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*A Survey of*

# AGRICULTURE IN MALAYSIA

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## PREFACE

Malaysia, one of the world's newest nations, came into being in September 1963 with the merger of the States of Malaya, Singapore, Sarawak, and Sabah. Since its formation, the country has been almost constantly in the world's news because of its involvement in the political turbulence of southeast Asia. Consequently, there has been an unusually large number of requests for economic information about this still largely agricultural country.

Malaysia is much too new to permit a worthwhile analysis of its overall agricultural economy. Only now is an attempt being made to improve the uniformity and comparability of statistical data and other economic information. Also, the country has not had sufficient time to develop its economy to the extent that it gives definite indications of the form it will take. Thus, this study is largely an attempt to pull together the available pertinent information about the agricultural economies of the component units of Malaysia. However, some consideration has been given to the future agricultural economy of the new nation.

\* \* \* \* \*

With the creation of Malaysia some changes were made in the names of the component geographic areas. The area known as the Federation of Malaya (1957-1963) was designated the States of Malaya (or mainland Malaysia), while the Crown Colony of North Borneo became the State of Sabah. Singapore and Sarawak retained their historical names. The new names are utilized in this publication.

Throughout this study, acre is used as the unit of measure for area and metric ton (2204.6 pounds) for weight. Unless otherwise stipulated, the Malayan dollar (M\$) is the unit of currency. Its average conversion rate is M\$3.06 equal US\$1.

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## SUMMARY

Many factors are common to all or some of the areas which now make up Malaysia. <sup>1/</sup> Agriculture forms the basis of the economy in all areas except Singapore. However, raw and semiprocessed agricultural commodities constitute a large portion of Singapore's trade. The production of rubber is of paramount importance throughout the entire area, not only in the agricultural sectors but also in the overall economies.

At the same time, each area has its own unique characteristics. Major among these is the level of economic development, which differs significantly.

Malaysia covers an area of nearly 129,000 square miles and has a total population of about 10.5 million. Shaped very much like a crescent, it stretches from Thailand, on the Asian mainland, across more than 1,000 miles of the South China Sea to a point southwest of the Philippines.

Malays and other indigenous races make up about half of the population; the remainder is composed of outside ethnic groups, primarily Chinese and Indians. The overall annual rate of population growth is over 3 percent, with Singapore setting a much higher pace. The population density ranges from a low of about 2 persons per square mile in parts of Sabah to over 7,800 per square mile in Singapore.

Agriculture, forestry, and fishing account for approximately 80 percent of the economically employed portion of the population in Sabah and Sarawak. In mainland Malaysia, these segments account for 58 percent of the gainfully employed; in Singapore 8 percent. Average per capita incomes cover a wide range--from about M\$550 in Sarawak to M\$1,300 in Singapore. Within each geographic area, significant differences also exist in average incomes, depending on the type of employment individuals have. The average income in Malaysia is about M\$860, which is well above that in most other countries of southeast Asia.

About 19 percent of the land in mainland Malaysia is under cultivation, while 25 percent of the land in Singapore is devoted to agriculture. About 6 percent is cultivated in Sabah and 20 percent in Sarawak. However, in these latter States only 3 percent of the total land is permanently cultivated. The remainder is worked under a system of shifting cultivation. Rubber is the main crop produced on the permanently cultivated land of the nation. However, when the land farmed under shifting cultivation is taken into account, rice takes the lead. Coconuts and oil palms are also grown on large areas of land.

In general, the production of rice has increased in Malaysia. Although rice is the staple food in the diets of most inhabitants, the country is still dependent on imports of it. Singapore is entirely dependent on outside supplies. Many types of fruits and vegetables are grown in Malaysia; most are for home consumption. In some regions, especially in Singapore and areas around other cities, highly intensive market garden areas have developed. Pineapple is the principal fruit grown for sale in commercial markets. In several parts of mainland Malaysia, most of the crop is canned for export.

The rubber industry forms the keystone of the economy of Malaysia. During recent years, rubber produced in what is now Malaysia has accounted for 39 percent of the world production.

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<sup>1/</sup> States of Malaya (or mainland Malaysia), Singapore, Sabah, and Sarawak.

Present plans for the industry indicate higher levels of production in the future. In 1962, rubber accounted for 70 percent of the total foreign exchange earnings of the States of Malaya, 19 percent of Sabah's earnings, and 47 percent of Sarawak's earnings. 2/ Singapore's rubber exports represented 44 percent of its total exports in 1962 (2). 3/

Production of coconuts has declined in recent years. Much of this decline is the result of poor management and a high percentage of old trees. Increased attention is being given to the potential of oil palms. It is commonly believed that this crop could aid the move towards diversification of the agricultural sector, and thus reduce dependency on rubber. Spices, for which the area was once famous, have declined greatly in importance.

Before the merger, the governments of mainland Malaysia and Singapore had launched comprehensive development plans. The Second Five-Year Plan (1961-65) of the States of Malaya contained extensive programs for the development of agriculture, including additional irrigation facilities for rice, the planting of high-yielding rubber trees, and settlement of thousands of acres of new farm land. Singapore's plan was aimed primarily at increasing the production of its industrial sector and reducing reliance on entrepot activities. Sarawak began an overall development program for its agricultural sector in 1962. To date, Sabah has not begun a coordinated program, but some individual schemes are in operation.

Although many problems are inherent in merging these sometimes diverse areas, Malaysia should continue to prosper and to set the pace in southeast Asia.

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2/ Excludes intra-Malaysian trade.

3/ Underscored figures in parentheses refer to items in the Literature Cited, p. 44.

# A SURVEY OF AGRICULTURE IN MALAYSIA

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## BACKGROUND

At the end of World War II the British began the process which ultimately led to the creation of Malaysia. On February 1, 1948, nine of the present States of Malaya became a semi-independent nation (the Federation of Malaya) within the British Commonwealth. The local rulers were given more authority, but the country was not fully independent. The settlements of Penang and Malacca remained under direct British rule. Singapore had become a separate crown colony in March 1946.

After a brief period of military administration at the end of the war, Sabah was made a crown colony on July 15, 1946. Thus, the North Borneo Company, although still in existence, was no longer the administrator of the area. Sarawak had become a crown colony 15 days earlier. The Rajah had begun the process before the war. Upon ascending the throne again in 1946, he realized the benefits of direct British administration and relinquished control over Sarawak.

Under the title of the Federation of Malaya, mainland Malaysia became an independent, self-governing country on August 31, 1957. Penang and Malacca joined the original nine States to make up this country. It chose dominion status within the commonwealth of nations, but was unique in that it maintained a limited constitutional monarchy. In 1959, Singapore's status as a crown colony ceased, and it became a self-governing State.

On July 9, 1963, the leaders of mainland Malaysia (Federation of Malaya), Singapore, Sabah (North Borneo), Sarawak, and Britain signed a pact in London which created Malaysia. Britain granted independence to Sabah and Sarawak. In turn, these areas accepted statehood within the new nation, bringing the total number of States to 14. Malaysia came into existence on September 16, 1963.

## STATES OF MALAYA

### Physical Characteristics

#### Location and Area

The States of Malaya, formerly the Federation of Malaya, occupy the lower portion of the Malay Peninsula, <sup>4/</sup> and thus are the southernmost extension of continental Asia. They possess many characteristics of the surrounding islands.

Since it is a peninsula area, mainland Malaysia is bounded principally by water. On the east is the South China Sea, while on the west is the narrow Strait of Malacca, across from which

<sup>4/</sup> Sometimes referred to as the Kra Peninsula.

lies the Indonesian island of Sumatra. To the south, across the Johore Strait, is the island of Singapore, a State within Malaysia. The northern boundary, the only land frontier, is shared with Thailand.

Mainland Malaysia is elliptical in shape. It is approximately 450 miles long, about 200 miles wide, and has 12,000 miles of coastline. Estimates of total land area vary, but it is generally considered to approximate 50,690 square miles, an area slightly larger than the State of New York (8). (See appendix table 10.)

### Topography

Mountain ranges, generally running north and south, form the backbone of the States of Malaya. Over the centuries, weathering has worn down the peaks, so that today they are, in general, rounded and covered with forests. The tallest peak, Gunong Tahan, is nearly 7,200 feet high. Tropical rain forests and jungle cover four-fifths of the country.

Inland, between mountain ranges, and paralleling the coastlines are many low, flat plains. They have been formed by the sedimentary action of the many rivers which drain the peninsula. These plains, especially the ones found along the west coast, are the principal agricultural land. The west coast is fringed by mangrove swamps, while sandy beaches dominate the east coast.

The many rivers are generally small and drain eastward and westward from the central highlands. To the east, the largest rivers are the Pahang, the longest river (205 miles long), the Kelantan, and the Trengganu; to the west are the shallow Perak River, the Selangor, and the Muda.

A number of islands lie off the coast, but Penang Island is the only one of importance.

### Climate

The climate of the area is tropical, characterized by abundant rainfall, high humidity, and generally uniform high temperatures. The seasons are related to the monsoons. The northeast monsoon lasts from October to February and the southwest monsoon from mid-May to September. The two periods of time between monsoons constitute the other seasons.

The annual average rainfall is over 75 inches, without any distinct dry season. As a region, the East Coast receives the heaviest rainfall, 120 inches annually. Precipitation decreases further inland to about 100 inches at the base of the main mountain ranges. Rainfall in the central region is irregular, while on the west coast the rainfall, in general, decreases from 107 inches at Penang to 70 inches in Negri Sembilan. The heaviest rainfall normally occurs during the northeast monsoon.

Temperatures are generally uniform, whether considered on a yearly basis at one place or on a place-to-place basis at the same time of year. The seasonal range of temperature is from 2 to 4 degrees Fahrenheit, while the daily range is more pronounced--from 12° F. in coastal regions to 18° F. at higher elevations inland. The mean monthly maximum temperature is about 88° F. and the minimum 71° F. The relative humidity is high (70 percent or more) and may become quite oppressive during the day if there are no breezes.

### Soils

A thorough national soil survey is now in progress in mainland Malaysia. In the past, various classification systems have been employed to describe the local soils. Many people



follow the principle that the soil types correspond to the geological features of the area. Based on this principle, soils are classified as granite, quartzites, which are subdivided into hill soils and valley soils, raub series, coastal alluvium, highland, and Pahang volcanic and dolorite (17).

The heavy precipitation characteristic of the area has played a key role in soil formation. It has caused a very rapid deterioration of the rock structure and has also led to extensive leaching. Thus, the soils, which are formed primarily from granite and Triassic rocks, are infertile and lack the minerals necessary for plant growth. In addition to this general infertility, the soils are predominantly acid. However, one good feature of the hot, wet weather is the continual process of decay which provides some nutrients to plants at all times.

### Population

According to the most recent census (1957), the total population of the States of Malaya was 6,278,758 (13). From 1947 to 1957 the population had increased at an average annual rate of 2.8 percent. In mid-1960, the total population was estimated at 6,909,000. Native Malays comprised the largest segment of the population (50 percent), with Chinese (37 percent) and Indians and Pakistanis (11 percent) the leading minorities.

Although the population is predominantly rural, the trend towards urbanization is quite evident. In 1957, 26.5 percent of the total population lived in urban areas, as opposed to only 15.9 percent in 1947. <sup>5/</sup> The total population increased approximately 28 percent within the period 1947-57, but urban population rose over 113 percent. Although there was an expansion in the manufacturing industries and other economic sectors generally found in urban areas, this was not the sole factor in the shift in population. A major cause of urbanization between 1948 and 1960 was the terrorist activity which created a "state of emergency" and forced many people to leave their farms and rural homes.

### Agriculture in the Economy

Outsiders have for centuries sought to control part or all of the Malay Peninsula because of its strategic location. The Portuguese and the Dutch wanted to monopolize the spice trade by controlling the Strait of Malacca. They paid little attention to the agricultural potential of the country. However, the Dutch, and later the British, realized some profit from tin mines in the interior (19).

It was not until the turn of the 20th century that the agricultural potential was utilized. Before this time, although some commercial production had been undertaken, agriculture was predominantly the subsistence type. These commercial ventures were the basis of today's estate production. Rubber plants were first introduced about 1877. In 1906, prices of rubber boomed and by 1915 rubber had replaced tin as the major export product. Thus, the pattern of present-day agriculture was set. Today the economy of the States of Malaya is based on agriculture. In 1961 over 41 percent of the gross national product (GNP) was derived from agriculture and over 70 percent of the foreign exchange was earned from the sale of agricultural products (appendix table 13).

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<sup>5/</sup> Urban areas were defined in the census as administrative areas which had more than a specified minimum population--in this case 10,000.

The number of people employed in agriculture in 1957 was 1,164,202, more than half the total employed in all major industries (table 1). <sup>6/</sup> The 1957 figure, with allowance made for those engaged in the production of tea and agricultural services, was approximately 1 percent below the 1947 figure. In the same period, labor shifted substantially within the agricultural sector. The number of people engaged in cultivation of subsistence crops, including rice, decreased over 125,000; while the number engaged in the cultivation of commercial crops increased about 112,000. Some of the decrease in the labor force engaged in rice cultivation was attributed to the time of year when the census was taken (a slack work period for those growing rice).

## Agricultural Patterns

### Land Use

A large part of mainland Malaysia, over 75 percent of the land area, is covered by forests or swamps. The forests are found in the mountains and valleys of most of the interior and on the east coast; while the swamps parallel the west coast. This large land area is not only unused but, for the most part, also unoccupied.

Agricultural land in this area is characterized by extreme localization of activity. Most of the land used for agriculture or other economic ventures has been carved out of the forest; this accounts for the localization. A major part of the agricultural land is in a narrow strip lying along the peninsula's west coast. A large concentrated area also is in the northeastern corner of the States of Malaya, and some scattered areas lie along the east coast. Only a small amount of agriculture is carried on in the interior.

Approximately three-fifths of the forest area is classified as State land, that which is not alienated for some purpose. The remainder of the forest area, for the most part, is composed of reserves (appendix table 11). These reserves, somewhat similar to national parks in the United States, generally are for conservation of forests and water supplies, and serve as wild life refuges.

In 1962 the cultivated area was approximately 6,100,000 acres, 19 percent of the total land area. The ratio of agricultural land to total land in mainland Malaysia is comparable to that in Japan (<sup>1</sup>). Mainland Malaysia, one-third the size of Japan, has less than one-tenth as many people. <sup>7/</sup> In the past decade, the amount of agricultural land in the States of Malaya has increased by more than 10 percent, while it has remained almost constant in Japan.

The small amount of agricultural land devoted to the production of food crops makes the land use pattern of mainland Malaysia unique in Asia, with the possible exception of Ceylon. Approximately 75 percent of the crop area is devoted to nonfood or commercial crops such as rubber, oil seeds, spices, and tea.

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<sup>6/</sup> Includes people involved in some minor processing of such things as rubber and coconuts on the farm, but does not include people involved in forestry and fishing.

<sup>7/</sup> In 1959, Japan had only .14 acres of agricultural land per capita, while mainland Malaysia had .82 acres, and the average for the Free World countries of the Far East was .66 acres.

Table 1.--States of Malaya: Distribution of persons gainfully employed,  
by major industries, 1947 and 1957 <sup>1/</sup>

Industry	1947		1957	
	Total employed	Percentage of total employed	Total employed	Percentage of total employed
	Number	Percent	Number	Percent
<b>Agriculture: <sup>2/</sup></b>				
Rice cultivation.....	470,692	25.1	398,295	18.7
Rubber.....	509,436	27.2	614,487	28.9
Palm oil.....	11,158	0.6	13,221	0.6
Coconuts, copra, etc.....	39,519	2.1	39,739	1.9
Tea.....	<sup>3/</sup> n.a.	n.a.	4,558	0.2
Other crops.....	126,393	6.7	79,835	3.8
Livestock.....	9,750	0.5	8,187	0.4
Services and other agriculture.....	n.a.	n.a.	5,880	0.3
<b>Total agriculture.....</b>	<b>1,166,948</b>	<b>62.2</b>	<b>1,164,202</b>	<b>54.8</b>
Forestry.....	13,372	0.7	19,161	0.9
Fishing.....	60,288	3.2	61,431	2.9
Mining and quarrying.....	47,690	2.5	58,499	2.8
<b>Manufacturing:</b>				
Food.....	17,983	1.0	17,596	0.8
Beverages, tobacco, rubber products, and textiles.....	10,389	0.6	9,801	0.4
Footwear and wearing apparel.....	14,764	0.8	22,788	1.1
Rattan and attap basketweaves.....	21,010	1.1	8,800	0.4
Wood, furniture, paper products, and printing.....	23,580	1.3	31,216	1.5
Chemicals.....	1,393	0.1	1,958	0.1
Nonmetallic mineral products.....	2,361	0.1	4,252	0.2
Basic metals and metal products.....	5,924	0.3	3,611	0.2
General engineering machinery and equipment.....	16,934	0.9	23,577	1.1
Electrical machinery and repairs.....	1,223	0.1	2,180	0.1
Miscellaneous.....	10,600	0.6	9,930	0.5
<b>Total manufacturing.....</b>	<b>126,161</b>	<b>6.9</b>	<b>135,709</b>	<b>6.4</b>
Building and construction.....	13,458	0.7	67,807	3.2
Electricity, water, etc.....	4,561	0.2	11,596	0.5
Commerce.....	173,120	9.2	195,192	9.2
Transportation and communication.....	65,870	3.5	74,755	3.5
<b>Services:</b>				
Government, community, and business..	76,733	4.1	116,142	5.4
Armed Forces.....	11,623	0.6	46,055	2.2
Miscellaneous.....	109,279	5.8	157,549	7.4
<b>Total services.....</b>	<b>197,635</b>	<b>10.5</b>	<b>319,746</b>	<b>15.0</b>
Other industries.....	6,242	0.4	18,111	0.8
<b>Grand total.....</b>	<b>1,875,345</b>	<b>100.0</b>	<b>2,126,182</b>	<b>100.0</b>
Total population of the States of Malaya.....	4,908,086		6,278,758	

<sup>1/</sup> Both male and female. <sup>2/</sup> Includes some minor processing of such products as rubber and coconuts. <sup>3/</sup> Not available.

Source: (13).

Rubber is produced on approximately 4 million acres, about 65 percent of the total agricultural land (table 2). Three factors combine to give it this predominance: the suitability of climate and soil, the ease of cultivation, and the relative income advantage. It is an important crop not only on the estates but also on smallholdings.

The other important commercial crops are coconuts (520,000 acres), grown on both estates and smallholdings, and oil palms (141,000 acres), grown almost exclusively on estates. Spices, for which the area was originally noted, are grown on less than 40,000 acres. Land used for these crops represents about 11 percent of the total agricultural land.

Next to that for rubber the cultivated area in rice is largest--989,000 acres or about 16 percent of the total agricultural area. Rice is produced by smallholders only. Over 90 percent of the rice acreage is utilized to produce rice by the wet cultural method.

Mainland Malaysia also produces a variety of fruits, vegetables, and other foodstuffs; but the planted area is less than 6 percent of the total agricultural land. Most of these commodities are grown for home consumption on smallholdings such as village gardens (kampong). Some specialized commercial cultivation includes intensive market gardening by Chinese in urban areas and the production of pineapples for canning.

### Land Tenure

There are a number of ownership patterns in mainland Malaysia. In the past, the native rulers of the individual States or the British Crown had the right to grant titles to lands which they governed. The present constitution delegates control of land to individual States, but the Central Government has authority to coordinate the various land policies.

The National Land Council has been established to formulate a common land policy binding on all State governments. Despite procedural differences within the various land laws, many principles are common to all States. A modified form of the Torrens system<sup>8/</sup> of land registration is used in all States except Penang and Malacca, which still follow the system prescribed in the United Kingdom's Registration Act of 1875. Under the local Torrens system, the registered owner of a piece of land has rights over it and his title can be revoked only on grounds of fraud. Thus, all land transactions are considered null and void unless registered with the appropriate land office.

All land which has not been alienated is held by the States. In general, an individual may acquire title to a tract of land by filing application with the appropriate land office.

The following general types of titles are held on land in mainland Malaysia:

(1) Freeholds--titles used for land in towns and villages. Previously these titles were issued in perpetuity, but they are now issued only under special circumstances.

(2) Extracts in Mukim Registers--titles issued for lands which are cultivated. Before World War II these titles carried perpetual rights, but today are issued for periods of 99 years or less.

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<sup>8/</sup> Derives its name from Sir Robert Torrens who was the Governor of South Australia about 1860. It combines maximum security of tenure with minimum formality to establish and transfer legal ownership.

Table 2.--States of Malaya: Acreage devoted to major crops, annual 1947, average 1951-55, annual 1958-62

Crop	1947	Average: 1951-55:	1958	1959	1960	1961	1962
----- 1,000 acres -----							
<b>Cereals:</b>							
Rice.....	813.5	855.5	916.6	924.0	941.0	966.0	989.0
Corn (maize).....	1.1	6.0	11.7	11.0	11.0	11.0	12.0
<b>Root crops:</b>							
Sweetpotatoes.....	20.4	15.9	22.2	24.0	25.0	25.0	25.0
Yams.....	.9	1.3	1.6	2.0	2.0	2.0	2.0
Cassava.....	48.4	35.0	42.3	43.0	43.0	43.0	50.0
<b>Vegetables:</b>							
Fresh vegetables <sup>1/</sup> .....	18.9	18.9	25.6	26.0	28.0	30.0	24.0
Colocasia (taro).....	3.6	3.3	4.0	4.0	4.0	4.0	4.0
<b>Fruits and nuts:</b>							
Pineapples.....	11.9	27.2	44.4	45.0	45.0	45.0	44.0
Bananas.....	64.1	48.4	64.4	65.0	68.0	70.0	67.0
Citrus.....	<sup>2/</sup>	3.1	7.7	8.0	9.0	9.0	9.0
Durians.....	<sup>2/</sup>	27.7	35.4	36.0	37.0	36.0	35.0
Mangosteens.....	<sup>2/</sup>	8.2	9.9	10.0	10.0	10.0	9.0
Rambutans.....	<sup>2/</sup>	17.0	24.7	24.0	26.0	25.0	27.0
Other fruits.....	105.0	44.7	34.5	27.0	34.0	31.0	26.0
<b>Spices:</b>							
Areca nuts.....	51.0	44.9	42.5	41.0	41.0	41.0	33.0
Ginger.....	1.4	1.1	2.6	2.0	2.0	2.0	1.0
Other spices.....	3.8	4.6	6.4	3.0	3.0	2.0	2.0
<b>Oilseeds:</b>							
Coconuts.....	512.1	504.8	519.0	518.0	518.0	520.0	520.0
Peanuts (groundnuts).....	2.3	2.6	4.6	5.0	5.0	5.0	6.0
Oil palms.....	78.2	105.2	121.0	125.0	127.0	137.0	141.0
Rubber.....	3,317.3	3,636.0	3,755.0	3,791.0	3,841.0	3,951.0	<sup>3/</sup> 4,000.0
Tea.....	9.7	8.8	10.4	11.0	11.0	11.0	10.0
Coffee.....	9.0	9.8	14.8	15.0	15.0	15.0	16.0
Tobacco.....	4.3	3.4	6.8	6.0	6.0	7.0	9.0
<b>Total <sup>3/</sup>.....</b>	<b>5,120.0</b>	<b>5,500.0</b>	<b>5,800.0</b>	<b>5,850.0</b>	<b>5,900.0</b>	<b>6,000.0</b>	<b>6,100.0</b>

<sup>1/</sup> Includes chilies.

<sup>2/</sup> If any, included in other fruit.

<sup>3/</sup> Estimated. Figures have been rounded.

Sources: (11, 12) and U.S. Foreign Service Reports, American Embassy, Kuala Lumpur.

(3) Leases--titles covering towns and village lands. These are issued for periods of 99 years or less.

(4) Certificates of titles--titles issued on the subdivisions of land under grants of titles or leases.

(5) Tied titles--titles issued to smallholders who cultivate approved crops on their holdings. These holdings are in projects which have been developed by the Federal Land Development Authority (FLDA) (9).

Although most of the land is held in perpetuity, the landowner is still charged an annual sum of money commonly called quitrent. <sup>9/</sup> It must be paid to the Government by all title holders. Also, many landowners must comply with certain requirements which are either implied or expressed in writing as additional conditions to the title. Some of the common requirements are continual cultivation of a certain percentage of the total land owned, the employment of good cultural practices, and the use of some land for a specific crop.

Approximately three-fourths of the farmers in the States of Malaya are operating under permanent ownership titles. About one-fifth of all farmers operate on a tenancy basis.

The 1960 Census of Agriculture reports that the ratio of owner-operated farms to the total number of farms was highest for those devoted to rubber and other permanent crops. Permanent titles were held on over 90 percent of the export crop farms and on less than 50 percent of the rice farms (26). (See appendix table 17.)

#### Farm Size

Based on size, farms in the States of Malaya fall into two distinct categories--estates and smallholdings. A smallholding is a farm, contiguous or noncontiguous, with less than 100 acres of land; while estates encompass 100 acres or more. However, farms within each classification vary considerably in size, depending on the crop produced.

Approximately 40 percent of the rubber area is operated by smallholders. Many farmers devote only a small part of their land to the production of rubber; the remainder is used for other crops. There are various programs to encourage smallholders to increase their rubber areas as well as to replant with high-yielding varieties. The average size of all rubber estates is about 800 acres. About 65 percent of the rubber estates have less than 500 acres; 10 percent have more than 2,000 acres.

Next to rubber, rice is grown on the largest area of cultivated land. The average rice holding is about 4 acres, and is cultivated almost entirely by Malay smallholders. Coconuts, next in importance, are grown primarily by smallholders. Estates account for only about 20 percent of the total coconut area. These estates have from 100 acres to over 3,500 acres of land, with an average of about 1,000 acres.

Oil palm cultivation is confined entirely to estates. The average size of an oil palm estate is 2,000 acres. Pineapples are grown throughout mainland Malaysia on both smallholdings and estates. Other crops, accounting for less than 10 percent of the cultivated area, are also grown to varying degrees on both smallholdings and estates.

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<sup>9/</sup> Upon payment of this rent, the landowner is "quit" of his obligations to the State.

## Farm Labor

Most agricultural laborers work their own farms. A smaller number are employed as hired labor on rubber, coconut, and oil palm estates, and the few large rice farms in the north.

Based on the population census of 1957, 55 percent of the gainfully employed population is engaged in agriculture. Workers in rice cultivation total nearly 400,000, of whom approximately 40,000 may be on the larger rice farms. The greatest number of workers in one industry, agricultural or nonagricultural (over 21 percent of the employed population, or more than 600,000), is engaged in the production of rubber. A little over 13,000 people are engaged in oil palm production. All other forms of crop production, dominated by smallholders, provide employment for less than 10 percent of mainland Malaysia's work force. Livestock raising engages less than 0.5 percent.

Annual cash income per worker on rice farms ranges from M\$150 to M\$250. These incomes are, in general, the same as those of workers in other types of agricultural production on smallholdings. Foremen and workers in processing factories on rubber estates receive an average salary in the vicinity of M\$110 to M\$130 per month, while tappers and weeders receive from M\$70 to M\$90 a month. Earnings of workers in comparable grades on coconut and oil palm estates are somewhat similar.

## Agricultural Institutions

### Organizations

The growth of farmers' cooperatives has been slow; in general, farmers have resisted any change. In recent years, the Department of Agriculture has attempted to accelerate the acceptance of new institutions and has concentrated on a rural education program to reorient the thinking of the farm population.

At the same time, many cooperative societies have been organized. For the most part, these are in urban areas and their membership is Chinese. The main agricultural function of these societies is the marketing of farm commodities.

Various other organizations have been established, primarily by the Government to assist agricultural development. The FLDA, set up in 1956, is charged with providing people with smallholdings. Thus, the Authority performs such duties as making land surveys, selecting settlers, and clearing land. After a settlement is established, the FLDA extends credit to the farmer in the form of materials and subsistence funds for two years. After that time a settler should be self-sufficient and capable of producing his own rice, vegetables or livestock. At the end of seven years, rubber trees can be tapped and the settlers are to repay the FLDA loans. It is believed that when the scheme becomes fully operative the settlers will earn M\$300 per month. The Authority has charge of 15 land development schemes (for the development of over 50,000 acres of land) which have benefited about 5,000 families. Reorganized in 1954, the Rural and Industrial Development Authority (RIDA) has the task of stimulating, facilitating, and undertaking economic and social development, particularly in the rural areas (15). The RIDA accomplishes this objective through both loans and training programs. Direct loans to farmers for such things as land acquisition and improvement and the purchase of livestock and implements account for about 20 percent of all loans.

## Transportation and Marketing

The transportation system in the States of Malaya is the most advanced in southeast Asia (27). It consists, in varying degrees, of modern motor, rail, sea, and air facilities. The slower, traditional forms of transportation are also used extensively.

The pattern of land transport routes results from the local topography and the large area covered by heavy jungles. The chief arteries run through the alluvial plain west of the central mountain range. East of the mountains, transportation facilities are relatively undeveloped. The number of all-weather roads crossing mainland Malaysia is quite limited. Since the rivers are generally shallow, river transport, except by flat bottom boat, is largely limited to the mouths of the major rivers.

A sizable portion of the rubber and copra production moves via coastal shipping to the major outlets of Singapore and Penang. Both of mainland Malaysia's major international ports, Penang and Port Swettenham, are located on the west coast; the east coast has only a few minor ports.

In mainland Malaysia imported commodities are handled differently from those locally produced. The chain of distribution for imported foods is basically the importer, the wholesaler, and finally the retailer. The bulk of domestically produced food finds its way to wholesalers for distribution to retail outlets, but many producers in the vicinity of population centers are frequently seen selling their own wares to the public.

## Production Practices

Just as agricultural enterprises fall into two groups so also do production practices. Malay smallholders utilize the accumulated experience of generations of farmers. The estates are operated mainly by either Europeans or Chinese. These nonindigenous groups have gradually adapted more modern and improved methods.

### Double Cropping

In 1957 the Department of Agriculture announced that double cropping, especially of rice, was a sound farming practice. This official sanction of double cropping was necessary to overcome the smallholder's traditional apathy to change. The actual employment of this practice is dependent upon the suitability of the soil and the adequacy of water supplies. The Drainage and Irrigation Department (DID) of the States of Malaya has drawn up plans to provide sufficient water to increase the area suitable for the double cropping of rice and other crops.

Double cropping of rice is gaining popularity, especially in the northwest production area. The production of two or more vegetable crops per year on a limited area also is becoming quite important.

### Irrigation and Drainage

The irrigation work of DID centers on the provision of water necessary to increase rice and food production, while its drainage activities are aimed at the improvement of rubber and coconut areas along the west coast.



Despite average annual rainfall of over 75 inches, in many instances agricultural production suffers from the lack of water. This is due to several things. Sufficient rainfall does not continue throughout the monsoon period and monsoons do not always arrive when needed or last long enough. Thus, irrigation facilities are necessary to insure a uniform water supply.

Most of the present irrigation projects furnish water primarily for rice production. Thus, in view of the policy of mainland Malaysia to increase the rice output, these facilities take on increased importance. At present, irrigation water is used to supplement rain water during the monsoon period. However, with an improvement in facilities, irrigation water will be used to further a double cropping system for rice.

Few of the irrigation schemes have impounding facilities. For the most part, water is furnished to land via gravity diversion from streams or by pumping from the owner's small catch ponds. Thus, during the dry period, when the water level in the rivers and ponds falls, water cannot be furnished to the land in sufficient quantities. The Krian Irrigation Scheme is notable in that it is an impounding scheme. The impounding schemes, despite their higher cost and the inevitable flooding of certain settled areas, are the only feasible way of furnishing the large quantity of water necessary for a double cropping system. The Government is now concentrating on expanding impounding capacity. Pumping systems have increased in importance and some of the newer ones are capable of furnishing water to support limited double cropping.

In 1932, when the DID was established, the irrigated area was 75,700 acres. By the end of 1955 the area had expanded to 270,000 acres and at the end of the First Five-Year Plan in 1960 to nearly 400,000. The aim of the present plan is to provide new or improved irrigation facilities for another 300,000 acres.

Extensive areas within the alluvial belt of the west coast suffer from bad drainage and are subject to flooding and salt-water intrusion. Thus, this land has lost some or all of its production capacity. Most of this land is devoted to the production of rubber and coconuts.

During the latter part of the 19th century and the early years of the 20th century scattered attempts to control coastal flooding and improve drainage usually had adverse effects. Projects which controlled flooding tended to interfere with inland drainage, while those that aided drainage increased the possibilities of flooding. After careful study the DID has met the problem by constructing substantial coastal bunds which incorporate an adequate internal drainage system.

The DID took over the administration of drainage work on 98,900 acres in 1932. The war interfered with much of the rehabilitation work, but by 1949 the drained area had reached 211,000 acres. During the period 1950-55 an additional 80,000 acres were added. Most of this additional land was located along the west coast of Johore. By 1960 the total area serviced by drainage facilities totaled 360,000 acres. It is envisioned that when the program is completed over 1 million acres will have been improved.

#### Farm Machinery and Equipment

Although a limited number of tractors were used for agricultural work in mainland Malaysia before World War II, it was not until 1948 that serious attention was given to more extensive utilization of mechanized equipment on estates and smallholdings. Progress at first was slow and numerous difficulties had to be overcome. The 1960 Census of Agriculture reports that 8.9 percent of all estates, but only 1.9 percent of all farms, were using tractors.

In 1951 the Department of Agriculture began a program of mechanical work for smallholders on a contract basis. During the next 2 years, there was a considerable increase in the use of agricultural machinery on estates, and smallholders became more aware of the benefits of mechanization. A few smallholders purchased their own equipment, but the most of their needs were met by the Government, which provided tractors under a contract. However, these centralized contracting services had heavy overhead costs, mainly due to inefficient operations. Thus, their charges were quite high. By 1954 a number of small, private contracting firms had been established to meet the needs for low-cost work.

There were and still are several reasons for this slow adoption of mechanization. In many cases, the large machinery and implements can not be used because of topographical conditions. On the other hand, native labor is familiar with the use of primitive implements and does not take naturally to the newer types. Since up to now labor has been plentiful and comparatively cheap, there has been less incentive to make the initial outlay for the relatively expensive machinery.

The most popular hand implement is the chankol, a broad and deep hoe varying in size and weight. It is utilized for a number of operations, such as digging, hoeing, weeding, and draining rice fields. Another popular implement is the fork, usually three pronged and similar in size to the chankol. On estates, as well as smallholdings, material is transported primarily by manual laborers. The movement of crops to the factory, cutting and filling, and similar operations are frequently done with open baskets carried on the head or on a stick across the shoulders.

#### Disease and Pest Control

Brown spot is the most common disease of rice in the States of Malaya, and is present to some extent in every production area. Tests are being conducted on susceptibility of various varieties of rice to brown spot, as well as to blast disease. The most serious disease of oil palms is basal stem rot. A greater impetus to the development of control measures for this disease occurred during the latter part of the 1950's, when it was found that the disease attacks young palms as well as overaged ones.

An obscure disease of coconut, which causes the premature shedding of nuts, has occurred in the State of Johore. To date, control methods have not been found. Some damage to coconuts is also inflicted by insect pests, such as the slug caterpillar and rhinoceros beetle. However, the dread padang-padang, common to the Philippines and other coconut areas, has not occurred in mainland Malaysia. Common diseases of pineapples include heart rot and fruitlet brown rot, while the leading pest is the mealybug. Experiments to find controls are being carried out by the Department of Agriculture. Tests are also being conducted on insect pests and diseases of tea, soybeans, various vegetables, cloves, derris, cocoa, and citrus fruit.

Livestock in mainland Malaysia is relatively free from most of the serious tropical diseases. However, there is a considerable loss of animal health from other causes, such as poor livestock management and malnutrition.

#### Fertilizers

Fertilizers are essential for the cultivation of annual crops in the Malay States. A possible exception may be on virgin land, but this is open to question. The local soils, mostly granite and quartzite types, are deficient in organic matter.

When green manure or any other organic material is applied to the soil, it must be turned in shortly before planting to be of any benefit to the plants. This is due to the high rate of leaching which occurs. Experiments indicate that superphosphate, even in small amounts, provides such a stimulus to plant growth that production increases.

Little information is available on the actual consumption and use of fertilizers. A subsidized fertilizer distribution plan for rice production was launched by the Government in 1952. However, public enthusiasm has been much less than envisioned, despite a 50-percent price subsidy.

### Agricultural Production

Estates produce commodities for sale only, concentrating on such crops as rubber, oil palms, and pineapple. Smallholders grow all of the food crops and some of the commercial crops, especially rubber and coconuts.

Rubber dominates the agricultural production picture of the States of Malaya. Other important crops include rice, coconuts, oil palm, and pineapple. Crops of less importance include tea, fruits, spices, cassava, sweetpotatoes, sago, sugarcane, cocoa, derris, and ramie.

#### Food Crops

Rice.--Land used for the production of rice accounts for about one-sixth of the total cultivated land. Although the production area for rice is the second largest area for any crop, it is only a fraction of the area devoted to rubber. The land is cultivated mainly by Malay smallholders, but the milling and marketing of the crop are handled by the Chinese. Although rice is a staple in the local diet, the amount produced domestically is not more than two-thirds of the total requirements.

Ricegrowing areas are found in all States. However, most acreage is concentrated in two regions--the northwest (Perlis, Kedah, Province Wellesley and Perak), which has 55 percent of the total planted acreage, and the northeast (Kelantan and Trengganu), which has approximately 25 percent. Another important area is located at Tanjong Karang in Selangor. Approximately 95 percent of the total planted rice area is cultivated under the wet system.

The total rice acreage harvested has increased steadily because more land has been devoted to rice, and more of this land has been double cropped. In 1962 the total rice area was 989,000 acres, of which about 46,000 were double cropped. In 1960, 976,000 metric tons of paddy rice, an alltime high, were produced (table 3). The output in 1961 and 1962 fell to 926,000 metric tons. The main crop is harvested between January and mid-April, while the off-season crop is harvested in the fall.

Other crops, including vegetables and fruit <sup>10/</sup>.--All other food crops produced for local consumption are grown on less than 6 percent of the total cultivated area.

Aside from rice, corn is the only grain crop of any significance. It is grown on most smallholdings as a supplement to the household food supply. Very little is grown for commercial distribution, nor is it used to a great extent as livestock feed. Sweetpotatoes and cassava are

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<sup>10/</sup> Does not include pineapple, which is listed as a commercial crop.

Table 3.--States of Malaya: Production of major crops, 1958-62

Crop	1958	1959	1960	1961	1962
-----1,000 metric tons-----					
Cereals:					
Rice, (paddy).....	714	903	976	926	926
Corn (maize).....	7	9	10	11	11
Root crops:					
Sweetpotatoes.....	75	108	113	117	127
Yams.....	7	8	10	11	10
Cassava.....	23	23	22	28	30
Vegetables:					
Fresh vegetables <u>1/</u> .....	341	381	400	457	373
Colocasia.....	8	11	12	12	11
Fruits and nuts:					
Pineapples.....	180	182	195	229	224
Bananas.....	322	327	345	356	341
Citrus.....	8	8	9	9	9
Duriens.....	36	37	38	37	36
Mangosteens.....	13	15	16	16	13
Rambutans.....	24	24	26	25	27
Other fruit.....	33	31	35	31	26
Spices:					
Areca nuts.....	10	10	11	12	9
Ginger.....	7	7	7	7	5
Other spices.....	7	6	7	7	4
Oil seeds:					
Coconuts <u>2/</u> .....	110	127	176	165	136
Peanuts (groundnuts).....	<u>3/</u>	<u>3/</u>	<u>3/</u>	1	2
Oil palms:					
Kernels.....	19	19	24	25	28
Oil.....	61	73	92	95	108
Rubber.....	672	707	720	749	764
Tea.....	2	2	3	3	3
Coffee.....	3	4	3	4	3
Tobacco.....	2	2	2	2	2

1/ Includes chilies.

2/ In terms of copra.

3/ Less than 500 metric tons.

Sources: Indices of Agricultural Production, Nov. 1963, ERS, and Foreign Service Reports, American Embassy, Kuala Lumpur.

the major root crops. Most of the vegetables are grown by Malays in small home gardens or in city fringe market gardens operated by Chinese farmers. These Chinese farmers strive for as many harvests as possible; to this end, mostly leafy vegetables are grown. Off-season production of vegetables on rice land is gaining popularity. Here again, this is occurring mostly on farms operated by Chinese.

Fruit raising on about 3 percent of the cultivated land provides a secondary source of income for many smallholders. Acreage devoted to banana raising exceeds that devoted to the growing of any other fruit, but there is very little intensive commercial production of bananas. It and the other tropical fruits, durian, rambutan, and mangosteens, are common on smallholdings throughout mainland Malaysia. Oranges are the chief citrus fruit.

### Commercial Crops

Rubber.--Of both agricultural and nonagricultural commodities, rubber is the most important export of mainland Malaysia. Its importance in the economy is shown by the fact that land on which it is planted accounts for almost two-thirds of the planted area, and workers employed in its production make up three-tenths of the total work force.

The rubber tree is well suited to the hot and wet Malayan climate. The local soil, in many places unusable for more intensive tropical crops, is well fitted for rubber production. The industry is divided between the estates, mainly operated by Europeans though some are owned by Asians, and smallholdings, all owned by Malays or other Asians. Rubber estates and smallholdings stretch more or less continuously through the western part of the States of Malaya, from Kedah in the north to Johore in the south.

In view of the overshadowing economic importance of rubber, an extensive replanting program was launched in 1953. Under this scheme, the Government subsidizes the replacement of old rubber trees with new high-yielding varieties, some of which in experimental stands have more than doubled normal production rates.

Total rubber production in 1958 was 672,000 metric tons. (See appendix table 12.) By 1962 it had risen to 762,000 metric tons, an increase of more than 13 percent, or an annual increase of about 3 percent. Rubber production in 1962 exceeded that of 1948 and 1949, which were previous peak years in the postwar period. During those years the trees were still "flush" from the war-time lag in tapping.

Coconuts.--After rice and rubber cultivation, coconut production is next in importance on smallholdings. Coconut acreage on estates accounts for only about 20 percent of the total area in coconuts. Production of copra for local extraction of oil is the main market interest, but large quantities of fresh coconuts are used for home consumption.

Plans have been drawn up to increase coconut production and in turn reduce dependence on copra imports. This would be accomplished by replacing old trees with better varieties and by improving drainage.

Three major production areas lie along mainland Malaysia's west coast in Johore, Perak, and Province Wellesley. Coconuts also are grown extensively along the east coast. Because a major portion of the coconut palms are well past their prime, copra production in recent years has dropped about 40 percent below the prewar average. In 1960, 176,000 tons were produced. This represented a postwar high. By 1962, the output had dropped to 136,000 tons.

Oil palm.--Oil palm cultivation in the States of Malaya is entirely an estate operation. Presently all production is concentrated on 61 estates with 140,000 acres. This area, about 2 percent of the total cultivated area, has increased steadily since 1951.

Most research on the oil palm industry indicates that profitable production can be derived only from large areas. In view of this, the Government is considering extensive plantings, bordering existing oil palm estates, and apportioning the new land to smallholders. This will give the smallholders the benefit of the managerial experience and oil processing equipment of estates, and provide the estates an increased supply of kernels.

In 1962, 106,000 metric tons of oil were produced, an alltime record. Growers also set a record by producing 28,000 metric tons of kernels.

Pineapple.--Pineapple is grown throughout the States of Malaya, but it is utilized for canning in only three States. Johore is by far the biggest producing area, with Selangor next and then Perak. The postwar rehabilitation of the industry emphasized permanent plantations in contrast to the "catch" crop system employed before the war. Large-scale jungle clearing, drainage work in the coastal peat swamps, and planting were projects carried out in Johore and to a lesser extent in the two other major producing States.

In recent years approximately 45,000 acres of land have been planted to pineapple and over 200,000 metric tons produced. Much of it is consumed fresh. Shipments of pineapple, most of which is canned in Singapore, amounted to 48,548 metric tons in 1962. Exports of canned pineapple totaled 36,127 metric tons.

Other crops.--Land used for the production of spices, tea, cocoa, coffee, and tobacco accounts for less than 2 percent of the cultivated land. Of the spices, only areca nut is cultivated to any extent, with ginger and pepper of secondary importance.

Both highland and lowland teas are grown commercially. Lowland tea accounts for approximately two-thirds of the total output. Its greater yield seems to more than offset the disadvantage of a slightly lower market price because of inferior quality. Although coffee production has tended to increase in recent years because of good prices, mainland Malaysia has remained a net importer. Liberica coffee accounts for most of the production. Prospects for cocoa as a potential economic crop are clouded by the possibility of dieback disease. A dark, heavy leaf variety, which is sun cured, is the most common tobacco grown. However, the production of flue-cured, Virginia-type tobacco is increasing as the demand from local cigarette producers raises its market value.

#### Livestock and Livestock Products

Although the States of Malaya cannot be classed as a livestock raising area, this smallholder industry has some economic significance (table 4). The population census of 1957 reports that less than 0.5 percent of the employed population was engaged exclusively in the raising of livestock.

In most cases, livestock raising is an integral part of the overall farming operation. The major exception is found among the Indians, who devote their entire time to raising buffalo and cattle for milk. Important domestic animals are buffalo, cattle, swine, sheep, goats, and poultry. Livestock products include meat, eggs, milk, and hides.

Table 4.--States of Malaya: Number of selected types of livestock, 1953-1962 1/

Year	Buffalo	Cattle	Sheep	Goats	Hogs
	1,000 head	1,000 head	1,000 head	1,000 head	1,000 head
1953.....	243	279	26	289	306
1954.....	247	278	27	272	399
1955.....	243	279	27	268	404
1956.....	243	287	29	268	426
1957.....	253	285	31	275	396
1958.....	255	291	33	269	398
1959.....	263	305	35	279	418
1960.....	269	308	37	271	455
1961.....	276	306	35	278	465
1962.....	276	298	37	287	492

1/ End of year.

Source: (12).

Several factors inhibit the development of the livestock industry. The climate is not suited to intensive livestock operations. Pasture and fodder are insufficient to keep all types of livestock in good condition throughout the year. Time and money needed to develop pasture are not likely to be forthcoming from private investors. A final factor inhibiting development of the industry is the attitude of various segments of the population towards consumption of certain livestock.

The Malay farmer is primarily interested in buffalo; his interest in goats and sheep is limited. Buffaloes are used mainly in the cultivation of wet rice and as a beast of burden. Swine are raised almost entirely by Chinese farmers and are very important to his vegetable-pig-poultry-fish system of commercial gardening. The Indian segment of the agrarian population is interested in milk production, primarily from cattle, but also from buffalo and goats. Poultry has gained significant popularity in recent years. Although the majority of the chickens remain in "backyard" flocks, an increasing number of commercial flocks of 3,000 to 10,000 birds have been started. Some flocks have as many as 50,000 birds.

#### Agricultural Development

On December 31, 1960, mainland Malaysia completed its First Five-Year Plan, commonly known as the General Plan of Development, and immediately launched the Second Five-Year Plan, 1961-65. The present program is considered the Government's "big push" to provide for the economic and social needs of mainland Malaysia. Like its predecessor, the Second Plan deals

not only with the agricultural sector but with all sectors of the economy. Public and private investments are combined to finance the program.

### First Five-Year Plan

Although the First Five-Year Plan dealt with all aspects of the economy, a major part was devoted to agricultural development (table 5). With respect to agriculture, the objectives of the Plan were as follows (10):

- (1) To achieve self-sufficiency in many essential foodstuffs and to increase the production of others, such as rice, so as to limit imports to the present level.
- (2) To diversify production by introducing new crops and encouraging the growth of some exotic crops already grown.
- (3) To increase production of existing crops.
- (4) To improve the marketing system.
- (5) To give financial assistance to farmers through various agencies.
- (6) To give security to cultivators.
- (7) To provide extensive agricultural education.

Table 5.--States of Malaya: Gross public investment in agriculture, First and Second Five-Year Plans 1/

Program	First Plan			Second Plan
	Goal	Actual	Percentage of goal	Goal
	Million dollars	Million dollars	Percent	Million dollars
Rubber replanting.....	160.0	153.4	96	165.0
Drainage and irrigation.....	60.0	38.3	64	100.0
Land development.....	15.0	16.7	111	191.0
Cooperative credit.....	---	n.a.	---	20.0
Coconut rehabilitation and replanting.....	---	---	---	15.0
Research and extension.....	2.7	2.4	89	20.0
Animal husbandry.....	1.5	1.7	113	10.0
Land survey.....	9.7	3.6	37	6.9
Other <u>2/</u> .....	8.4	6.8	81	5.2
Total.....	257.3	222.9	87	533.1

1/ Does not include expenditures on forestry or fisheries. Some programs will benefit sectors other than agriculture.

2/ Includes programs such as the Rural and Industrial Development Authority.

Source: (10).



During the period 1956-60 many economic problems, both internal and external, beset mainland Malaysia. There was a heavy drain on financial and administrative resources because of the emergency. The widespread decline in prices of farm products in 1957-58 reduced the revenue realized from the export of raw materials and resulted in a decline in the rate of development investment. Thus, despite the soundness of the programs, the First Plan fell short of its goal in some sectors.

The total gross investment during the First Plan was approximately M\$3,000 million, 30 to 40 percent above the 1950-55 average. About 60 percent of the total investments came from private sources; the remaining portion came from government and other public agencies. Although overall public investment was about 15 percent below the target of M\$1,150 million, this amount was nearly double that of the preceding 5 years.

A major portion of the private investment in agriculture was stimulated by government programs. Under the Plan, total cultivated area increased about 5 percent, while agricultural production increased nearly 15 percent. The following tabulation shows some of the changes at the end of the Plan period:

Commodity	Percentage change in--	
	Cultivated area	Agricultural output
	Percent	Percent
Rubber.....	4.5	12
Rice .....	8.0	30
Oil palms .....	14.0	27
Coconuts .....	1/	- 13
Food and fruit crops.....	11.0	1/
Meat.....	---	6

1/ Not available.

Some caution must be used in interpreting the output figures because of the considerable variation in production from year to year.

The increase in rubber production is particularly noteworthy because, although total acreage increased, the mature acreage decreased by 10 percent. The increased production was due primarily to greater yields resulting from the planting of improved varieties. The rise in rice production was due to improved varieties of seed, use of fertilizer, availability of more irrigation facilities, and further use of double cropping. An organized marketing system which raised the cash returns to the growers has provided an incentive to produce more rice. A predominance of overaged trees and a deterioration of land resulted in the decline in the output of coconut products.

The total public investment in the agricultural sector of the economy amounted to M\$222.9 million, 13 percent below the planned target.<sup>11/</sup> However, some phases of the program for agriculture drew investment beyond the level planned.

<sup>11/</sup> This does not include forestry and fisheries which are included in this section of the economy by the Government.

More than half of the public investment in agriculture was made in the rubber replanting program. The Government provided both smallholders and estates with payments which offset part of the cost of planting improved high-yielding varieties on new acreage or replanting existing acreage. During the period, smallholders increased their holdings by 86,000 acres and replanted 308,000 acres; estates increased their area by 79,000 acres and replanted 357,000 acres. Thus, during the First Plan period the area planted to high-yielding varieties rose from 30 percent to 46 percent of the total rubber acreage.

Expanded irrigation facilities are aimed at increasing rice production. The First Plan sought to increase the irrigation area from the 270,000 acres of 1955 to 470,000 acres in 1960. However, primarily because of a lack of qualified engineers, the project succeeded in reaching only about 60 percent of its target. Only 390,000 acres were served by irrigation facilities in 1960. Mainland Malaysia also carried out extensive work on land drainage and protection to improve the rubber and coconut lands.

The major factor contributing to the increase in agricultural land was the opening of jungle tracts for settlement and cultivation. In 1956, the FLDA was established to coordinate and supervise all activities necessary to create new agricultural communities. By the end of 1960 it had 22 schemes in different stages of completion. About 3,500 families had been settled, and rubber had been planted on half of the nearly 30,000 acres newly cleared.

Although in some instances the Plan fell short of its target, it was not a failure. Barring unforeseen circumstances, one of the most important gains to be made will be the greater rubber production resulting from the rubber replanting program.

### Second Five-Year Plan

At present mainland Malaysia is working under its Second Plan. The targets set are quite reasonable when considered in relation to the resources and capabilities of the economy. The overall objectives of the Plan follow:

- (1) To improve the economic and social well-being of the rural population by providing the necessary facilities and opportunities.
- (2) To provide employment for the growing population of working age.
- (3) To increase per capita output by protecting per capita living standards against adverse trends such as a decline in rubber prices.
- (4) To diversify production by developing other suitable agricultural crops in addition to rubber, and by encouraging industrial expansion.
- (5) To expand and improve health and social services and provide adequate facilities to all parts of the nation.

A major part of the Plan is aimed at the agricultural sector of the economy and the rural portion of the populace.

Despite the gains made during 1956-60, mainland Malaysia still faces many problems. The population is increasing by about 3 percent a year, and by 1965 an additional 340,000 workers

will be added to the labor force. Thus, the economy must make substantial progress just to maintain its present level. Added to this is the economically depressed situation found in most rural areas. Many of the people are landless, and surveys show that poor living conditions and low nutritional standards exist in many regions. And finally, in spite of strides toward diversification of production made during the First Plan, the States of Malaya still rely on rubber for a major share of their income. It follows that the economy is vulnerable to world market fluctuations in the price of rubber and to the increasing use of synthetic rubber.

The Second Plan permits an overall production increase of 15 percent for the agricultural sector. The production of rubber is to increase by over 10 percent, about the same rate of increase as under the First Plan. The replanting rate also is to remain equal to that achieved during the period 1955-60. The rice output is to increase at a rate equal to the rising domestic consumption, and thus imports are to remain about constant. The production of other agricultural commodities is to be increased substantially. Employment in the agricultural sector should increase more than 10 percent during the period.

The projected total investment under the Second Plan is M\$5,050 million, nearly two-thirds greater than the actual investment during the First Plan. Total private investment, forecast at M\$2,900 million, will again account for the largest portion of the overall investment. Little, if any, of this private investment will be channeled into the agricultural sector.

Public investment is to form a larger portion of total investment during the present Plan than it did during the previous one. The goal for the public investment in agriculture is M\$533 million, 24.8 percent of the total public investment. <sup>12/</sup> This is nearly 2 1/2 times the actual investment made during the previous 5-year period. Over a third of the agricultural investment will be spent on the development of new lands. Additional funds will come from other sectors of the economy; for example, the transportation sector will build rural roads to new settlements. The rubber replanting schemes draw the next largest investment, with irrigation and drainage projects ranking third. Over 85 percent of the investment in the agricultural sector is allocated to these three areas. Thus, the Government is carrying forward its multigoal program for agriculture--improving rubber production while widening the base of the country's economy through the production of new crops on new land.

The FLDA will receive most of the money allocated for land development. This will be used for the clearing and settling of approximately 250,000 acres for cultivation. Planners of the development programs envision new land settlements opening at a rate of 12 per year. A 10-acre holding will be provided for each family; each settlement will have about 400 families. Over the 5-year period, about 24,000 families will be settled on the new land. Rubber or oil palm will be planted on 7 acres of the individual holding, and rice, fruits, vegetables, or other crops can be grown on the remaining 3 acres.

An additional 75,000 acres will be opened under the Group Settlement Areas Act of 1960. This program was set up to provide an average holding of 8 acres for the many landless peasants of the country. The alienation procedure followed is much simpler than that used by the FLDA. Assistance is granted to the settlers in the same manner as under the FLDA projects.

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<sup>12/</sup> Does not include forestry and fisheries.

The total amount of new agricultural land which will be provided by government programs during the Second Plan, approximately 325,000 acres, represents 5 percent of the agricultural land utilized in 1961. This will result in an annual increase of approximately 1 percent, which is in line with the rate during the First Plan. Although this is not an exceptionally high rate of acreage expansion, several factors virtually prohibit a greater rate.

Until a comprehensive soil survey is completed, the actual amount of land suitable for agriculture will remain questionable. During the Second Plan period, over one-third of the gross public investment in agriculture will be utilized primarily for new land development. Additional funds will be expended in the agricultural sector for related programs and in other sectors of the economy to provide roads, utilities, and public services for these new areas. The larger expenditures necessary to provide new land at an annual rate in excess of 1 percent would be too great a burden on the Government.

In addition to these factors, the Government hopes to draw excess agricultural labor into the industrial sector. Therefore, the rate of land expansion does not have to keep pace with population increases.

It is expected that 650,000 acres will be replanted to rubber during the Second Plan. This will raise the percentage of land in high-yielding varieties to 65 percent of the total rubber area. Since much of the estate acreage is already covered by improved trees, the future replantings will be concentrated on smallholder land. The public expenditure in this category provides for rubber experimentation and research as well as for subsidies to producers to offset part of the cost of replanting.

To increase the production of rice and other commodities, the Government is sponsoring extensive drainage and irrigation projects. The irrigation projects will develop new rice land and will increase acreage which can be double cropped. Also, adequate water supplies should tend to increase average crop yields. About 300,000 additional acres will benefit eventually from the construction of new irrigation systems or the improvement of existing facilities, but not all within the 5 years covered by the Second Plan.

Drainage projects are to be extended over approximately 180,000 acres, mostly smallholder land in the alluvial delta, to revitalize coconut production. The Government is now faced with the prospect of a declining output of coconut products because of the predominance of overaged trees and the deterioration of coconut land through frequent inundation. Smallholders, because they cannot afford the cost of replanting, are hardest hit by the problem of overaged trees. A program similar to the Rubber Replanting Scheme is to be started under the present Plan. Funds will be used to conduct experiments to determine the best varieties to be used for replanting. Also, subsidies and guidance will be extended to the planters.

As mentioned earlier, production of livestock and animal products in the country is quite limited. The Plan has allocated M\$10 million to (1) improve the quality of stock and increase production through such methods as selective breeding and importation of better breeding stock, (2) develop extensive reserves for grazing from present waste land, and (3) expand facilities for research and training.

The value of livestock and poultry products is expected to increase by M\$40 million during the period. At the end of the Plan period, annual output of meats will be about 50 million pounds

more than in 1960. The projected percentage production increases of various meats are as follows: pork, 50 percent; mutton, 17 percent; and beef, 3 percent. Approximately 11,000 acres will be developed during 1961-65 for livestock, of which one-fourth will be cultivated for fodder grasses.

Expanded rural cooperatives will furnish equipment and supplies to the farmer and become the major source of short-term credit needed by the farmers. At a future date, cooperatives may also form an integral part of the marketing system.

The need of mainland Malaysia for far-reaching agricultural research and extension services has been considered by the planners. Funds are to be spent for (1) control of insects, pests, and plant disease; (2) promotion of improved rice seed utilization; (3) federal paddy and dry land stations so that intensified research can be conducted on off-season cropping, double cropping, and the adaptability of various crops; (4) soil research and soil surveys; and (5) extension education to introduce better cultivation practices and cropping patterns.

The Second Five-Year Plan is an ambitious venture, even when measured against the First Plan. The ratio of total investment to projected increase in the 1965 national output of goods is 4 to 1, quite high by most standards. However, many of the benefits which will be derived, especially in the agricultural sector, will not be realized until the end of the Plan period. Also, a substantial amount of the public investment will be used for such things as health, education, and other social services which do not directly yield measurable economic output.

## SINGAPORE

### Characteristics

#### General

The State of Singapore, composed of the island of Singapore and approximately 40 other islets, is located off the southern tip of the Malay Peninsula. Singapore Island is about 14 miles long, 26 miles wide, and has a land area of 209.5 square miles (23). The other islets have a total land area of 15 square miles; the major ones being Pulau Tekong (6.9 square miles), Pulau Ubin (4.0 square miles), and Pulau Blakang Mati (1.1 square miles).

The Strait of Johore separates the State from mainland Malaysia. A three-quarter-mile causeway, carrying a railroad and highway, is the major transport link between the two entities. The city of Singapore occupies the south-central portion of the main island.

Most of Singapore's surface is made up of gently rolling hills, the tallest of which is only 581 feet high. The rivers have all been modified by manmade facilities; the headwaters of the three largest have been dammed to form reservoirs.

The State's climate is similar to that of the other parts of Malaysia; a fairly constant temperature, high humidity, and abundant rainfall. Temperatures normally range from about 75° F. to 85° F. Although there are no distinct wet and dry seasons, December is usually the wettest month.

#### Population

Singapore's last official census was conducted in 1957. As of June 18 in that year, the total population was 1,445,929. This was a 54.1 percent increase over the 1947 figure. It was estimated

that by mid-1962 the population had risen to 1,732,800. The increase during the 5-year period was 19.8 percent, equivalent to an average annual increase of 3.7 percent. Singapore has one of the fastest growing populations in the world.

The Chinese form the major racial group, accounting for three-quarters of the total population. Malays (14 percent) and Indians and Pakistanis (8 percent) are the other leading racial groups, while Europeans and Eurasians make up the remainder of the population.

Statistics on the total number of people employed have not been officially compiled. However, a partial census of some working groups is conducted periodically. As could be expected, the manufacturing sector of the economy is the biggest single employer. On the other hand, all of the various sectors connected with trade (including transportation, warehousing, and finance) account for the largest portion of the total number employed. It is believed that less than 10 percent of the economically active are engaged in agriculture.

## Economic Situation

### General Structure

For more than a century, Singapore has been important as an international trade center. The State's economic well-being was built on entrepot trade, but in recent years industry has been playing a larger role in the economy.

Its favorable geographic location and good harbor first brought merchants to Singapore. Although the island of Singapore itself did not produce many commodities for export, the surrounding areas, Sumatra and the other islands of the former Dutch East Indies, <sup>13/</sup> Thailand, Burma, and the States of Malaya, were rich in export products. Construction of port, transport and storage facilities, and the establishment of banking and other commercial services provided other ingredients needed. Soon large quantities of tropical products were being funneled through Singapore, where processes such as grading and repackaging were undertaken. Then the products were sent on to Europe and America. Since the early 1900's, increased amounts of manufactured goods destined for southeast Asia have moved through Singapore. The State also serves as a middleman for a significant part of the trade between the countries in its immediate area.

With the end of World War II, a rising tide of nationalism began sweeping southeast Asia. Economic independence tended to go hand-in-hand with political independence. These new nations wished to handle their own trade, selling directly to the end user and buying directly from the manufacturers. Major among the moves in this realm was Indonesia's stoppage of all trade with Singapore in late 1963. In the future the relative value of entrepot trade will probably decline, and the State will have to look to other sources for revenue.

Many banks and insurance companies, as well as trading organizations, maintain their regional offices in Singapore. These are an important source of revenue.

The State's industrial sector depends almost entirely on imported materials. Of prime importance are those industries which process the agricultural raw materials produced in the region. Remilling of rubber is the biggest industry, and provides the State's leading export item. Other major industries are lumber milling and vegetable oil production; smaller ones include the canning of pineapple and the making of soap and various finished rubber goods. Iron and tin are the major nonagricultural commodities which are reworked by plants in Singapore.

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<sup>13/</sup> Now the Republic of Indonesia.

## Development Plans

Singapore is currently working under its first comprehensive development plan. It was launched in 1961 and will continue through 1964. Before 1961, development projects in the public sector were financed on an annual basis by the department of government having jurisdiction over the project. No overall plan or goal existed.

The main objective of the development plan is to create employment for the State's ever-increasing work force. Thus, over 58 percent of the total expenditure under the plan is slated for economic development programs (table 6). The largest expenditure of funds in this sphere will be to the Economic Development Board. Set up in 1961, the Board is engaged in industrial promotion activities. The Government intends to encourage industrialization through various financial benefits (for example, duty-free imports and tax concessions) and the provision of essential services (such as plant sites, utilities, and transport), but will leave the actual industrialization to the private sector.

Approximately 10 percent of the funds allocated for economic development are to be spent on a program which includes agriculture. The actual total expenditure which will aid farmers can not be determined. Money spent on transport facilities, industrial development, utilities, and many other programs provides benefits for all sectors of the economy.

The other major expenditure, 40 percent of the total, is for social development. Within this area, the largest outlay will be for an expanded program of public housing. Other programs in existence before the plan will be continued.

## Agriculture

### General

Agriculture is of minor importance in the State's economy. Only limited land area is devoted to crop production, and much of the output is for local consumption.

The total amount of cultivated land has remained at approximately 35,000 acres during the past decade (table 7). This is 25 percent of the State's total land area. Although the expansion of urban areas and industrial sites has not made significant inroads on the present production land, it has decreased the amount of land available for future expansion of the cultivated area. In view of this, a project is underway to reclaim about 4,000 acres of swampland and develop it for agricultural use.

Land used for producing rubber and coconuts accounts for about 60 percent of the total agricultural acreage. Much of the remainder is used for raising fruits, vegetables, and other food crops. Animal husbandry is of some importance. Swine and poultry are the main types of livestock raised.

Singapore has only a few estates, all of which produce either rubber or coconuts. Most of the agricultural land is held by individuals owning small plots. However, through the use of intensive cultural methods, the farmers achieve high yields.

Singapore produces no rice and is wholly dependent upon imports. Since rice is a staple ingredient in most diets, a rice stockpile program is operated to insure an adequate supply at all times.

Table 6.--Singapore: Expenditures under development plan by programs, 1961-64

Program	Expenditures
	<u>Million dollars</u>
Economic development	
Land and agricultural development <u>1</u> /.....	53.27
Industry and commerce:	
Economic Development Board.....	100.00
Kallang Industrial Site.....	40.00
Jurong Industrial Site.....	45.00
Land acquisition <u>2</u> /.....	5.60
Electricity.....	78.50
Water.....	54.23
Gas.....	14.03
Transport and communication:	
East wharf development.....	12.70
Improvement of Singapore River.....	15.70
Civil aviation.....	10.90
Telecommunications.....	12.88
Roads.....	29.60
Bridges.....	10.43
Telephone board.....	17.45
Other.....	7.66
Total.....	507.95
Social development	
Health.....	35.80
Education.....	94.48
Social welfare.....	1.77
Housing.....	153.60
Sewerage.....	47.36
Community services.....	6.07
Culture.....	10.80
Total.....	349.88
Public administration.....	13.19
Grand total.....	871.02

1/ Includes land to be purchased for general development and resettlement, flood control schemes, and rural development schemes. 2/ Land for industrialization.

Source: (24).



Table 7.--Singapore: Utilization of cultivated land, 1959

Land use	Area	Percentage of total cultivated land
	Acres	Percent
Cereal crops:		
Corn.....	25	.1
Root crops:		
Sweetpotatoes.....	1,400	4.0
Cassava .....	630	1.8
Vegetable and pulse crops .....	4,350	12.3
Fruit crops.....	4,940	13.9
Commercial crops:		
Rubber.....	15,168	42.8
Coconuts .....	7,600	21.4
Tobacco .....	759	2.1
Spices.....	400	1.1
Other crops <u>1/</u> .....	170	.5
<b>Total cultivated land.....</b>	<b>35,442</b>	<b>100.0</b>

1/ Includes land used for grazing.

Source: (3).

### Production

Crops.--Approximately 35 percent of the total rubber output is produced on estates; the remainder is grown by smallholders. Rubber is relatively unimportant as a source of farm income. Less than half of the land devoted to the production of rubber is properly maintained. A great number of the rubber trees are tapped only when the price of rubber is attractive. On some rubber acreage the trees are not being tapped at all; the owners are waiting for the land to be purchased for urban development.

Coconut production follows somewhat the same pattern as that of rubber. Most of the coconut palms are past their peak production years. Since no comprehensive replanting program exists and individual replantings are negligible, the output of coconuts will decline and all but cease in the foreseeable future.

The area devoted to fruit production has tended to increase lately. Pineapples, bananas, papaya, rambutans, and exotic fruits are grown on most of the land. A relatively high degree of horticultural skill is employed in fruit production. Only selected varieties are planted, and careful attention is given to the trees. Although fruits are not as profitable per unit area as vegetables, they can be grown on land which is not suited for vegetable production.

Singapore's climate is well suited to rapid vegetative growth, and many local farmers have taken advantage of this fact. A very highly intensive form of market gardening, dependent upon soil fertility and an adequate water supply, has been developed. Farmers are very efficient and have incorporated many up-to-date practices into their production techniques. Leafy vegetables, which lend themselves to multiple annual harvests, are grown extensively.

In the past, pepper was the main spice produced in Singapore. However, unfavorable world prices for this commodity have sharply curtailed output. The only other spices of any significance are ginger and chilies produced by vegetable farmers for local consumption.

Livestock.--Smallholders raise most of the livestock. In general, the pattern for livestock raising is similar to that found in mainland Malaysia. Most of the buffaloes and cattle are kept by the Indians for milk, pigs by the Chinese, and poultry by many of the smallholders.

One large dairy farm has been started in the State. Its herd of approximately 900 cows is composed mainly of holsteins imported from Australia. Production costs are high, and the milk finds its best market in the non-Asian segment of the population.

Individual farms produce most swine in small quantities. These farms have started to accept modern production practices and improved crossbred swine. In recent years, relatively large poultry flocks have been established. Few flocks have more than 5,000 birds, but those with between 1,000 and 5,000 are quite common.

## SABAH

### Physical Characteristics

#### Location and Area

The State of Sabah, formerly the Crown Colony of North Borneo, occupies the northeastern corner of the island of Borneo. Its western coast is touched by the South China Sea, while the northern and eastern coastlines are washed by the Sulu and Celebes Seas. Two distinct political entities border Sabah on the south--Sarawak and Kalimantan, or Indonesian Borneo. The Equator passes just south of Sabah. Jesselton, the capital city, lies approximately 1,000 miles east of Kuala Lumpur, across the South China Sea.

Sabah occupies a total of 29,388 square miles, an area slightly smaller than the State of South Carolina. Its coastline is between 800 and 900 miles long (4).

#### Topography

Mountain ranges between 4,000 and 6,000 feet high occupy most of the central part of Sabah. One of the main groups is the Cooker Range, which parallels the coast of the South China Sea. Low hills are found closer to the coast, while alluvial flats form much of the actual coastline. Among the hills are many valleys, usually covered with dense forests. A few plains may be found in Sabah. Closer to the coastlines, swamps are common.

Sabah has many rivers and streams. In many regions these waterways form the only means of communication and transportation for the people. The rivers which flow to the east coast have

a gentler flow and are usually longer than those which flow to the west. Thus, those flowing to the east are navigable over a greater distance. The Kinabatangan River, some 350 miles from its source to its mouth, is the State's longest.

Sabah has many islands, most of them small and of little importance. Labuan Island, at the northwest corner of the State, has one of the leading harbors.

### Climate

The climate in Sabah is tropical. The proximity of large bodies of water almost eliminates any wide variation in temperatures. Thus, the average midday temperature is 88° F. and the average evening temperature is 72° F.

Annual rainfall ranges between 60 and 160 inches. The amount of rain received in any region is dependent upon its location; the seasonal pattern is influenced by the prevailing winds or monsoon. On the west coast the rainy season is during the southwest monsoon (May-July). The east coast receives its heaviest rains during the northeast monsoon (October-March). The heaviest rainfall is usually recorded in the southwest; the interior and the northeast receive the lowest.

### Population

Sabah's total population was reported as 454,421 in the 1960 census. This was an increase of 36 percent over the 1951 figure, and indicates an annual net increase of 2.9 percent when immigrants are excluded. The rate of increase is very phenomenal when compared to the 0.9 percent annual increase between 1931 and 1951. The population was estimated as 475,000 at the end of 1961.

The following tabulation shows the ethnic distribution of Sabah in 1960:

Ethnic group	:	Percentage of total population
Indigenous groups:	:	
Dusun.....	:	32.0
Bajau.....	:	13.1
Murut.....	:	4.9
Other.....	:	17.5
Nonindigenous groups:	:	
Chinese.....	:	23.0
Europeans.....	:	0.4
Other.....	:	9.1

There are approximately 16 people per square mile in Sabah. Over 40 percent of the people live along the west coast, where the average density is 66; in the interior, where large areas are still virgin jungle, the average density is only 2 people per square mile. There has been no marked movement to urban areas.

### Production Patterns and Practices

#### Land Use

Forests, mostly uninhabited, occupy nearly 80 percent of the total land area. In 1962, forest products accounted for more than half of all exports. Approximately 6 percent of Sabah's

land is utilized for agriculture. More than half of this is classified as bush fallow, land on which the natives practice shifting cultivation. The permanent area devoted to agriculture accounts for nearly 3 percent of the State's total land. About 19 percent of the total agricultural area is used for the production of rubber; 8 percent of it is used for producing rice on a permanent basis (table 8). Nearly 70 percent of the permanent agricultural area is used for the production of all tree crops (rubber, coconuts, and so forth).

### Land Tenure

In Sabah, all land dealings are based on the Torrens system of land tenure, and the land ordinance is the guiding piece of legislation. All land which has not been alienated is the property of the State government.

Two types of tenure exist in Sabah: (1) ordinary leasehold, available to anybody, and (2) title by entry in the Register of Native Titles, restricted to natives only. Generally, leaseholds are not granted for more than 99 years. On the other hand, the native title extends to the owner a permanent and transferable right to use the land within certain prescribed limits. 14/ Native title holders pay an annual rent of 50 cents per acre, while leaseholders pay from M\$1 per acre to M\$6 per acre, according to the length of time the land is held. If leasehold land is alienated for wet rice production and so used, a rebate reduces the annual rent to 50 cents per acre.

Approximately 200,000 acres are held under native titles (25). Much of the land is planted to rice, with fruit trees, rubber, coconuts, sago, and tobacco of secondary importance. Natives

Table 8.--Sabah: Utilization of cultivated land, 1960-61

Land use	Area	Percentage of total cultivated land
	<u>1,000 acres</u>	<u>Percent</u>
Cereal crops:		
Rice.....	88	8.2
Fruit crops.....	6	.6
Commercial crops:		
Rubber.....	203	18.9
Coconuts.....	79	7.4
Oil palm.....	10	.9
Shifting agriculture.....	<u>1/</u> 640	59.7
Other crops <u>2/</u> .....	46	4.3
Total cultivated land.....	1,072	100.0

1/ Estimated. 2/ Includes fallow land.

Source: (18).

14/ Some of the requirements are acceptable cultural practices, continued cultivation, and sale or transfer only to another native.

engaged in shifting cultivation do not hold titles to the land they work. Nonindigenous individuals hold leases on about 565,000 acres. <sup>15/</sup> Europeans, who raise commercial crops such as rubber, oil palms, cocoa, and hemp on large holdings, control approximately 231,000 acres. Asians, utilizing both large and small holdings to produce mostly rubber, coconuts, rice, and vegetables, control the remainder of the leasehold area. Native reserves similar to those in mainland Malaysia are of some importance.

### Practices

A system of shifting cultivation is followed by a number of indigenous people. Although the agricultural commodities grown under this system have no commercial significance--the amount produced barely meets the needs of the grower--the system is damaging the State's forestry resources. The Government is attempting to halt the practice.

The use of tractors and other machinery is confined mostly to the estates and some stations operated by the Department of Agriculture. Smallholders use animals and crude instruments.

The Department of Agriculture is currently investigating the use of fertilizers, disease and pest control measures, and other aids to production. However, it will take some years before the average farmer will benefit from this work. One of the biggest stumbling blocks will be the general apathy to innovations.

### Agricultural Production

Although agricultural statistics are available on only a few crops, some general trends are evident.

### Food Crops

Rice--As in other parts of Malaysia, rice is the staple food in Sabah. Three types are produced: wet paddy, hill paddy, or kaidinga paddy. By far the most important type is wet paddy, which accounts for approximately 80 percent of annual production. Its growth depends on a sufficient supply of water from either rainfall or irrigation systems. <sup>16/</sup> Both hill and kaidinga paddy are produced by dry culture methods. The major rice-producing regions are along the west coast and in the area immediately inland.

Hill paddy is grown under a shifting cultivation system by groups living in the mountainous areas. In most cases only one rice crop is produced on a piece of land after the jungle is cleared and burned. Kaidinga paddy, planted on fertile soil mostly along the coast, is grown with other crops under a rotation system.

Although rice yields and output have tended to increase since the mid-1950's, Sabah has not been able to reduce substantially its dependence on outside supplies. Imported rice accounted for 37 percent of the total amount consumed in 1956 and 34 percent of that consumed in 1960.

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<sup>15/</sup> This does not include town areas.

<sup>16/</sup> As of the 1960-61 crop, 37 percent of the wet paddy area was served by irrigation projects.

Other crops, including vegetables and fruits.--Corn is grown throughout the State, but not on a large scale. In addition to its use as food for human consumption, it is used also for hog and poultry feed. Another commodity used for both human food and animal feed is sago. The sago palm, although concentrated on the Klias Peninsula, grows naturally throughout most of Sabah. Before World War II the sago industry was very important; some interest again is being shown in it.

Soybeans are grown primarily as a catch crop on land opened for permanent crops. Peanuts are produced on a small scale in the upland area parallel to the west coast. Small amounts of oil are extracted from both soybeans and peanuts.

Vegetables are raised in many market gardens, which surround nearly all the urban areas. Many vegetables which grow in temperate climates, such as beans and tomatoes, are cultivated on land at elevations of 4,000 to 5,000 feet. Supplies are fairly good throughout the year. Although fruit trees are found on most farms, orchards are few. Bananas are an important cash crop in the area south of Beaufort. Other common fruits produced are durians, rambutans, and pineapple. Work on improving the varieties grown is being considered.

### Commercial Crops

Rubber.--Grown on both estates and smallholdings, rubber forms the keystone of the State's agricultural sector. Between 1956 and 1961, the acreage planted in rubber increased from 128,477 to 202,900, or by 60 percent. Smallholdings accounted for approximately 122,000 acres of the 1961 figure. About three-quarters of the total acreage is concentrated in the hills parallel to the west coast. Some recent initial plantings have been made along the east coast.

A replanting program similar to the one in mainland Malaysia has been underway for a number of years. As of the end of 1961, high-yielding clones had been planted on 41 percent of the total area. First returns from these clones are expected in 1964.

Coconuts.--The main coconut-producing area is in the northeast near Kudat. Other major production areas are in the coastal regions of the east. In recent years there have been many coconut plantings, especially in the Kudat area. Although land planted to coconuts exceeds 79,000 acres, only about 50 percent of this area is mature. Thus, actual increases in the harvested area and production have been little in the past few years. Coconuts are produced by smallholders. Cultivation practices are generally substandard, resulting in heavy production losses through disease and insect infestation.

Other crops.--Considerable interest has been shown in recent years in the oil palm industry. By the end of 1963, Sabah's three largest oil palm estates (2,000 to 5,000 acres each) were in various stages of development. It is believed that this industry will become a good source of foreign exchange earnings in the future. At present, oil palm is actually harvested on only slightly more than 1,000 acres of land.

Abaca (Manila hemp) production is concentrated on estates in the southwest. Before 1961 the future of the hemp industry was threatened by the aphid-borne virus disease known as bunchy-top. This disease has now been brought under control and the production area will probably increase. Sabah's only tobacco estate discontinued operation in 1961 because of attacks by insects and disease. This estate had produced high-quality cigar wrapper for export. Tobacco produced by smallholders is used primarily in the domestic manufacture of cheroots and pipe tobacco.

The low price of coffee has prompted many coffee growers to replant their land with rubber. The production area for coffee, which still exceeds 2,000 acres, is found in the west coast highland and along the east coast. Liberica coffee is grown in the latter area. Tea is cultivated on a small scale in the west coast highlands. Some consideration has been given to commercial production. The acreage planted to cocoa, concentrated in the southeast, increased from 135 in 1956 to 3,300 in 1961. The quality of the cocoa grown here is good, and it is believed that it will become a significant export item.

Pepper is no longer an export item because of the decline in world pepper prices, but some is still grown for local consumption. Sugar is grown on smallholdings in many parts of the State, but it is not exported.

### Livestock

As of January 1961, it was estimated that Sabah had the following number of livestock (4):

<u>Kind</u>	<u>Number</u>
Buffalo . . . . .	66,800
Cattle . . . . .	14,500
Swine . . . . .	81,100
Goats . . . . .	17,600
Poultry . . . . .	1,000,000

Buffaloes have a variety of uses and therefore are of great importance. Many are found in the major rice-producing areas, where they are utilized in most cultivation operations. They are also used throughout the State as a pack animal, and they furnish a considerable portion of the local meat supply. Between 4,000 and 4,500 buffaloes are slaughtered annually in government facilities. This is considered to be 75 percent of the annual number killed. Live buffaloes are exported to Sarawak and Brunei, while meat is shipped to Singapore and Hong Kong.

Cattle are raised in the highlands. Although used occasionally as pack animals, they are never used in rice cultivation. The number of cattle slaughtered increased from approximately 900 head in 1956 to 1,500 head in 1961. Some live animals have been exported, as well as meat and hides.

In Sabah, pigs are raised both for subsistence and for commercial purposes. Many farms keep a few pigs, which are allowed to roam free. At the same time, relatively modern establishments for producing hogs are being started. These are found in the coconut areas near Kudat and the east coast and in the areas where rice is produced. This enables the producer to procure cheap local feeds such as coconut meal and rice bran. Also, sago and sago meal are used as feed. About 40,000 pigs are slaughtered annually.

Goats are an important source of meat in areas which are chiefly Moslem. No statistics are kept on the number slaughtered. Poultry production follows the same pattern as swine raising. Though nearly every household keeps a backyard flock, commercial establishments are starting to appear. Poultry meat and eggs provide a large source of animal protein. There is ample room for increased egg production, since imports of eggs are substantial.

## Agricultural Development

### General

To date, Sabah has not embarked upon a comprehensive development program for agriculture. However, some small programs dealing with specific phases of the agricultural sector have been initiated.

The aim of the Government's agricultural policy is (1) to increase the production of economic crops, foodstuff, and livestock under sound methods of husbandry so as to achieve a balanced diversity of crops and livestock; (2) to survey and develop new areas of land suitable for cultivation; (3) to effect controls of pests and diseases of crops and livestock; and (4) to conduct research on all branches of local agriculture, animal husbandry, and fisheries so as to provide the knowledge required for sound future development (5).

### Development Schemes

The State government has been drawing up guidelines on the development of land, especially land which has not been previously utilized in the interior and along the east coast. Much of the work on improvement of the rubber industry is conducted by the Rubber Fund Board, supported by a cess on rubber exports. The Board is affiliated with the Rubber Research Institute of Malaya, from which it derives basic research information. A rubber replanting program has been in operation since 1956.

## SARAWAK

### Physical Characteristics

#### Location and Area

Sarawak occupies a large part of the northern coast of the island of Borneo, which is washed by the South China Sea. It shares its longest land boundary with the Republic of Indonesia. The State of Sabah lies to the east, while the British Protectorate of Brunei forms a small double enclave in the northeastern part of Sarawak. Sarawak's southernmost point is less than 1 degree north of the Equator. Kuching, the capital, is about 500 miles east of Singapore.

Sarawak is very slender in shape. It is some 500 miles long, and varies from 40 to 150 miles in width. Its land frontier with Indonesia stretches over 1,000 miles, while that with Sabah is less than 100 miles. Sarawak covers approximately 48,250 square miles, an area slightly smaller than the State of Mississippi (21).

#### Topography

A chain of mountain ranges dominates the interior and traces the boundary with Indonesia. Although these mountains do not reach any great height, the range is generally unexplored. <sup>17/</sup> An alluvial plain borders the sea. Lying between the coastal plain and the mountainous interior is a region of gentle foothills. Peat swamps are numerous in the coastal plains.

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<sup>17/</sup> Mount Murud, the State's highest peak, is 7,950 feet high.



Many rivers originate in the mountains and flow to the sea. The longest is the Rajang, which is 250 miles long. Many of these rivers serve as major arteries of transportation and communication.

### Climate

The climate of Sarawak has three main characteristics: uniform temperature, high humidity, and heavy rainfall. Sarawak lies in the Asian monsoon area and this factor influences its climate greatly.

The average high temperature is 88° F., the low 77° F. Even at the extremes the difference is not great; the highest is 97° F. and the lowest is 68° F. The relative humidity seldom drops below 70 percent. Kuching records a mean annual rainfall of 150 inches, while a large area of the State receives from 120 inches to 160 inches. The heaviest rainfall is in the northeast, where the annual average is 236 inches.

The four seasons are determined by the monsoons. The northwest monsoon extends from October to January or February and the southeast monsoon from April to July or August. Two approximately 8-week intervals between monsoons account for the remaining two seasons.

### Population

The census of January 1960 set Sarawak's population at 744,529. By the end of 1961 it was estimated to be 780,000. The following tabulation shows a percentage breakdown of the 1960 population by cultural groups:

Cultural group	Percentage of total population
Indigenous groups:	
Sea Dayak.....	31.5
Land Dayak.....	7.8
Melanau.....	5.9
Other.....	5.1
Nonindigenous groups:	
Chinese.....	31.1
Malay.....	17.5
Europeans.....	0.2
Other.....	0.9

The total population increased 36.3 percent between 1947 and 1960. This is equivalent to an annual increase of 2.6 percent. The average number of persons per square mile is 11 to 15 throughout the entire State. However, a large part of the interior has only 3 people per square mile.

### Production Patterns and Practices

#### Land Use

Primary forests cover approximately three-fourths of the State. On most of the remainder, or about 9,900 square miles, agricultural commodities are produced. On this agricultural land, the bush-fallow method of cultivation is mainly used.

Rice is produced on about 75 percent of the agricultural land. The dry cultural system is employed for rice produced on most land located in the interior. Dry culture rice is the main crop grown under the practice of shifting cultivation. At the same time, rice produced under the wet cultural system is grown on a large share of the permanently cultivated land.

Permanently cultivated land accounts for only about 3 percent of the land area. The bulk of the cash crops (rubber, pepper, sago, and coconuts) comes from this land.

### Land Tenure

All land in Sarawak belongs to the Government. Although a new land code became effective on January 1, 1958, its provisions are applicable to only about one-fourth of the land used for agricultural purposes.

The entire land tenure system is based on the need to protect the native population from exploitation by nonnatives. At the same time, however, nonnatives, especially the Chinese, must have sufficient land to ensure economic development. Most of the State's land area is therefore divided into three categories: mixed zone land, native area land, and native customary land. <sup>18/</sup>

Both natives and nonnatives may gain titles to land in the mixed zone. This land, which encompasses some 4,400 square miles, is found along the coast, around the larger towns, and in the river valleys.

Title to land in the native area may be acquired by natives only. In many cases this land is found interspersed in the mixed zone area. The native area has a total of about 2,500 square miles of land.

The remainder of the land is generally referred to as the native customary area. Only natives may use this land. However, no titles are issued. Instead, natives who clear the land are granted customary rights equivalent to a license to use the land. Rights may be passed on to descendants. Presently the pattern of rights over most of this area has become complex. This is the result of the division of land among descendents and the movement of various tribes throughout the area. Most of the land in this category is in the interior, but some is scattered within lands in other categories.

No land is held in perpetuity; it is leased to the occupant. Before the land code, some leases were granted for 999 years, but now the average length is 60 to 99 years. The basic annual rent on agricultural land is M\$3 per acre, but it is less for land used for grazing or ricegrowing.

### Practices

Over four-fifths of the agricultural land in Sarawak is utilized under a system of shifting cultivation by the indigenous people in the interior (table 9). The cycle of cropping is determined by the total amount of land available to the community. On the average, each family should have 60 acres to allow the soil to recover after each cropping.

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<sup>18/</sup> Not included here are the forest reserves, which account for 11,000 square miles, and the area occupied by towns and villages.

Table 9.--Sarawak: Utilization of cultivated land, 1960-61

Land use	Area	Percentage of total cultivated land
	<u>1,000 acres</u>	<u>Percent</u>
Cereal crops:		
Rice.....	272	4.3
Fruit crops .....	10	.2
Commercial crops:		
Rubber .....	330	5.2
Coconuts.....	50	.8
Sago .....	150	2.4
Pepper .....	8	.1
Shifting agriculture.....	5,400	85.3
Other crops <u>1/</u> .....	110	1.7
Total cultivated land.....	6,330	100.0

1/ Includes fallow land.

Source: (18).

Both organic and chemical fertilizers have been used in the production of pepper for a number of years, but only recently has the use of fertilizers in the production of other crops been tested. Work on fertilizer is being carried out in connection with the Rubber Planting Scheme and the Department of Agriculture's experimental program for rice. Although the use of fertilizers has proved worthwhile, farmers have been slow to adopt this new practice. Most of this is attributed to the lack of operating capital among smallholders.

Work with irrigation and drainage, mechanization, disease and pest control is only in the beginning stages. But as the State strives for development it will be compelled to advance its work in these fields.

### Agricultural Production

Statistics on area and production, even for the few major crops grown in the State, are incomplete; adequate information on the many minor crops is almost nonexistent. Although the State participated in the FAO-sponsored 1960 Census of Agriculture, the samples taken were very small and the findings were sketchy.

#### Food Crops

Rice.--Although rice is the staple food in the average diet, the system for cultivation of it is primitive. The two most important methods of production are the dry and wet methods. Dry

paddy cultivation is employed on the slopes of the interior mountains. There the indigenous people continue the centuries-old bush-fallow method of production, with no knowledge of up-to-date cultivation practices. Wet paddy cultivation is used along the coastal flats and in the river deltas and valleys. Although the farmers in these areas have been exposed to improved production practices, they persist in their traditional methods. Thus, a modified form of the bush-fallow cultivation system is employed here also. Very little attention is paid to the use of animal-drawn implements, and irrigation and drainage schemes are of minor importance. Yields are very low, and the State is dependent on imports of rice for about one-half of its needs.

The permanent acreage planted in rice has tended to increase in recent years. In 1961 it approximated 270,000 acres. The rice area utilized under the shifting cultivation system was about 15 times this figure. Despite this increase in the permanent rice area, Sarawak's dependence on imports of rice will continue for some time.

Other crops, including vegetables and fruits.--A wide variety of both fruits and vegetables is grown in Sarawak. In recent years, the volume produced has tended to increase. Basically, commercial production of these commodities is in the hands of Chinese market gardeners, but small amounts are now being supplied by native farmers from their home gardens. Important vegetables are sweetpotatoes and cassava. Corn is grown mainly for home consumption, but a limited amount is also produced for commercial distribution.

Bananas are grown throughout the State, especially as a catch crop on new land opened up for rubber and coconuts. However, a greater rate of expansion is discouraged by the lack of a sufficiently large market. Pineapples are grown in some of the peat areas, while watermelons are raised along the coast. Most of the exotic fruits, such as rambutans and durians, come from trees scattered in the jungles or in mixed stands around houses. Some trial plantings of citrus fruits, mainly mandarin oranges, have been successful, and commercial production for export is being considered.

### Commercial Crops

Rubber.--As in mainland Malaysia, rubber is the main crop in Sarawak. However, actual production practices here are not as modern as those employed elsewhere.

Rubber production is almost entirely a smallholder enterprise. Sarawak has only five rubber estates. <sup>19/</sup> These have a combined area of 13,285 acres, or about 4.5 percent of the estimated total area of approximately 330,000 acres. Holdings of 100 to 1,000 acres are not very common either. Most of the production area is located in the coastal plains and in the foothills, with some small scattered holdings in the interior.

The absence of a developed estate sector has been given as a reason for the low degree of husbandry evident in the State's rubber industry. In other areas these estates provide the model for the smallholders. In Sarawak most of the smallholdings are planted in a hit or miss manner with poor stock. Care of the trees and surrounding areas is poor and rubber processing methods very primitive. The resulting product is inferior. Many smallholders use their rubber trees

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<sup>19/</sup> Individual landholdings of over 1,000 acres are considered estates. One of these estates is the Government-operated Rubber Fund Estate of Sanarahan.

as a source of "quick" cash, to be tapped when there is a need for money or the price is high. This has led to wide fluctuations in the output of rubber, although in general production has tended to increase.

Pepper.--Despite its varying fortunes, pepper still ranks second only to rubber as a cash crop. Chinese farmers, whose holdings average about 1 acre, dominate the industry. These farmers follow a highly intensive system of cultivation, and thus are able partly to negate the disadvantage of such a small production area.

The pepper industry is highly speculative. The annual number of new plantings of pepper depends upon market prices; high prices induce a wave of plantings, which in some cases are not kept up when prices decline. Thus, over the years, total acreage has remained between 7,000 and 8,000 acres. This estimate may be low because it is believed that recent price increases have induced some of the indigenous population to plant pepper in the more remote regions of the interior.

Coconuts.--The production of coconuts is entirely in the hands of smallholders. The largest area planted in coconuts is centered along the coast and the river flats of the First and Second Divisions. <sup>20/</sup> In addition, many houses have a small stand of trees. A survey in 1961 reported approximately 34,000 acres of coconut land in the First Division. From this it has been estimated that the total acreage for the State is about 50,000 acres. Most holdings are between 5 and 10 acres, with a few reaching nearly 100 acres. In recent years, the output of coconuts has tended to decrease as a large number of trees pass their production peak or drop out of production entirely. This decline in output has been hastened by insufficient drainage facilities in some areas and the generally low standards of cultivation. The Government's program for the coconut industry may correct the decline in production.

Sago palm.--Sago flour, produced from sago palm, is consumed by both humans and animals. The palm grows naturally throughout the State, and in the past was a good source of cash income for many farmers. Since 1957, the generally low price of sago has caused it to lose importance as a cash product, and now most of the production is centered in the Second and Third Divisions.

Other crops.--Although oil palms grow throughout the State, their production is not economically important. However, with the need to diversify, a program was begun in 1961 to investigate large-scale commercial production of oil palms. Coffee production has been common for a number of years. It has gained further popularity as a crop to be interplanted in newly opened coconut land. Some low-grade, sun-dried tobacco is grown for local consumption. The establishment of a cigarette factory in 1960 at Sibuluan has provided some incentive to raise the quality of tobacco produced.

Kapok and nipah are produced for both home needs and commercial sale. Derris, ginger, and turmeric are grown mainly as catch crops in newly opened pepper gardens; thus, the level of output is dependent upon interest in pepper production.

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<sup>20/</sup> Administrative divisions similar to U.S. counties. Each has a numerical name, the numbers running consecutively from the southwestern region to the northeastern.

## Livestock

A census of livestock, conducted at the end of 1961, showed the following number of livestock in Sarawak: 21/

<u>Kind</u>	<u>Number</u>
Buffaloes .....	9,892
Cattle.....	7,620
Pigs.....	255,841
Goats .....	8,813

Certain segments of the livestock industry are commercialized, but for the most part, livestock has little prominence in the overall agricultural picture. In the areas surrounding most of the larger population centers, Chinese farmers produce pork, poultry, and eggs for sale. The livestock industry is almost entirely ignored in the rural areas, and few farmers engage in any form of mixed crop-livestock operations.

Buffaloes may be found in almost all parts of Sarawak, but they are of little importance in the economy. Many of the natives keep them as an indication of social status. They do supply some meat, but seldom are they used in wet rice cultivation. The State government is attempting to encourage their use through a program for the training of buffaloes and the distribution of them to farmers.

Cattle are concentrated in the coastal areas and, for the most part, are allowed to roam free. Thus, their feed supply is erratic and their breeding is indiscriminate. In recent years small dairy herds have been started around Kuching and Miri. Although these animals are generally stall fed, their output is low and care of the milk is poor. Much of the State's red meat supply, beef and mutton, is imported from Singapore and Sabah. This importation will probably continue because of a lack of local interest in establishing a cattle industry large enough to meet local needs.

The poultry industry has developed primarily to satisfy the demand for eggs. During 1961, imports of low-priced eggs from Singapore threatened the industry, but mandatory marking of imported eggs increased the sale of local eggs, and the industry is again expanding.

## Agricultural Development

### General

Sarawak's agricultural policies are designed (1) to develop, intensify, and diversify agriculture, with particular regard to food supplies, especially rice and all forms of animal protein; (2) to increase exports of cash products, particularly rubber, pepper, coconut, and sago, and to improve the quality of exported products; (3) to introduce and develop new crops shown by experimentation to be of economic significance; (4) to promote and assist in sound agricultural development of new lands; and (5) to safeguard crop and livestock industries from disease by the imposition of controls regulating the entry of stock and plants into Sarawak (20). These

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21/ No information is available on the total number of poultry in Sarawak.

policies are being implemented through three broad programs: fundamental research (scientific investigation conducted in the laboratory), applied research (field testing of laboratory findings), and extension programs (programs for conveying to farmers new information gained through the dual research program and for helping them to apply it).

Fundamental research.--A number of tasks have been laid out for those persons engaged in fundamental research. An overall comprehensive soil survey must be conducted before Sarawak's agricultural potential is fully known. Good planting materials and livestock, with high-yielding characteristics and adapted to local conditions, are needed to increase output. Also, the development of methods of eradication and control of local diseases and pests is necessary to allow these new varieties and breeds, as well as the old ones, to flourish.

By the end of 1962, only about 20 percent of the State's total land area had been surveyed. This had been accomplished in the preceding 4 years. Extensive studies were conducted to determine the cause of foot rot of pepper, a disease which had threatened to wipe out the industry.

Applied research.--Sometimes referred to locally as agronomy, applied research is investigation designed to test the practicality of experimental findings. Studies have been conducted on dry rice production with new varieties, cultivation techniques, and fertilizer. Work on the wet rice output has been concentrated on proving new varieties, growing methods, and the use of manure. In line with the need to diversify the agricultural economy, extensive work has been carried out on the practical introduction of oil palms and cocoa. Some work on the improvement of local livestock and the introduction of new breeds is now under way.

Extension programs.--Extension programs provide the means by which research findings are passed on to the farmer. They serve as the link between the Government and the farmer. Extension work in Sarawak is patterned after that in the United States. It includes not only practical adult education in new farming methods but also youth organizations, such as the 4-H Club, and home demonstrations for women. In connection with the extension program, the Department of Agriculture is now operating a school of agriculture in Butah Lintang, Kuching, and an extension training center at the Tarat Experimental Station.

### Development Schemes

It was not until the late 1950's that Sarawak launched any formal development scheme. The most important program is the one for planting rubber; the program for coconut planting takes second place. Because of the lag between planting and production, actual increases in the crop output from these two schemes had not occurred by the end of 1962. These and other smaller schemes have served some immediate purpose. They are helping to develop viable rubber-dry rice and coconut-wet rice economies. The Rubber Planting Scheme is a major step towards eliminating the practice of shifting cultivation. Rubber trees will give the farmer a cash crop which is relatively permanent and nonseasonal. The main drawback to present development schemes is that they are devoted almost entirely to rubber. Thus, more emphasis must be placed on the development of new crops.

Rubber.--In view of rubber's commanding position, increased production is important to the State's economy. Sarawak, like the other States, has undertaken a subsidy program to increase

the acreage planted to high-yielding clones. Started in 1957, approximately 60,800 acres had been planted to the high-yielding varieties by the end of 1962. To aid farmers living deep in the interior, the Assisted Rubber Planting Scheme was begun in 1961, and about 3,800 acres have been planted with high-yielding rubber. Both schemes permit the planting of clones, but some green budded planting now is being done on a limited basis.

Coconuts.--A coconut planting scheme similar to the program for rubber has been in operation since 1959. By the beginning of 1963, 10,642 acres of smallholdings had been planted under this program. Over 200,000 seedlings were planted under a subsidy scheme for planting individual trees near households. The next steps to be taken under this scheme will be to set quality control standards and modernize processing.

Other schemes.--An overall program to improve and increase rice production was introduced in 1959. Under it, individual farmers or groups may receive help on land surveys, the construction of drainage and irrigation facilities, and various other land improvement projects. Farmers must furnish a certain amount of self-help to qualify. During the first 3 years of the program 5,130 acres were improved or brought into production. A program to furnish wet rice producers with trained buffaloes is also in operation. The Subsidized Commercial Piggery Scheme, introduced in 1962, is designed to help farmers produce swine for commercial distribution.

## OUTLOOK

In general, Malaysia's economy is more highly developed than the economies of other countries of southeast Asia and, for that matter, most of the countries of Asia. The nation's gold and foreign exchange holdings are substantial, and its visible trade balance is encouraging. Most of the accepted indicators of economic activity point to a sound economy.

Recently, two extensive surveys were conducted in the areas now encompassed by Malaysia. During the latter part of 1962 the agricultural sector of the States of Malaya was surveyed by a team of U.S. farm experts. This project, sponsored by Ford Foundation, was aimed at assessing the economic advantages of diversification and possible means of attaining it. The Government was deeply interested because continued overdependence on rubber placed the economy in a precarious position.

Generally, the team did not make any suggestions which were wholly new. Realizing the advantages mainland Malaysia has in the production of natural rubber, they urged the Government to continue assistance programs to improve methods for producing rubber. At the same time, other economically sound crops, such as oil palms, should be introduced on a large scale, and special attention should be given to programs which foster comprehensive rural development.

In response to a request to the International Bank for Reconstruction and Development, a well-qualified group of specialists analyzed the diverse elements of Malaysia's economic structure in 1963. The concentration of trade in Singapore and production of rubber and tin in mainland Malaysia, combined with the relatively primitive conditions in Sarawak and Sabah, demand careful coordination of individual development plans, the study group emphasized.

At the time of the study, no overall guiding principles existed to shape the various parts of Malaysia into a coordinated economy. The study group indicated that although the resources and



economies of the different areas should not be forced into a single pattern, each part should contribute to the whole.

The report also dealt with the present and future government policies on industrialization and trade. As the country shifts its emphasis from agriculture to industry, its trade policy will probably change. Basically, Malaysia's overall policy is that of free trade, but this may change as infant industries seek protection from foreign goods. Although quite complicated, the question of policy must be settled before any degree of industrial development can take place.

Malaysia is not saddled with the problems common to most developing countries. It has a highly commercialized agriculture, a well-fed people, a stable government, an expanding middle class, and substantial investment capital. Nevertheless, government officials have realized that the economy cannot continue to be based on the production of rubber and other primary products. Their approach to the problem has been realistic. Experts have been asked to assess the country's methods of improving its economic development, and their recommendations are being implemented.

All of these factors speak well for the new nation. A sound and basic economic structure has been laid. The future looks promising and full of hope for Malaysia.

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APPENDIX

Table 10.--Malaysia: Comparative statistics, by regions

Item	States of Malaya	Singapore	Sabah	Sarawak	Total
Area (square miles).....	50,690	220	29,388	48,250	128,548
Population (thousands) <u>1/</u> .....	7,232	1,700	475	780	10,187
Economically active population engaged in agriculture (percent of total population) <u>2/</u> .....	58	8	80	81	54
Gross national product (million dollars) <u>3/</u> .....	5,720	2,200	<u>4/</u> 300	430	8,650
Exports (million dollars) <u>5/</u> .....	2,626	3,309	221	397	6,553
Imports (million dollars) <u>5/</u> .....	2,228	3,963	215	412	6,818

1/ 1961 yearend.

2/ 1957, States of Malaya and Singapore; 1960, Sabah and Sarawak. The total consists of the 1960 figures and the 1957 figures raised by the percentage increase in population from 1957 to 1960. Percentages include some people engaged in hunting and fishing.

3/ 1961.

4/ Estimated.

5/ 1961. Includes intra-Malaysian trade.

Source: (18).

Table 11.--Malaysia: Land utilization, by regions, 1960-61

Region	Class of land				Total land area
	Agricultural <u>1/</u>	As percentage of total land area of region:	Forest Reserves <u>2/</u>	Other	
	Square miles	Percent	Square miles	Square miles	Square miles
States of Malaya...	9,586	19	13,250	27,854	50,690
Singapore.....	55	25	---	165	220
Sabah.....	1,678	6	9,680	18,030	29,388
Sarawak.....	9,900	20	11,450	26,900	48,250

1/ Includes land under shifting cultivation and that used for grazing.

2/ Land devoted to permanent production of forest products.

Source: (3, 5, 7, 11, 18).

Table 12.--Malaysia: Production of natural rubber, by regions, 1952-62

Year	States of Malaya	Singapore	Sabah <u>1/</u>	Sarawak	Total production	World total production	Malaysia's share of world total
	-1,000 metric tons <u>2/</u> -					:1,000 metric tons <u>2/</u> :	Percent
1952..	592	2	19	32	645	1,819	35
1953..	582	2	17	24	625	1,758	36
1954..	595	1	17	24	637	1,839	35
1955..	647	2	20	40	709	1,951	36
1956..	634	2	20	41	697	1,918	36
1957..	646	2	20	42	710	1,933	37
1958..	672	2	21	40	735	1,971	37
1959..	707	2	23	44	776	2,163	36
1960..	717	3	22	51	793	2,017	39
1961..	746	3	24	48	821	2,121	39
1962..	762	2	23	44	831	2,139	39

1/ Estimated on basis of amount exported.

2/ Dry rubber content.

Source: (22).

Table 13.--Malaysia: Foreign exchange earnings by regions and principal sectors of the economy, 1961 1/

Sector	States of Malaya	Singapore <u>2/</u>	Sabah	Sarawak	Total
	----- Million dollars <u>3/</u> -----				
Rubber.....	1,347	4	41	83	1,475
Tin metal and concentrates.....	432	---	---	---	432
Timber.....	40	---	103	42	185
Iron ore.....	164	---	---	---	164
Coconut products.....	31	---	27	---	58
Palm oil.....	58	---	---	---	58
Pepper.....	---	---	---	29	29
Manufactured goods, including processed foods.....	90	120	8	8	226
Others, including remaining primary and agricultural products.....	57	16	41	16	130
Total earnings from mer- chandise.....	2,219	140	220	178	2,757
Net investment income.....	-223	44	<u>4/</u> n.a.	-28	-207
Entrepot earnings.....	60	398	n.a.	---	458
Other services.....	-138	404	n.a.	22	288
Grand total,.....	1,918	986	220	172	3,296

1/ Excludes intra-Malaysian trade, where identifiable. Exports are valued at the export price in the country of origin whether they pass through Singapore or not. Brunei petroleum exports via Sarawak are excluded.

2/ Singapore's invisible earnings are probably understated.

3/ M\$1 = US\$0.33.

4/ Not available.

Source: (18).

Table 14.--States of Malaya: Number and percentage of farms, by State and type of farm, 1960 <sup>1/</sup>

State	Total number of farms	Type of farm													
		Wet Rice		Vegetable		Farms producing other temporary crops		Rubber		Coconut		Fruit/Kampong		Mixed	
		Farms	Percent- age of total	Farms	Percent- age of total	Farms	Percent- age of total	Farms	Percent- age of total	Farms	Percent- age of total	Farms	Percent- age of total	Farms	Percent- age of total
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Johore.....	56,128	1,200	2	260	0	840	1	28,370	52	10,392	19	5,858	10	9,208	16
Kedah.....	83,534	44,910	53	480	1	734	1	7,996	10	250	10	5,076	6	24,088	29
Kelantan.....	70,424	20,554	29	60	0	600	1	9,204	13	1,168	2	10,520	15	28,310	40
Malacca.....	18,556	3,128	17	100	0	120	1	3,334	18	528	3	3,600	19	7,746	42
Negri Sembilan..	23,774	2,980	13	200	1	320	1	5,156	22	120	1	2,922	12	12,076	50
Pahang.....	27,910	3,940	14	1,020	4	440	2	8,866	32	876	3	2,244	8	10,524	37
Penang and Prov. Wellesley.....	19,686	11,290	57	240	1	262	1	1,530	8	1,100	6	2,068	11	3,196	16
Perak.....	72,646	20,772	28	1,160	2	4,398	6	16,834	23	4,976	7	6,650	9	17,856	25
Perlis.....	12,640	8,540	68	0	0	120	1	254	2	0	0	540	4	3,186	25
Selangor.....	34,034	7,996	23	500	2	540	2	6,658	20	7,180	21	5,252	15	5,908	17
Trengganu.....	30,318	6,966	23	20	0	1,580	5	2,684	9	2,086	7	5,082	17	11,900	39
Total.....	449,650	132,276	30	4,040	1	9,954	2	90,886	20	28,676	6	49,812	11	134,006	30

<sup>1/</sup> Farms are classified into seven types according to the predominant use of the land. For example, a rubber farm is a farm on which three-quarters (75%) or more of the total cultivated land is reported under rubber, while a mixed farm is one on which no one crop accounts for three-quarters (75%) of the total cultivated land.

Note: Where the figure "0" appears in the percent column, the corresponding number of farms accounts for less than 0.5 percent of the total number.

Source: (26).

Table 15.--States of Malaya: Number and percentage of farms, by type and size of farm, 1960 <sup>1/</sup>

Size (in acres)	Type of farm														
	Total number of farms	Wet Rice		Vegetable		Farms producing other temporary crops		Rubber		Coconut		Fruit/Kampong		Mixed	
		Farms	Percent- age of total	Farms	Percent- age of total	Farms	Percent- age of total	Farms	Percent- age of total	Farms	Percent- age of total	Farms	Percent- age of total	Farms	Percent- age of total
	<u>Number</u>	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>
Under 1.....	45,892	13,062	10	1,960	45	2,020	20	1,720	2	3,600	13	20,310	41	3,220	2
1 - 1 3/4....	79,666	30,640	23	1,300	32	3,000	30	7,200	8	5,444	19	15,420	31	16,662	13
2 - 2 3/4....	78,014	28,204	21	540	13	2,720	27	12,774	14	5,904	21	7,690	16	20,182	15
3 - 3 3/4....	57,426	18,900	14	180	4	1,084	11	11,072	12	2,764	9	2,242	4	21,184	16
4 - 4 3/4....	41,726	12,780	10	20	1	400	4	9,372	10	2,562	9	1,620	3	14,972	11
5 - 7 1/4....	72,074	19,324	5	20	1	426	5	18,082	20	3,966	14	1,686	3	28,570	21
7 1/2 - 9 3/4..	28,678	5,260	4	20	1	142	2	9,232	10	1,342	5	422	1	12,260	9
10 - 14 3/4....	28,272	3,376	2	0	0	100	1	11,168	13	1,998	7	252	1	11,378	9
15 - 24 3/4....	12,628	654	1	0	0	36	0	6,642	7	732	2	136	0	4,428	3
25 - 49 3/4....	4,346	70	0	0	0	20	0	2,944	3	278	1	30	0	1,004	1
50 - 99 3/4....	788	4	0	0	0	4	0	572	1	70	0	4	0	134	0
100 and over..	140	0	0	0	0	2	0	108	0	16	0	0	0	12	0
Total.....	449,650	132,276	100	4,040	100	9,954	100	90,886	100	28,676	100	49,812	100	134,006	100

<sup>1/</sup> The size classification of farms is based upon the total cultivated land acreage, excluding any land not actively cultivated for crops.

Note: Where the figure "0" appears in the percent column, the corresponding number of farms accounts for less than 0.5 percent of the total number.

Source: (26).



Table 16.--States of Malaya: Number and percentage of farms by type of farm and number of parcels per farm, 1960 <sup>1/</sup>

Parcels per farm	Total number of farms	Type of farm													
		Wet Rice	Vegetable	Farms producing other temporary crops		Rubber	Coconut	Fruit/Kampong	Mixed						
		Percent- Farms : age of : : total	Percent- Farms : age of : : total	Percent- Farms : age of : : total	Percent- Farms : age of : : total	Percent- Farms : age of : : total	Percent- Farms : age of : : total	Percent- Farms : age of : : total	Percent- Farms : age of : : total						
Number	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	
1.....	708,246	74,344	56	3,540	88	7,878	79	42,826	47	20,308	71	39,804	80	19,546	15
2.....	120,060	33,494	25	420	10	1,506	15	24,268	27	4,886	17	7,282	15	48,204	36
3.....	63,976	13,654	11	60	2	450	5	11,652	13	2,000	7	1,812	4	34,348	26
4.....	29,128	5,702	4	20	0	90	1	6,052	7	782	3	578	1	15,904	12
5 - 9.....	26,250	4,772	4	0	0	30	0	5,562	6	614	2	330	0	14,942	11
10 and over...	1,990	310	0	0	0	0	0	526	0	82	0	6	0	1,062	0
Total.....	449,650	132,276	100	4,040	100	9,954	100	90,886	100	28,676	100	49,812	100	134,006	100

<sup>1/</sup> A "parcel" is any piece of land which is entirely surrounded by land of other farmers or by land not forming part of any farm (for example, forest, river, main road), and may consist of a whole grant of land, only part of a grant, or several grants.

Note: Where the figure "0" appears in the percent column, the corresponding number of farms accounts for less than 0.5 percent of the total number.

Source: (26).

Table 17.--States of Malaya: Number and percentage of farms, by type of farm and tenure status, 1960 <sup>1/</sup>

Tenure status	Total number of farms	Type of farm													
		Wet Rice		Vegetable		Farms producing other temporary crops		Rubber		Coconut		Fruit/Kampong		Mixed	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Owner.....	349,962	72,282	55	620	15	2,006	20	83,934	92	26,326	92	41,926	84	122,863	92
Temporary occupation licensee....	42,216	10,930	8	1,220	30	3,248	33	5,492	6	2,082	7	4,570	9	14,674	11
Tenant.....	96,696	68,564	52	840	21	1,620	16	1,888	2	192	1	810	2	22,782	17
Other.....	66,148	15,838	12	1,420	35	4,082	41	12,284	14	1,782	6	5,508	11	25,234	19
Total.....	449,650	132,276	---	4,040	---	9,954	---	90,886	---	28,676	---	49,812	---	134,006	---

<sup>1/</sup> Four main tenure categories are defined as follows:

(a) Owner or own on permanent title--ownership in the form of an approved grant or title from the Government. Farmers with this type of tenure have virtually unrestricted power to transfer the land by sale or gift. Land undoubtedly owned, but not yet officially registered in land offices, would fall in this category.

(b) Temporary occupation licensee or own on temporary title--occupation of land secured from the Government. A nominal fee is paid for occupation of the land. This is usually the first stage in obtaining a more permanent title. This procedure is not always followed since temporary cultivation is permitted on land intended for other uses, for example, buildings or mining.

(c) Tenant or rented in cash or kind--occupation of land for which either fixed sums of cash or a fixed sum or share of the crop is paid. A farmer with this kind of tenure may also use land on which he makes payment by giving service, such as plowing.

(d) Other--occupation of land free of payment of fees or rents to either the Government or to any private landlord, for example, use of railway reserves and squatter land. Any land for which the tenure system was unknown is included.

Note: Individual farmers may obtain land under one or by several methods or systems, therefore the aggregate of the number of farms reported in each of the four tenure categories will always exceed the total number of farms.

Source: (26).

Table 18.--States of Malaya: Number of farms and land area involved by type of farm and general land utilization, 1960

Type of farm	Total farms reporting	Total land area	Cropland (cultivated)				Land used for other purposes	
			Temporary cropland		Permanent cropland		Farms reporting	Area
			Farms reporting	Area	Farms reporting	Area		
	<u>Number</u>	<u>Acres</u>	<u>Number</u>	<u>Acres</u>	<u>Number</u>	<u>Acres</u>	<u>Number</u>	<u>Acres</u>
Wet Rice.....	132,276	457,175	132,276	406,827	55,146	31,972	8,232	18,517
Vegetable.....	4,040	5,150	4,040	4,380	280	100	520	665
Farms producing other temporary crops.....	9,954	26,320	9,954	21,163	2,078	890	1,676	4,282
Rubber.....	90,886	739,870	14,578	17,700	90,886	682,765	11,340	39,513
Coconut.....	28,676	134,571	1,100	1,222	28,676	125,303	2,610	8,041
Fruit/Kampong....	49,812	91,574	5,244	2,900	49,812	74,807	6,504	13,901
Mixed.....	134,006	783,815	114,882	246,565	132,158	484,579	21,054	53,386
Total.....	449,650	2,238,475	282,074	700,757	359,036	1,400,416	51,936	138,305

Source: (26).

Table 19.--States of Malaya: Number of farms and land area involved by tenure status and general land utilization, 1960

Tenure status	Total farms: reporting	Total area	Cropland (cultivated)				Land used for other purposes	
			Temporary cropland		Permanent cropland		Farms reporting	Area
			Farms reporting	Area	Farms reporting	Area		
<u>Number</u>	<u>Acres</u>	<u>Number</u>	<u>Acres</u>	<u>Number</u>	<u>Acres</u>	<u>Number</u>	<u>Acres</u>	
Owner.....	263,456	1,345,895	122,294	261,312	241,194	1,021,063	24,658	63,868
Temporary occupa- tion licensee..	18,580	54,560	12,364	30,144	10,454	20,258	2,484	4,149
Tenant.....	44,992	127,584	44,992	124,713	3,986	2,519	540	439
Other single tenure.....	26,274	78,113	16,902	30,204	15,278	40,108	3,134	7,892
Owner/tenant.....	36,836	179,918	36,604	118,459	31,914	53,532	4,008	7,944
Other mixed tenure.....	59,512	452,405	48,918	135,925	56,210	262,936	17,112	54,013
<b>Total.....</b>	<b>449,650</b>	<b>2,238,475</b>	<b>282,074</b>	<b>700,757</b>	<b>359,036</b>	<b>1,400,416</b>	<b>51,936</b>	<b>138,305</b>

Source: (26).

Table 20.--States of Malaya: Number of farms and total land area involved, by size of farm and general land utilization, 1960

Size (in acres)	Total farms reporting	Total land area	Cropland (cultivated)				Land used for other purposes	
			Temporary cropland		Permanent cropland		Farms reporting	Total land area
			Farms reporting	Total land area	Farms reporting	Total land area		
Number	Acres	Number	Acres	Number	Acres	Number	Acres	
Under 1.....	45,892	31,277	20,442	9,817	30,550	13,003	4,524	8,412
1 - 1 3/4.....	79,666	115,085	50,882	53,561	52,506	48,581	7,162	12,982
2 - 2 3/4.....	78,014	193,569	51,648	89,865	58,150	88,524	7,166	15,750
3 - 3 3/4.....	57,426	200,514	40,046	93,235	46,022	93,115	5,998	14,375
4 - 4 3/4.....	41,726	189,935	28,208	77,984	36,306	98,389	5,502	13,566
5 - 7 1/4.....	72,074	446,247	48,260	173,191	63,486	249,757	9,320	23,534
7 1/2 - 9 3/4...	28,678	256,155	18,722	77,560	27,130	162,692	4,720	15,905
10 - 14 3/4.....	28,272	341,718	16,090	80,508	27,258	246,801	4,160	14,350
15 - 24 3/4.....	12,628	240,850	6,074	33,439	12,406	197,191	2,326	10,250
25 - 49 3/4.....	4,346	145,486	1,532	9,748	4,298	129,823	866	5,932
50 - 99 3/4.....	788	53,289	156	1,476	784	49,705	172	2,106
100 and over.....	140	24,350	14	373	140	22,835	20	1,143
Total.....	449,650	2,238,475	282,074	700,757	359,036	1,400,416	51,936	138,305

Source: (26).

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