from about 90,000 tons in 1960 to an estimated 135,000 tons in 1965. Yields on the larger estates have exceeded expectations, being about 10 tons per acre.

266. The potential for extensive cultivation of oil palm is also good in Sabah and Sarawak. The exploitation of this potential has already begun in Sabah, where acreage has increased from 1,000 acres in 1960 to 20,000 acres in 1965.

OTHER FOOD CROPS

267. Growth in the production of other food crops averaged more than 3% per annum over the five-year period. In Malaya the acreage under tapioca, sweet potato, sago, sugar-cane, etc. increased from 118,000 acres to 152,000 acres between 1960 and 1964, while that under fruits such as pineapple, banana, durian, rambutan, mangosteen and citrus rose from 213,000 acres to 223,000 acres. In addition progress was made with regard to yield and quality and also in the development of suitable methods of processing and utilization. Under the subsidized fruit rehabilitation scheme, 7,116 acres of fruit holdings were planted with high-yielding trees while 10,770 acres were replanted or rehabilitated.

LIVESTOCK

268. Livestock production is estimated to have grown by 9.1% per annum. The most striking progress took place in the poultry and pig industries. In Malaya poultry production more than doubled and egg production nearly trebled between 1960 and 1965. With the significant increases achieved in poultry production, imports of poultry remained stable at about two million birds from 1960 to 1964, despite the fact that poultry consumption in Malaya increased from 5 lbs *per capita* to 12.5 lbs over the same period. Imports of eggs for domestic consumption fell from 165 million in 1960 to 68 million in 1964 although average consumption rose from 30 eggs per annum to about 100 eggs. The production of pork rose by 22% between 1960 and 1965. In Sabah the value of pig production increased from \$4 million in 1960 to \$5 million in 1965. The output of beef in Malaya increased by 30% over the period 1960-65, while mutton registered no growth.

269. The initiative of the private sector in bringing about the above achievements has been well sustained by the efforts of local feed companies and the implementation of government schemes through which breeding stock and other services have been provided. Furthermore, the success with which the disease of Ranikhet has been brought under control has facilitated the undertaking of specialised large-scale operations in poultry and egg production.

FISH

270. The volume of marine fish landed increased from 160,000 tons in 1960 to about 218,000 in 1964 with the bulk of the catch from Malaya. During the period concerned, landings in Malaya rose from about 140,000 tons to 190,000. This expansion is the result of the mechanization of fishing boats, widespread use of nets made of synthetic fibre, which yield better catches and are easier to operate, and improved fishing techniques. At the

same time, the production of fresh water fish increased from 24,500 tons to 25,500 tons, while the acreage of fish ponds expanded from 1,200 acres to 2,400.

271. The period 1961-65 also witnessed the advance of fish processing with the production of frozen tuna and fish meal in Penang, frozen fish in Perak and frozen prawns in Sabah.

LAND DEVELOPMENT

272. Together with the advances which were achieved in the output of the nation's principal agricultural commodities, considerable progress was made in bringing new land into cultivation, thus facilitating the attainment of a greater contribution by the agricultural sector to national economic development in the years ahead.

273. It is estimated that in Malaya 124,000 acres were opened up during 1961-63, providing for the settlement of 21,000 families. In addition, 116,000 acres of new land were opened to supplement the existing holdings of 23,000 farm families. The major part of new settlement was the result of the operations of the FLDA, under which 145,000 acres were opened during 1961-65, providing for new settlement of 12,000 families. The remaining part of land development activity was mainly the result of fringe alienation, controlled alienation and new block planting schemes of state governments.

274. In Sabah at the end of 1965, some 150 minor land development schemes and 15 major land development schemes are in progress and a further five major schemes are under investigation. These major land development schemes provide for planting rubber and oil palm. They will cover approximately 51,000 acres and cater for about 4,000 families.

275. In Sarawak two main schemes were undertaken. One was to assist the migration of native farmers from regions in which there was a land shortage to areas where land was more plentiful. The second was to assist farmers to settle on a former rubber estate. With the commencement of the 1964-68 State Development Plan, a more vigorous effort has been initiated for land settlement.

II—LONG-TERM OBJECTIVES

276. In the light of the natural resource pattern of the economy, it is imperative that, despite the progress which is already being made, agriculture should play an even more important role in the overall growth of the economy. To enable this requirement to be met, it is necessary over the long-term to obtain:

- (i) an accelerated expansion of output and employment in the agricultural sector by increasing the land area under cultivation;

- (ii) a progressive increase of *per capita* output and income in the agricultural economy by raising the productivity of all factors of production employed in the sector;
- (iii) a broadening of the base of the agricultural sector to ensure that its annual contribution to overall development will be less subject to the market vicissitudes confronting individual commodities, especially rubber;
- (iv) an enhancement of the ability of the agricultural sector to stimulate industrial development through the production of those commodities which make possible the viable development of agriculturally-based industrial enterprises.

277. Available evidence indicates that these long-term objectives can be attained. It has been established that in Malaya there are some 9.4 million uncultivated acres of land suitable for agriculture. Of these, about a third are thought to be of especially high fertility. Wide differences exist among holdings in the yields of several crops and average yields of some crops are low as compared with average yields in other countries. These facts suggest that a wide scope exists for increasing average crop yields through more attention to soil fertilization, weed control, varietal improvement, insect and disease control and water supply and drainage. Furthermore, there is much scope for increasing productivity per unit of land and labour through off-season cropping, inter-cropping and mixed farming with animal husbandry.

278. The prospects for agricultural diversification are also good. By the end of the decade some headway will have been achieved in crops such as oil palm, rice, sugar and fruit. With the intensification of research into those crops which are currently grown but are not cultivated on a commercial scale, further possibilities for exploitation will arise in time.

279. As for the creation of linkages between agriculture and agriculturally-based secondary industries, there are promising possibilities for the encouragement of fertilizer, animal feed and food industries. Particularly promising food industries include dairy products and other processed foods as well as tapioca starch industries.

III.—PROBLEMS OF AGRICULTURAL DEVELOPMENT

280. Exploitation of the scope that exists for attaining the long-term objectives, however, calls for attention to the following formidable problems.

- (i) There is currently inadequate technical capacity in the government and the private sector for bringing about the enlargement and

strengthening required of the agricultural economy. A massive commitment to agricultural research and education is therefore imperative.

- (ii) The price prospects for natural rubber, which is the mainstay of the agricultural sector and of the whole economy at present, are not bright. If the contribution of agriculture to national economic development is to be increased, diversification of agricultural production is imperative. This process, which is already underway, must be accelerated.
- (iii) There is a lack of incentives for many individual agriculturalists to expand their enterprises and to improve their techniques of production. This problem arises from limited know-how, the small size of production units, high marketing costs both for inputs and outputs, lack of credit on reasonable terms and unfavourable tenure relationships. In Sabah and Sarawak a special problem is the practice of shifting cultivation by a large part of the rural population, resulting in inefficient use of land.

IV.—OBJECTIVES OF AGRICULTURAL DEVELOPMENT, 1966-70

181. In the light of the above problems, the First Malaysia Plan will:
- (i) increase the quantity and enhance the quality of agricultural educationists, researchers and extension agents so as to expand the number of skilled farmers and improve the skills of all individual members of the agricultural community;
 - (ii) support on an intensive and continuing basis research on agricultural, forestry, fisheries and livestock products so as to break presently known yield barriers and develop improved patterns of production, processing and marketing that will utilize most economically the human, land and water resources of the country;
 - (iii) stimulate the adoption by the agricultural community of improved practices and patterns of production over as much of the present and future cultivated area of the economy as possible and encourage diversification;
 - (iv) increase the acreage under cultivation in the country, not only to expand physical production but also to provide employment opportunities for the rapidly growing rural population;
 - (v) correct existing institutional shortcomings in the fields of land tenure, credit, the processing of agricultural commodities and marketing so as to enable the agricultural community to be

adequately rewarded for its efforts and to have access at reasonable cost to the means of production.

282. The shortage of skilled agricultural specialists and the deficiency of applicable agricultural knowledge are the most stringent limitations on output growth. Within the framework of the above objectives, the main emphasis of the First Malaysia Plan will therefore be given to building up agricultural education and research.

283. The relative concentration of effort that is planned for agricultural education and research during the period of the First Malaysia Plan, however, does not mean that little attention will be given to the other objectives of agricultural development. Excluding the provision of government grants for rubber replanting in Malaya, more resources than were expended in the last five years will be devoted to extension services and to the provision of direct economic incentives, particularly to the small-holding community. But, in view of the limitation of qualified staff, it will not be possible to undertake so extensive a programme as is desirable. It is envisaged that by concentrating attention on strategic economic areas it will be possible not only to bring about significant output increases in these areas but also to generate demonstration effects on agricultural practice in neighbouring areas. With the experience gained by the government in these experimental areas and the increased output of extension personnel during the next few years, the government will be in a strong position in the Second Malaysia Plan period to implement further extension and incentive programmes that will cover a larger proportion of the countryside.

284. The government programme for land development will also be larger than that undertaken in the last five years. In addition, private estate development will be encouraged. The main obstacles to the implementation of a more sizable programme are shortages of trained managers and extension workers to run the land development schemes. However, with the successful implementation of the agricultural education and research programmes during the next five years, which will increase the output of such personnel, the government and the private sector will be in a position to undertake a much larger programme of land development under the Second Malaysia Plan than is envisaged for the next five years.

285. Recognizing the stultifying effects which existing institutions have on the motivation of individual agriculturalists to improve their lot, the government will continue to strive to bring about the necessary modifications in the institutional structures of credit, land tenure and marketing. The rural co-operative movement and Bank Bumiputra will be strengthened and given the facilities required to improve the availability of rural credit. Once these

steps are taken, rural producers will have greater access to agricultural credit at reasonable cost. Rural producers will also benefit from the activities of the Federal Agricultural Marketing Authority (FAMA), whose function will be to ensure that the agricultural community obtains a fair reward for its productive efforts. With regard to land tenure, arrangements will be made through the Federal Land Consolidation and Rehabilitation Authority (FELCRA) to extend existing holdings to economic size. In addition, land tenancy legislation will be strengthened. At present, high rentals and insecure tenure reduce motivations for improvement. The adoption of better farm practice is impeded because farmers' net incomes are depressed by the level of rents to an extent which leaves no margin for saving or investment. The tenant also lacks that minimum security of tenure which would encourage him to invest savings in improvements or would encourage a creditor to grant a loan.

V.—PHYSICAL PRODUCTION TARGETS

286. As the agricultural programme for 1966-70 is principally geared to the creation of the requisite capacity for accelerated development in the future and as the major agricultural commodities to be promoted are perennials with long gestation periods, investment during the next five years will not in general yield results until later. Output growth during the period 1966-70 will be mainly the result of investment in the last few years. Some of the 1966-70 investment in short-term crops, however, will produce returns during the Plan period. An indication of the principal production targets is given in Table 7-2.

287. Rubber production will increase by 37% between 1965 and 1970 or at an average annual rate of 6.6%, as a result of the high rate of rubber replanting in the last seven years. Planting and replanting with high-yielding material during this Plan period will generate further increases after 1970.

288. The output of rice is expected to increase at an even higher rate. With the recent completion of several important irrigation and drainage schemes, increased double-cropping and improved yields, output will expand by 7.6% per annum between 1965 and 1970. Despite the increase of population, this will enable the share of domestic production in total consumption to rise to over 70% in Malaya. However, Sabah and Sarawak will continue to be heavy importers.

289. Of all agricultural commodities, the most impressive increase is expected to be shown by oil palm, for which output is likely to increase by about 14% per annum. With the continued replacement of rubber with oil palm on many estates and sharp increases in new planting, particularly in government land development schemes, the output of oil palm products will

TABLE 7-2
PROJECTED PRODUCTION INDICES, 1965-70
(1960=100)

Commodity	Weights (%)	Indices		Annual growth rate (%)
		1965	1970	
Rubber	62	117	162	6.6
Palm oil and kernels	2	149	285	13.9
Copra	4	71	75	0.9
Padi	8	112	162	7.6
Pineapple	11	152	245	7.9
Tea		117	134	2.9
Sago flour		241	333	6.8
Pepper		236	297	4.7
Hemp		116	130	3.0
Fresh fruit		120	156	5.4
Fresh vegetables		118	146	4.3
Tobacco	4	122	158	5.3
Livestock (including poultry)		154	200	5.5
Fish		144	192	6.0
Timber (round)	4	166	180	1.6
Aggregate production index ..	100	127	166	5.5
Export production index ..	75	128	166	5.3
Domestic production index ..	25	121	166	6.6

continue to grow very rapidly during the period 1970-75. The output of timber is conservatively expected to increase by 1.6% per annum over the next five years. Malayan timber output will increase at about 7% per annum with the implementation of the new forest policy and accelerated land clearance. Output from Sabah is envisaged to grow much less rapidly than in the recent past, when licences for timber clearance were given out very freely. Sarawak swamp forest output will fall following a reduction in the maximum permissible rate of exploitation but production from the hill forests has been increasing rapidly and this growth may continue for some years.

290. With increased logging, considerable expansion is expected in local wood processing industries, particularly in Malaya. This will enable import substitution and export expansion to be accelerated in wood products, particularly plywood.

291. The output of fresh fruit and vegetables is projected to grow by 5.4% and 4.3% per annum respectively. The principal influence will be population

growth, import substitution and growing export possibilities for some products such as bananas.

292. The annual rate of growth of output of livestock products is projected to be 5.5%, while that for fish is likely to be about 6%. These rates are lower than those experienced during the past five years, when output expanded by 9.1% and 7.5% annually. The main reason for the lower growth rates expected is that many opportunities for import substitution have been exploited and future output expansion will be geared mainly to the growth of domestic demand. However, as progress takes place in the processing of such products export possibilities should emerge, with consequent inducement for further expansion of output.

VI—PROGRAMMES UNDER THE FIRST MALAYSIA PLAN

AGRICULTURAL RESEARCH

293. Applied research will be given pre-eminence over basic research. The existing inventory of facts and information discovered by basic research all around the world is vast. Furthermore, to the extent that this information is generally valid and capable of being transferred from other more developed countries, Malaysia can concentrate on applied research which seeks to use the results of basic research to solve specific Malaysian problems. This endeavour will continue to be a co-operative one among the government, statutory bodies, the University of Malaya and private organisations.

294. As the availability of manpower for agricultural research is severely limited, the government's programme in the coming five-year period will be guided by the following priorities. First priority will be given to research on inter-cropping, off-season cropping and mixed farming and to problems relating to processing and marketing, as negligible attention has been given to these matters in the past. Second priority will be given to research on those local crops for which insufficient detailed research has been undertaken so far but which probably can be grown on a larger scale in the country. Third priority will be accorded to crops which are widely cultivated at present, so as to raise their maximum expected yields. The fourth priority will be devoted to investigations into those crops which are less known locally.

295. Within the framework of the priorities set out above, the allocation for research in Malaya is \$16.6 million. The allocation covers rice and rice-field crop research, dryland-crop research, research into the production and processing of food crops, soil surveys and soil fertility and conservation studies. The corresponding allocations for Sabah and Sarawak are \$4.5 million and \$1.7 million respectively.

PLANT PROTECTION SERVICE

296. A sum of \$0.4 million will be spent for the establishment of checking stations at the main entry points into Malaya to prevent the entry of plant material which may be carrying dangerous pests and diseases.

AGRICULTURAL EDUCATION

297. The amounts to be expended are \$31.9 million for Malaya, \$0.8 million for Sabah and \$4.9 million for Sarawak. The programme will be geared to expanding the output of extension workers, field supervisors and specialists. The ultimate objective is to have one extension worker for every 500 acres, one field supervisor for every four extension workers and one professional specialist for two to three field supervisors. For this purpose the allocations are to be used for the establishment of 12 agricultural schools at upper-secondary level in Malaya, the expansion of the College of Agriculture at Serdang, the establishment of a second agricultural college on the East Coast of Malaya and the expansion of the Faculty of Agriculture, University of Malaya.

298. In Sabah 16 rural training centres have already been established and a further six centres will be set up, providing one training centre for every district in the State. For Sarawak, five Farm Institutes are to be set up to provide training for primary school leavers. In addition, short-term practical agricultural and home management training will be given to farmers and their wives, the former at agricultural stations and the latter at Women's Institutes. The Joint Agricultural Training School, currently under construction, will help increase the output of extension workers.

299. To ensure adequacy in the number of middle-level agricultural personnel in Sabah and Sarawak and to ensure the establishment of a sufficient base of potential entrants for training at the professional level, an allocation has also been made for work to commence on a third agricultural college to be located in either Sabah or Sarawak towards the end of the Plan period.

AGRICULTURAL EXTENSION

300. A sum of \$10.6 million will be spent in Malaya for the provision of accommodation, transport and training facilities for extension agents and the provision to Farmers' Associations of pest control equipment, water pumps and accessories, harvesting and processing equipment and drying and storage facilities. Through the provision of such equipment, extension agents will endeavour to educate farmers in the use of modern technology in the production and processing of their crops.

301. The allocations for improving and expanding accommodation, transport and training facilities for extension agents in Sabah and Sarawak are \$0.4 million and \$1.5 million respectively.

CROP SUBSIDIES

302. The agricultural crop subsidy programmes have been established to stimulate the adoption of improved farm practices. In view of the low incomes of a majority of the farming community, it is necessary not only to educate farmers in the use of improved techniques but also to subsidize purchases of some of the inputs required by the new methods. Subsidies are to be given for the cultivation of rubber, padi, oil palm, fruit, coconut, citrus, banana, maize, groundnut, cashew-nut, pineapple and coffee. Of these crops, only rubber, padi, fruit, coconut and pineapple have been subsidised in the past; the cultivation of the remaining crops is to be encouraged for the first time, in line with the policy of government to stimulate diversification of agricultural production. These programmes call for allocations of \$128.9 million for Malaya, \$6.0 million for Sabah and \$81.2 million for Sarawak.

303. The major subsidy programme of the government will continue to be the rubber replanting programme, under which land planted with low-yielding rubber may be replanted with high-yielding material or with certain other crops including oil palm. In Malaya, under the existing scheme which will terminate in 1970 and for which \$94 million is allocated, it is estimated that in the estate sector about 220,000 acres will be replanted with rubber and 65,000 acres with other crops, mainly oil palm, and that about 300,000 acres of smallholding land will be replanted while 50,000 acres will be newly planted with rubber. With both estates and smallholdings, the annual rate of replanting will be lower than in the previous five years because of the substantial acreage that is already in high-yielding material. The acreage under high-yielding rubber on estates will increase from about 78% to about 89%, while the corresponding increase on smallholdings will be from about 50% to 65%.

304. About 54% of the total rubber acreage in Sabah of 250,000 acres is now under high-yielding material. The allocation to Sabah of \$5.3 million is for the planting of an additional 40,000 acres and replanting of 5,000 acres. In Sarawak about 30% of the total acreage under rubber is in high-yielding material. The allocation of \$61.0 million during 1966-70 is to finance planting and replanting of 105,000 acres.

305. The government is confident that the Malaysian natural rubber industry can continue to remain viable and productive in the foreseeable

future despite the competitive challenges it faces. This belief is held despite the realisation that the technology of synthetic rubber production will continue to improve and the world output of synthetic rubber and natural rubber combined will probably increase at a more rapid rate than world demand, driving prices downwards. Progress in rubber replanting and continuation of aggressive research into high-yielding hybrids, production techniques and uses of natural rubber will permit costs to be lowered so that Malaysian natural rubber can continue to be sold profitably at lower prices. As a result of these efforts, Malaysian natural rubber will continue to earn a net return for producers for many years to come.

306. At the same time, the possibility must be kept in mind that on many acres of Malaysian land some crop which will be more profitable than rubber can be grown. Oil palm appears at present to be one such crop in some cases, since it will probably yield higher net returns than rubber in the future and in any case offers an excellent opportunity to diversify Malaysian agriculture and reduce the risk involved in too heavy dependence upon rubber. The government has therefore adopted a policy of encouraging estates and smallholders to replace low-yielding rubber with oil palm rather than with high-yielding rubber wherever soils are suitable. The government has also ensured that FLDA plant oil palm rather than rubber in its land development schemes wherever this can be done.

307. Certain recent studies projecting commodity price trends even suggest that some of the land currently planted with high-yielding rubber might be more profitably used for oil palm. In fact, some estates have already begun to uproot young, recently replanted rubber and replace it with oil palm. The government is continuing to study the economics of this course of action and there is a possibility that in some cases it would be desirable to replace even recently replanted rubber with oil palm.

ANIMAL HUSBANDRY

308. The animal husbandry programme involves \$28.0 million for Malaya, \$2.1 million for Sabah and \$3.7 million for Sarawak. This allocation is for research into ways of improving livestock production both quantitatively and qualitatively, education of farmers in poultry raising and animal husbandry, implementation of direct promotional measures at the farm level for improved livestock management and production practices, maintenance of an efficient animal health service and development of dairy colonies and grazing reserves.

309. An Animal Production Institute will be established in Malaya for research into pastures and the physiology and production of fast maturing

livestock. At animal husbandry stations throughout the country, the number of which will be increased during 1966-70, breeding schemes will be undertaken for the development of improved breeds of goats, sheep, buffalo, dairy cows, beef oxen and pigs.

310. The transmission to farmers of the results of the research activities of the government and knowledge pertaining to improved techniques of livestock husbandry and poultry raising will be carried out through extension services and training courses at animal husbandry stations and veterinary centres throughout the country. Provision has been included for the establishment of several additional veterinary centres.

311. With the object of assisting farmers to use improved breeds, selected stock of oxen, poultry, buffaloes and pigs will be distributed. In addition, the artificial insemination service in Malaya will be extended by the establishment of centres throughout the peninsula.

312. Continuing with the maintenance of an efficient animal health service, the quarantine stations at Port Swettenham and Butterworth will be expanded and quarantine kennels will be established at Kuala Lumpur and Johore Bahru and in Sabah and Sarawak.

313. Grazing reserves will continue to be developed in Malaya and Sabah. The development of two dairy colonies at Batu Arang in Selangor and Pantai in Negri Sembilan will be completed. The two schemes will cover about 2,800 acres and accommodate about 2,800 head of cattle. Besides the advantages of resettling dairy farmers and improving their production methods, the project will be useful for experimentation into large-scale tropical dairy farming.

314. At the moment few of the by-products of the animal slaughter industry are fully used. This represents a potential which can be tapped with significant income and employment effects. In order to demonstrate the economic and technical feasibility of animal by-product industries, the Federal Veterinary Department will operate in Malaya an abattoir service on a pilot basis. This service will undertake the slaughtering of meat animals on proper lines and the utilisation to the fullest extent possible of by-products. In conjunction with a co-operative association of poultry producers, a pilot poultry processing plant will also be established with facilities for cold storage. Such co-operative activity will enable producers to get a higher return for their efforts and overcome their marketing problems.

FISHERIES

315. The fisheries programme is aimed at expanding research; training fishermen to be more competent; assisting them to avail themselves of

improved equipment, gear and other facilities; helping producers to improve processing and marketing methods; and establishing the necessary infrastructure facilities for large-scale and efficient marine fishing. The programme amounts to \$17.0 million in Malaya, \$1.3 million in Sabah and \$4.0 million in Sarawak.

316. If marine fish output is to be expanded significantly, it will be necessary to continue to encourage large-scale extension of fishing operations to distant waters. Such operations, entailing as they do the use of heavy motorised vessels, will require an expansion in the number of deep and well-equipped fishing harbours. With the resources of the Indian Ocean in mind, the largest allocation in the fisheries programme is for the development of fishing ports and the establishment of the necessary facilities for the handling, distribution and marketing of the catches in the north-west region of Malaya.

317. Attention will continue to be given to the development of more efficient gear and methods of fishing. In addition, the food technology research unit will be strengthened to help develop efficient methods to process and preserve fish. There will also be research on marine and inland fish biology and ecology.

318. In the field of education and extension, a Fisheries College is to be established in Penang. In Sabah a new fisheries training centre will be set up at Labuan. It is also proposed to build a marine fisheries school, similar to that in Penang, in Sarawak. To supplement the activities at these schools, fisheries mobile units will be set up. These units will visit fishing villages throughout the country to demonstrate the use of proper gear and equipment and disseminate information on the maintenance and repair of engines. An inland fisheries training centre is to be established at Bukit Tinggi in Pahang to enable a larger number of farmers to be trained in fresh water fish culture and management than is at present possible with the facilities at Kuala Kangsar in Perak.

319. To assist fishermen to purchase improved gear and to adopt improved methods for processing and marketing, fishermen's co-operatives will be provided with subsidies from the government in addition to credit. Fishermen's Associations will be set up and assisted. Government will also directly assist farmers to increase the size of their ponds, which at present are uneconomic, and to use chemical fertilisers to enhance the productivity of individual ponds.

FORESTRY

320. An effective long-term programme for exploiting existing forest areas, particularly in Malaya, will contribute in significant measure to the

generation of increased income and employment. Such exploitation, however, cannot be allowed to be excessive as a portion of the country's forests must be reserved to avoid the danger of sudden climatic changes in the country, safeguard water supplies and soil fertility and prevent flooding and erosion. A certain portion of forest land will be reserved for this purpose, while the remainder will either be developed for the production of timber on a permanent basis or cleared for crop production and livestock rearing. The areas under forest which will be required for the first two objects will be classified into protective and productive reserves respectively. The Forest Resources Survey, which has already started in Malaya, and the Land Capability Classification Survey, which will begin in 1966, will facilitate the necessary delineation.

321. With the object of encouraging efficient utilization of the products of the forest and ensuring the attainment of high yields from productive reserves, the programme for forestry will concentrate on research and silviculture. The programme amounts to \$10.0 million in Malaya, \$1.1 million in Sabah and \$1.3 million in Sarawak, with the programme for Sarawak being devoted entirely to research.

322. A centre for forest products utilisation research will be established in Malaya, while forest plantation research, with a view to strain improvement and better disease control will continue in Malaya, Sabah and Sarawak. Work on the Forest Resources Survey will be completed by 1968. It is also anticipated that a Forest Inventory of Sabah will be finalised during the Plan period.

323. The United Nations Special Fund is assisting a number of Asian countries to experiment with the feasibility of establishing plantations of quick-growing conifer species. The government wishes to participate in this project and for this purpose provision is being set aside for one pilot plantation of 1,000 acres in Malaya. Experimentation with the establishment of pilot pulp wood and quick-growing timber plantations has already begun in Sabah and Sarawak.

324. In Malaya the management of productive forests to ensure high productivity will take the form of silvicultural work and afforestation.

DRAINAGE AND IRRIGATION

325. An expansion of the acreage under rice and rice-field crops, increased off-season cropping and improved yields will require more extensive irrigation and drainage facilities. For rubber, oil palm and coconut an expansion of cultivable acreages, inter-cropping and yield improvements will necessitate adequate drainage. In view of the importance of these objectives, a large allocation is being provided for irrigation and drainage

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during the next five years. The allocation for Malaya is \$319.2 million, which is about three times the amount expended during 1961-65, while the allocation for Sabah is \$7.0 million, more than six times the 1961-65 expenditure, and that for Sarawak is \$6.5 million, which is more than double the expenditure during the past five years.

326. The two biggest projects to be implemented will be the Muda and the Kemubu projects in Malaya. The Muda River project will cost \$204 million and loan assistance from the World Bank will amount to \$135 million. The project when completed will open up 131,000 new acres for double-cropping and also provide irrigation to permit double-cropping on 130,500 existing acres which are being used at present to grow a single crop of rice. An application has also been made to the World Bank to assist with the Kemubu project, which will cost about \$40 million. This scheme will enable the entire project area of 55,000 acres to be converted from single to double-cropping. Both projects will bring about an increase in average net incomes of farmers in the areas concerned from about \$140 per annum per acre to \$430.

327. The benefits that will be achieved from the implementation of the Malayan programme, as compared with the results of the 1961-65 programme, are as shown in Table 7-3.

TABLE 7-3

MALAYA: DRAINAGE AND IRRIGATION PROGRAMME, 1961-70

(acres)				<i>Estimated, 1961-65</i>	<i>Target, 1966-70</i>
<i>Irrigation—</i>					
Existing cultivated land improved ...	...	...	...	258,000	250,330
Uncultivated land rendered cultivable ...	...	...	...	34,000	674
Land rendered capable of being double-cropped ...	...	...	...	155,000	358,600
<i>Drainage—</i>					
Cultivated land improved ...	...	...	...	195,000	192,000
Uncultivated land rendered cultivable ...	...	...	...	33,000	100,920

328. The implementation of the Sabah programme will lead to 7,000 acres of existing padi land being improved and 10,000 acres being brought into padi cultivation for the first time. In addition, adequate drainage facilities will be provided in the Klias peninsula, which will enable a major settlement scheme to be started covering 3,600 acres and 300 families.

329. In Sarawak the programme will open up 7,800 acres of new land for padi cultivation and will improve 19,500 acres for the production of padi, coconut and other crops.

330. In view of the heavy cost of the irrigation and drainage programmes and the substantial benefits that will be realised by the farming community from these programmes, the government will seek the co-operation of beneficiaries in meeting the costs involved, through the levy of higher irrigation rates. Unlike drainage rates, these are nominal at present and fall far short of the level which would cover the capital as well as the operations and maintenance costs of irrigation projects. The increases that will be sought in irrigation rates, however, will be brought about gradually so as not to affect adversely the incentive of farmers to maximise the use of expensively provided facilities.

LAND DEVELOPMENT

331. The largest allocation of public resources in the agricultural sector will be for land development. Land development is a matter of great need and urgency. There is unused land in Malaya, Sabah and Sarawak, some unemployment in Malaya and some land hunger throughout Malaysia.

332. It is estimated that at least 65,000 families need to be settled on newly opened land in Malaya by the end of 1970, while a further large number requires additional land to supplement existing inadequate acreages. In Sabah and Sarawak, the goal is to settle 12,000 families and 11,750 families respectively on new smallholdings.

333. To meet these needs about 400,000 to 450,000 acres will have to be opened up in Malaya, 60,000 acres in Sabah and 80,000 acres in Sarawak. This is a massive programme by any standard but its achievement will enable a substantial number of families to find livelihood and homes on new land and the country as a whole to benefit in the years to come from a large increase in agricultural production, with accompanying growth in exports and import substitution.

334. In Malaya, the FLDA, which is the main agency of the government for the block development of new land, will complete work on 133,000 acres planted before 1966, develop an additional 32,000 acres on existing schemes and initiate new schemes covering 109,000 acres. In opening this new acreage, the main emphasis will be given to the cultivation of oil palm rather than rubber. Out of a total of 141,000 acres of new development during the Plan period, 103,000 acres will be opened up to oil palm, while 38,000 acres will be for rubber. Implementation of this programme will entail capital expenditure of \$305 million.

335. With the work done in the last two years and the schemes to be implemented during 1966-70, a total of 21,250 families will be settled during the Plan period on FLDA schemes. At an average of six persons per family, this will involve a total of 127,500 people. Including those already settled

by the end of 1965, totalling 9,500 families, settlement on all schemes envisaged at the present time will amount to 34,450 families (including 3,700 families to be settled after 1970), with an estimated population totalling 207,000 people. Output from FLDA schemes will rise from 800 tons of palm oil and kernels in 1965 to 60,100 tons in 1970 and from 3,700 tons of dry rubber in 1965 to 88,700 tons in 1970.

336. In the past an average scheme has been about 5,000 acres, which provided for the settlement of some 400 families. The largest scheme ever to be undertaken will be the Jengka Triangle Project in Pahang, covering 150,000 acres, upon which work will begin during 1968. The feasibility of developing this area has been confirmed by the World Bank and a regional master plan is being prepared by consultants. It is hoped that assistance for this project will be provided by the World Bank.

337. The land development programme also calls for 150,000 acres catering for 21,000 families to be opened by other government land settlement schemes, including those for controlled alienation. In addition, land will be opened up through fringe alienation so as to supplement the acreages of those of the rural community who have insufficient land. Attention will be paid not only to undertaking new schemes but also to salvaging existing derelict schemes. For the latter purpose, a Federal Land Consolidation and Rehabilitation Authority will be set up. For all these activities an amount of \$30 million has been set aside in the Plan. This supplements provisions made under the rubber replanting scheme for new block planting and under other agricultural programmes connected with development and extension of land for cultivation.

338. As its title suggests, the functions of the new Authority will extend beyond rehabilitation work. It will in time also arrange for the purchase and consolidation of existing uneconomic holdings and their subsequent distribution into economic size lots.

339. It is hoped that with the liberalization of state land alienation policies, permitting alienation to private companies, private estate development will meet the remaining need for new land settlement over the five-year period. The Federal Government will assist State Governments in formulating a reasonably uniform set of conditions which will be offered to potential investors, both local and foreign. These will be designed to attract as much new investment as possible for land development.

340. The government land development programme for Sabah entails investment of \$27.8 million. Large areas will also be opened up by estates, in addition to the development that public agencies themselves carry out. While Sabah has vast areas of undeveloped land available for agricultural development, the best use of these areas has not as yet been determined.

However, the UN Special Fund Survey of the Labuk River Valley northwest of Sandakan, which is nearing completion, should enable a development plan to be drawn up to maximize the economic potential of this area.

341. The government land development programme for Sarawak calls for redistribution of smallholdings in many areas, followed by block planting of rubber and other crops and the creation of new villages with amenities. A sum of \$13.1 million has been set aside for land purchases, settlers' houses and village development, while the allocation for the planting of crops appears under the allocation for agriculture. In the case of Sarawak, too, it is hoped that private enterprise will open up substantial areas to agriculture.

AGRICULTURAL CREDIT

342. A large part of the credit needs of rural smallholders currently comes from private sources, including local shopkeepers, produce dealers and money lenders. Since these sources constitute a major means of obtaining credit for many farmers while at the same time local shopkeepers and produce dealers are a major outlet through which rural produce is marketed, credit is often available to the rural community only at high rates. The existence of additional sources of supply is therefore of the utmost importance if the rural community is to have sufficient access to capital at reasonable cost. For this reason, Bank Bumiputra has been established. In addition, it will continue to be the policy of government to support and encourage the development of the rural co-operative movement.

343. Government has already provided \$5 million to launch Bank Bumiputra. The Bank will assist particularly in the creation, expansion and modernization of agricultural enterprises. It will do so by providing finance in the form of loans and advances to enterprises requiring assistance.

344. The amount earmarked in the First Malaysia Plan for the rural co-operative movement in Malaya is \$16.5 million. This will be provided to rural co-operative societies in the form of loans. Together with their own resources, government assistance will enable rural co-operative societies to extend short-term credit for the seasonal requirements of individual farmers and for group purchases of supplies such as fertilizer. The societies will also provide medium-term credit for a variety of projects. The latter will encompass credit for redemption of mortgaged properties, purchase of new land and improvements to old holdings; mechanization of fishing operations and consolidation and extension to new areas of facilities for the processing and marketing of fish; extension of padi processing and marketing schemes and establishment of large and up-to-date co-operative

rice mills in suitable areas; and improvement and extension of schemes for the processing of rubber, copra, coffee and pineapple.

345. A sum of \$4 million will be provided to the Credit Corporation, agricultural, livestock and fisheries marketing organizations and co-operative societies in Sabah. The Credit Corporation makes loans to smallholders for the purchase of equipment for processing rubber, coconut, oil palm, cocoa, abaca and other crops. Loans are also made to rubber smallholders to tide them over the period when their trees are immature.

346. An amount of \$13.5 million will also be set aside for the Sarawak Development Finance Corporation, the Co-operative Central Bank and other co-operative organisations. These institutions will provide credit for crop production and marketing schemes, the purchase of low-cost rural houses and the maintenance of rubber and pepper gardens. Schemes will also be organized for the provision of credit to pig farmers, poultry-breeders and fishermen.

AGRICULTURAL MARKETING

347. To co-ordinate the activities of the various organizations, both public and private, which are involved in the marketing of rural produce, the Federal Agricultural Marketing Authority has been established and will commence operations during 1966. An allocation of \$3 million has been made for this purpose. The Authority will collaborate with all concerned to promote efficient and effective marketing arrangements. It will initiate appropriate schemes for the efficient marketing of rural produce. Where necessary, these schemes may take the form of marketing boards for particular commodities. This, however, will only be done if other methods of bringing about marketing arrangements which adequately reward rural producers for their productive effort cannot be devised.

348. At present the marketing of the produce of the small farmer and fisherman is beset with a host of market imperfections which arise, *inter alia*, from his limited bargaining power, lack of market information, lack of grades and standards, middlemen monopsony, cartels and price-fixing. As a result, small farmers and fishermen are open to exploitation and generally obtain a return which is incommensurate with their productive efforts. It will be the object of FAMA to intervene in markets where such operations prevail to rationalise, discipline and build them up so that they will serve the general welfare better and stimulate productive expansion more effectively.

EMERGENCY CONTRACT PERSONNEL SERVICES

349. As has been stressed previously, the principal bottleneck to the implementation of all agricultural development programmes will be the lack

of qualified local personnel to undertake them. While major emphasis will be given to agricultural education and training to produce vast increases in the quantity and quality of local agricultural researchers, educationists and extension workers, the results of this effort will not begin to appear before the next decade. In the meantime, the initiation of this effort itself, as well as the implementation of the research and operational programmes of the government, will depend for their success on the necessary skills being obtained from outside the country. It is hoped that a substantial part of the country's needs will be met through external technical assistance arrangements. The government intends to obtain the remainder through contractual arrangements. For all these purposes, a sum of \$5.0 million has been allocated.

VII.—ALLOCATIONS FOR AGRICULTURAL DEVELOPMENT

350. The allocation for agricultural development amounts to \$1,086.6 million, as shown in Table 7-4.

TABLE 7-4

MALAYSIA: PUBLIC DEVELOPMENT EXPENDITURE FOR AGRICULTURAL DEVELOPMENT, 1966-70

(\$ millions)

						Malaya	Sabah	Sarawak	Malaysia
Agriculture	...	...	...	...	...	166.5	11.7	89.3	267.5
Research	...	...	...	...	...	17.0	4.5	1.7	23.2
Education	...	...	...	...	...	10.0*	0.8	4.9	15.7
Extension	...	...	...	...	...	10.6	0.4	1.5	12.5
Rubber replanting grants	...	...	...	...	...	93.9	5.3	61.0	160.2
Other crop subsidies	...	...	...	...	...	35.0	0.7	20.2	55.9
Animal Husbandry	...	...	...	...	...	28.0	2.1	3.7	33.8
Fisheries	...	...	...	...	...	17.0	1.3	4.0	22.3
Forestry	...	...	...	...	...	10.0	1.1	1.3	12.4
Drainage and Irrigation	...	...	...	...	...	319.2	7.0	6.5	332.7
Land Development	...	...	...	...	...	335.0	27.8	13.1	375.9
Rural Credit and Marketing	...	...	...	...	...	19.5	4.0	13.5	37.0
Emergency Contract Personnel Services	...	...	...	...	...	5.0	—	—	5.0

* The allocations for the expansion of the present College of Agriculture, the establishment of a second agriculture college in Malaya and the expansion of the Faculty of Agriculture, University of Malaya appear in the allocations for the overall Education sector (Chapter XI).