Agricultr

Annex 7

COUNTRY REPORT 1977-78

IICA Office in Jamaica

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ANTILLEAN ZONE
IICA Office in Jamaica
P.O. Box 349,
Kingston 6, Jamaica.

AGRICULTURE GOVERNMENT POLICY PAPERS FOR JAMAICA

"AGRICULTURE IN JAMAICA"

Collection of papers of the IICA Office in Jamaica.

No. 1 Fritz Andrew Sibblies, "Basic Agricultural Information on Jamaica", internal document of work, January, 1977.

No. 2 Yvonne Lake, "Agricultural Planning in Jamaica" June, 1977.

No. 3 Aston S. Wood, Ph.D., "Agricultural Education in Jamaica" September - October, 1977.

No. 4 Uli Locher, "The Marketing of Agricultural Produce in Jamaica" November, 1977.

No. 5 G. Barker, A. Wahab, L. A. Bell, "Agricultural Research in Jamaica", November, 1977.

No. 6 Irving Johnson, Marie Strachan, Joseph Johnson, "Land Settlement in Jamaica", December, 1977.

No. 7 Government of Jamaica, "Agricultural Government Policy Papers", February, 1978.

INTRODUCTION

Jamaica is passing through one of the most important and interesting periods of her history, the period of the greatest effort made so far in planning its economic development.

Agriculture, as one of the most important sectors of the Jamaican economy, commands the greatest attention for national planning.

The office of IICA in Jamaica presents these four documents, which will assist the agricultural researchers in understanding the normative targets for Jamaican agriculture.

Dr. Percy Aitken Soux
Director of IICA in Jamaica

Kingston, February 1978

AGRICULTURE GOVERNMENT POLICY PAPERS FOR JAMAICA

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"AN OVERVIEW OF JAMAICAN AGRICULTURE"

Ministry of Agriculture of Jamaica

Agricultural Planning Unit

Kingston

February 4, 1972

BACKGROUND

Introduction

Jamaica is a mountainous island in the Caribbean, lying 90 miles south of Cuba. It has a land area of 4,240 square miles, and with a population of 1.9 million in 1970, the density per square mile was 448. Only about 20% of the land area is flat or gently rolling, while almost 50% is over 100 feet and about 40 square miles rise above 5,000 feet. A high central plateau extends from east to west, while the coastal areas, particularly in the northern and southern sections of the island are flat.

2. Soils

The soils are mainly of limestone origin. In general they are not very fertile, but are reasonably responsibe to good management. They range from clays, terra rossa soils, through to the sandy ranges of soils. Some 90 soil types have been identified.

3. Climate

A wide range of climate is found. In the main it is characterised by high temperatures on the lowlands, which are modified by elevation. Maximum temperatures on the flat lands range from about 88°F in January to 90°F in July. Minimum temperatures range from 30°F to 35°F lower than the maximum temperatures, depending on elevation.

4. Rainfall

Rainfall varies considerably from a low of 25 inches per annum on the southern plains to 300 inches in the upper reaches of the Blue Mountain (highest elevation 7,400 feet). Rainfall belts are identifiable, and these range from 100 inches and over in the north-east where Jamaica benefits from the northerly rain bearing winds, to less than 50 inches in the southern rain-shadow and coastal areas. The wide variation in climate makes it possible to produce a wide range of crops and livestock.

5. Agriculture (including Forestry)

Agriculture occupies approximately 1.5 million acres or about 55% of the total land area in Jamaica. Provisional data from the Census of Agriculture conducted by the Department of Statistics in 1968/69 reveal that there were 185,483 farms (this excluding operations carried out by 5,099 landless farmers). The distribution of farms by size groups is highly skewed. Farms of less than 5 acres accounted for 78% of the total number of farms and approximately 15% of the acreage in farms whilst, at the other extreme, farms of 500 acres and over accounted fro approximately 0.2% of the number of farms and 45% of the total farm acreage (see Table I).

(i)

DISTRIBUTION OF ACREAGE BY LAND CAPABILITY CLASS BY PARISH

(acres)

(all figures are approximate)

Source: Soil and Land Use Surveys of the Regional Research Centre, U.W.I. Various years as shown except for corrected Clarendon figures, supplied by Agricultural Chemistry Division. Ministry of Agriculture & Fisheries.

Parish	Class I	Class II	Class III	Class IV	Class V	Class VI	Total	Comments
Westmoreland No. 15 1964	5,392	47,009	24,712	22,934	19,527	66,227	185,801	
Hanover No. 12 1960	870	15,340	16,200	18,900	18,020	49,475	118,805	Included is 5,850 miscellaneous in Class VI
St. James No. 8 1959	1,700	12,650	13,600	18,650	15,600	74,350	136,550	
Trelawny N No. 25 1970	432	41,659	25,956	11,293	39,521	107,202	226,063	
St. Elizabeth No. 14 1963	5,492	49,816	68,901	3,333	29,327	98,152	255,021	
Manchester No. 17 1964	324	10,558	60,908	16,614	30,804	82,220	201,428	
St. Ann No. 21 1968	2,063	17,823	103,093	7,900	40,194	126,589	297,662	Included is 287 miscellaneous in Class VI
Clarendon No. 7 1959	21,000	27,000	91,000	38,000	45,000	52,000	274,000	See note on Source
St. Mary No. 10 1960	9,000	10,500	50,500	40,000	18,500	20,750	149,250	Included in Class VI is 12,000 unsurveyed and 2,500 not classified

Parish	Class I	Class II	Class III	Class IV	Class V	Class VI	Total	Comments
St. Catherine No. 1 1958	20,000	20,000	85,000	45,000	30,000	85,000	285,000	
Portland No. 11 1961	5,950	8,050	28,750	17,000	59,900	66,200	185,850	Included in Class VI is 47,800 of miscellaneous & forest
St. Andrew No. 4 1959	800	450	5,750	11,750	55,500	12,100	86,350	
St. Thomas No. 23 1967	5,430	19,570	24,465	11,390	59,800	26,715	147,370	Class VI & VII lumped together
Total	78,453	280,425	598,835	262,764	461,693	866,980	2,549,150	

Table 1 -

Size Group in Acres	Number of Farms		Acreage		Average Size of Farm (acres)
	Number	Percent of Total Farms	Acres	Percent of Total Acreage	
Under 5	144,604	78.0	223,818	14.9	1.5
5 - 25	36,881	19.9	333,548	22.1	9.0
25 - 100	3,004	1.6	125,104	8.3	4.6
100 - 500	699	.4	148,501	9.9	212.4
Over 500	295	.2	676,426	44.9	2,293.0
Total	185,483	100.0	1,507,397	100.0	8.1

Source: National Atlas of Jamaica

Most of the small farms are found almost exclusively in the hillier regions of the island (sometimes on land far too steep and too credible to accommodate existing patterns of agriculture). Paradoxically enough those are the farms which produce the bulk of the food which is grown for local consumption.

6. Land Use

Agriculture occupies nearly 50% of the total land area, thereby being the predominant user of land in Jamaica.

Table 2 - Land Use Distribution in Jamaica - 1970

Land Use	Acres	Percent
Forest	655,000	24.1
Other Woodland	538,000	19.8
Agriculture, including pasture	1,258,000	46.4
Natural range and grassland	103,000	3.8
Swamp+	50,000	1.8
Mining	7,000	.4
Urban	100,000	3.7
Barren	4,000	.1
	2,715,00	100.0

+Not including mangrove swamp which is in the Forest and Other Woodland categories.

Source: National Atlas of Jamaica.

The three principal types of agricultural usage are plantation crops grown mostly for export, mixed farming of food crops for domestic consumption and pasture for beef and dairy cattle, whose products also are locally consumed.

7. The major export crop of sugar occupies most of the alluvial coastal plains and interior valleys; it is estimated that sugar covers some 168,000 acres in total. Banana, the second most important export crop, which covers about 84,000 acres, is grown in several coastal and interior areas throughout the country. Citrus (about 25,000 acres) tends to be somewhat concentrated in the south-central part of the country and does not show as widespread land use on the map because citrus is often grown on plots too small to be indicated on a map of this scale. The country's fourth most important export crop is allspice, derived from pimento trees which grow in their natural state throughout large parts of the country. Pimento trees are not yet grown as a plantation crop. Although occupying substantial acreages in total, coffee (15,000 acres) and cocoa (27,000 acres) are often inter-cropped on small plots of land scattered throughout several areas in the country and therefore cannot be shown on the generalised land use map. Coconuts, occupying an estimated 100,000 acres, are grown as a plantation crop mostly in the coastal hills of eastern and north central Jamaica. However, virtually all coconuts and coconut products are used in Jamaica and so it does not constitute an export crop.

8. Mixed farming areas occupy most of the central uplands of Jamaica and some of the hillier parts of the remainder of the country where soil and climatic conditions permit. Virtually all the mixed farming activity takes place on small individually owned farms. Mixed farming refers mostly to cultivation of a great variety of food crops including yams, sweet potatoes, Irish potatoes, corn, pumpkin, peas, cassava and other vegetables, tree crops, such as ackees, avocadoes, mangoes, guavas,and pawpaws, as well as small fields of export crops, such as sugar cane and bananas. Acreages of some of these

crops are estimated for 1970 as follows:-

Pineapple	1,300 acres
Red Peas	6,500 "
Pigeon Peas	7,000 "
Peanuts	1,000 "
Potatoes and yams	10,200 "
Maize	8,000 "
Tobacco	1,900 "

Source: National Atlas of Jamaica.

9. The third agricultural acreages of pasture and grassland used for pasture is mostly situated in north-central and western Jamaica. It is estimated that some 500,000 acres of pasture and grasslands exist in Jamaica of which approximately 250,000 acres are in improved pasture (in 1970). In addition, some of the extensive areas of woodland are utilised for pasture on a less intensive basis.

10. Forest and other woodlands cover almost 45% of the country, mostly areas of rugged terrain such as the Blue Mountains and the Cockpit Country and dry, hilly uplands of poor soils in the southern, western and north western parts of Jamaica. Few large areas of virgin forest exist in Jamaica, and most of the forest or other woodlands are comprised of ruinate or second growth trees. Not including mangroves, swamplands totalling about 50,000 acres are situated mostly along or near the southern, western and eastern coasts.

11. Minor land uses, in terms of extent, are urban which covers 3.7% of the island and mining (mostly bauxite) which occupies 7,000 acres or 4% of the land, in the case of bauxite mining, a national policy exists on the rehabilitation of mined-out areas so that they are returned to their agricultural use. Only 4,000 acres of the country are considered barren or virtually void of any use or vegetation.

12. Although a major proportion of Jamaica is in farms and agricultural land use is extensive and, in some places, occurs on lands marginal for agriculture, considerable potentially productive land is lying idle or being grossly under-utilised. Such idle lands are, at present, mostly in unimproved pasture, grasslands or woodland.

13. Agricultural Land Tenure

A dominant feature of agricultural land tenure in Jamaica is the large number of small farms which exist particularly in the inland hilly areas, in contrast to the small number and large acreages of the estates. While there is much fragmentation of land in farms, the average number of parcels per farm is about 2. However, as many as 8 parcels are found in some instances.

14. Most of the land in farms is held under a freehold form of tenure (the estimate for 1961 being 76%). The remaining farms are held either under long-term lease-hold tenure or short-term rental, or on a basis of freehold ownership plus rental.

15. The Land Settlement

The Land settlement programme operated by Government was initiated experimentally in 1929. It really got underway in 1939 and now plays an important role in the land tenure system. This programme aims at providing land for settling potential farmers on land purchased by Government specifically for this purpose. Farmers repay government over a long-term period on an interest-free basis. By 1969 some 32,000 farms had been created under this programme on an estimated 210,000 acres. The Land Settlement programme is the main aspect of land reform activities. Recently, important aspects of this programme have been the creation of medium-sized farms specifically for dairying and the use of income targets for determining size of farms for different purposes under different ecological conditions. Provision of appropriate infrastructure helps to ensure development and aims at reducing migration to urban areas.

16. Freehold tenure is the type most accepted to Jamaicans, largely due to the status and security associated with it. Legal titles or their equivalent exist for only a small portion of the farms which are occupied on a freehold basis and this creates problems where financing of development is concerned. There are many variations of this type of tenure which includes 'family land' which is passed on intact from generation to generation. This overwhelming attachment to a freehold type of tenure has rendered sterile attempts to develop cooperative systems of ownership and farming which provide the best means of operations for land in certain locations.

17. Squatting is a form of tenure which exists and in some instances this has been practiced by some farmers on the same or different pieces of land for many years. Under such a 'system' no permanency of operation obtains and credit is not available for development. However, in 1955 Government enacted the Facilities for Title Law which enables persons who occupy land for more than 7 years to obtain credit for development.

18. Government is the largest single owner of land used for agricultural (including afforestation) purposes. The acreage of Forest Reserves and Crown Lands owned by Government is estimated to account for 274,000 acres. For agricultural purposes land in experiment stations is approximately _____ acres, while land operated by Statutory bodies such as the Agricultural Development Corporation is estimated to be at least 9,100 acres.

19. Population

It is estimated in the 'National Physical Plan for Jamaica 1970-1990' states that by 1990, Jamaica will have some 2,670,000 residents, an increase of 770,000 persons over 1970. Virtually all these additional people will be living in cities and towns; leading to a doubling of the present urban population. Rapid improvement in economic conditions in the early fifties and a decline in the death rate have facilitated the growth of the natural increase until very recently. In 1931-35 it was 1.5%,more than doubling to 3.3% in 1960, but falling again to an estimated 2.6% in 1969. One of the major factors influencing the decrease in the birth rate appears to be the recent increased emigration of Jamaican women of child-bearing age.

20. Net migration to the United States and Canada between 1965 and 1970 rose to 26,000 per annum and although the largest group is from the service industries, viz. domestic workers, a significant proportion (37%) are professional and technical personnel, clerical workers and craftsmen.

21. As in the majority of developing countries Jamaica shows a marked trend to urbanization. In 1960 almost 35% of the population was classified as urban and the Kingston Metropolitan Area, which contains over one-fourth of the total population, is over 12 times the size of the next largest city, Montego Bay. There is no evidence of a reversal in the trend to urbanization within the forseeable future.

Employment and Manpower

22. Most recent information on employment indicates that the Classifiable Labour Force represents about 40% of the population. One-half of the male labour force was in agriculture, 12% in manufacturing and 13% in construction. One-third of the female labour force was engaged in personal services, 19.5% in manufacturing, 17.5% in agriculture and 15.3% in commerce. Although there has been a decline, agriculture is still the single largest component, accounting for about 38% of the labour force, followed by manufacturing 14.8% and personal services - 14.5%.

23. Estimates of employment in certain major activities in 1970 show that the largest group (57,000 persons) was employed in the sugar industry, most of these being employed on a seasonal basis. The other major areas of activity providing employment are the Bauxite Industry's construction and agricultural aspects, manufacturing and tourism.

24. The population employed in agriculture continues to show a declining trend, both in absolute and relative terms. This is largely a consequence of the broadening of the base of the economy into the more modern sectors, and a drift of people away from agriculture even if job opportunities are not available. This helps to create shortages of labour for some agricultural activities. In some instances, therefore, this leads to pressures towards a greater degree of mechanization in agriculture.

25. Agricultural Development

The First Five Year Plan period ended on March 31, 1968. Delays and changes in the formulation of the Second Five Year Plan led to a rolling of the Plan for the period up to March 1970. The Second Five Year Plan is regarded as having been started in April 1970 and should then continue to March 1975. During the last decade and particularly since 1966 a more serious examination has been made, not only by the Government itself but also by the private sector, of the role played by agriculture in the economy, with a view to determining strategies for accelerating agricultural development. A number of industry studies (sugar, citrus, bananas and cattle particularly) have been carried out. Considerable work has been done in Forestry and Watershed Management. In addition, external technical assistance has been obtained for examining various facets of agricultire as a basis for improving and expanding the scope of agricultural development planning. Many technical experts from UNDP, FAO etc. have been engaged in examining prospects for development of tobacco, forestry, watershed management, rural infrastructure and agricultural marketing.

26. In general terms, more emphasis is being placed on the necessity to obtain fuller information on the resources, as a prerequisite for attempting to develop programmes and plans. The policy aims at tackling problems which currently limit development, and to this end emphasis is being placed on the provision of suitable infrastructure; harnessing water supplies for irrigation purposes; increasing and improving extension and other services; expanding credit facilities; and creating incentives for farmers through subsidies and marketing arrangements.

27. Relative contribution of the agricultural sector to GDP (at Current Prices) has continued to decline and in 1970 was estimated at 8.3% of the total. The fact that there are idle and under-used resources (land and man), inadequate facitities in some areas, low levels of skills and know-how and substandard quality of seeds and breed stock etc., indicates that there is considerable scope for developing agriculture, once these conditions can be corrected. Much attention is being focussed on structure both in terms of land distribution and land use, and on the organization and development of the country's agriculture

on a total basis. Due to the level of unemployment, and the migration of rural people to the towns where jobs are not available, Government has been endeavouring to find projects which, while helping to move agriculture forward, are also labour intensive in nature. In this latter respect the expansion of commercial forestry has considerable potential.

28. Severe droughts during 1966, 1967 and early 1968 have affected agricultural production, thereby limiting targets set for the agricultural sector. Fickle changes since then have led to some measure of increase but this has not been significant or sustained. An examination of the main contribution to the Sector's GDP indicates that livestock has shown the greatest increase and still has potential for further expansion. Faulty practices in our watershed areas have contributed to this situation and proposals have therefore been made for improvement in watershed management, inclusive of forestry development. A comprehensive Agricultural Census was undertaken in 1968, but final data are not yet available.

29. Land Use

For the purpose of ensuring that more of the country's agricultural land is adequately utilised, Government enacted legislation under the Idle Lands Law of 1966, setting up a Land Utilisation and Development Commission whose prime function is to see that all land in farms over 100 acres in size is adequately used. The Commission is empowered to declare a farm "idle", if it finds lands which are either not used or grossly under-used, provided the amount of idle land on these farms is not less than 50 acres. Where a farm is declared "idle", the owner is required to submit a development plan to the Commission. On refusal to do this or to pursue the development approved within a stipulated period, the Minister of Agriculture is empowered to acquire the land or any part of it, provided the amounts acquired are not less than 50 acres. Up to 31/12/71, 1,378 properties (equivalent to about 97% of the total number of 1,414 units in the size group involved) had been inspected by the Commission.

30. Livestock Development

Expansion of the dairy industry is one of the top priorities of the Government. Action taken to achieve this expansion includes:

(i) a one-year Government subsidy on feeds in 1967/69 lasting for about 18 months;

(ii) subsidy on the price of fertilizer for pasture establishment and maintenance;

(iii) establishment of medium-sized dairy farms of average size of 25 acres under irrigated conditions and 35 acres under rain-fed conditions. Farms are established on a leasehold-cum-freehold basis. Financing has been assisted by a US/AID Loan to the Jamaica Government. The farms are leased to young farmers, who must undergo one year's training in dairy husbandry, for a period of 25 years with an option to purchase after 15 years. Capital expenditure per farm is approximately $26,000;

(iv) provision of special credit for existing dairy farmers to enable them to purchase cattle and finance other development aspects.

A pig expansion programme has also been launched and in connection therewith a feed subsidy was provided in December 1967. In addition, Government has increased its research efforts and has expanded its programme for producing breed stock (large white pigs) for increasing the production of quality pork.

31. Fishing

Jamaica, like many developing countries, produces inadequate quantities of fish to satisfy its demand. The Industry is being geared to improve this situation through training programmes, and the provision of credit for purchasing equipment, etc. and the provision of fuel at duty free rates.

Steps are being taken to establish a Fishing Port Complex and to improve the internal marketing of fresh fish at wholesale and retail devels. At present there are 7,500 fishermen in the industry and together with their families and vendors give a total of about 50,000 people who depend on fishing.

32. Afforestation

Government in 1965 initiated an expanded forestry programme designed to protect soil and water resources, provide employment for unskilled labour in rural areas and ultimately to reduce the reliance on imports of wood and wood-products. A United Nations Special Fund project in Forestry Development and Watershed Management has spearheaded much of this work and has collaborated with the Agricultural Planning Unit in preparing a 100,000 acre forest project.

33. Water Resources

Water as a limiting factor in agricultural development has proved a serious problem particularly in periods of drought. Government obtained assistance from the United Nations to undertake a Ground Water Research and Survey project, under which studies have been carried out to determine the feasibility of harnessing water supplies for agricultural purposes in two areas of the island where water shortage is one of the major factors limiting agricultural development. Two pre-feasibility studies have been carried out by the UNDP research team for the Pedro Plains and the Martha Brae Valley.

34. Marketing and Processing

In order to keep pace with anticipated increased domestic production in 1966 the Agricultural Marketing Corporation (AMC) increased its activities. A new wholesale terminal market was built and additional cold storage facilities provided. The AMC has opened up 5 retail shops, largely experimental and demonstrational in the first instance, but proposes to increase its involvement in retailing.

Jamaica Frozen Foods Ltd., an agency of the Food Technology Division of the Ministry of Trade and Industry, has recently been established. It has a plant capacity for processing 50,000 packages of preserved food per day and produces a wide range of Jamaican specialities which are sold on the local market and exported.

35. Agricultural Development Planning

Since 1968 Government has accentuated its programme of strengthening a number of its Departments and Divisions to enable them to improve on services which are provided for the over-all development of agriculture, and in this respect it has benefitted from technical assistance from the United Nations and the United Kingdom Ministry of Overseas Development. A major change in this area was the creation of the Agricultural Planning Unit (APU) within the Ministry of Agriculture and Lands from the former Economics and Statistics Division of the Ministry of Agriculture. Two of the main functions of the new unit are:-

(a) to provide suitable data on a continuing basis, to assist Government in formulating agricultural policy and in setting targets for both the private and the public sectors; and

(b) to become actively involved in all aspects of agricultural development planning.

A basic feature of the development planning was intended to be the coordination of the efforts of departments, divisions and agencies of the Ministry of Agriculture and Lands (MAL) in evolving development programmes and their contingent projects for ultimate implementation. The APU has an important responsibility for evaluating all programmes and projects. In January 1969 the Ministry of Agriculture and Lands was split into two Ministries, viz. Agriculture and Fisheries and Rural Land Development. The Agricultural Planning Unit services both Ministries.

36. Trends in Agricultural Production

GDP at current prices from Agriculture, Fishing and Forestry, fluctuated during the period under review and this performance largely reflects the influence of weather conditions. Livestock is perhaps the only subsection which has maintained an upward trend during the period. On the overall, due to the significant annual gains in the GDP from all sectors, Agriculture's contribution has continued to decline. This contribution fell from 11% in 1966

to 8.3% in 1970, but showed only a very small change (5%) in absolute terms over the same period. Sugar remains the sensitive area in Agriculture's contribution to GDP.

Contribution of Agriculture, Forestry and Fishing to G.D.P. at Current Factor Cost - ($ million)

Major Areas of Section	1966	1967	1968	1969	1970
				(Prov.)	(Prol.)
Export Agriculture	30.1	31.7	31.6	26.7	27.3
Domestic Agriculture	25.3	25.2	24.7	24.1	26.8
Livestock, Hunting	12.5	13.6	13.8	15.6	16.1
Fishing	4.5	4.6	4.4	5.1	5.8
Forestry and Logging	2.7	2.8	3.0	2.9	3.0
Total for Agriculture	75.1	77.9	77.5	74.4	79.0
Total for all Sectors	682.1	723.1	784.6	858.8	951.1
Mining, Quarrying and Refining	98.1	102.5	100.1	124.7	159.9

Source: Economic Survey of Jamaica, 1970.

37. Sugar

The production of sugar continues to fluctuate. The tonnage of sugar cane, sucrose content, milling efficiency and price of sugar are the major factors affecting the ultimate revenue from sugar cane. Apart from weather conditions, other important factors which affect the tonnage milled are labour shortages, labour stoppages and transportation problems. Average yield per acre is put at 30 tons. A number of estates have been unable to obtain adequate cane to fill their grinding capacity. It is estimated that there are 167,000 acres in sugar cane.

During the period under review much effort has been displayed by Government to keep the sugar industry going. Recently a number of estates, in

attempting to rationalize their position are moving towards a policy of retaining operation of the sugar factory and leaving sugar cane production to farmers.

Recent negotiations have led to an International Sugar Agreement (in principle) for an increase in the price of sugar and ultimately an increase in the price of sugar cane per ton. Existing prices are $6 per ton for sugar cane, while sugar prices range between $70.00 and $122 per ton. The effects of Britain's entry into the EEC are as yet to be determined.

Production of sugar for the five year period 1967-1970 was 449,000; 445,000; 383,000; and 370,000 tons respectively. In 1970 sucrose content reached its lowest (11.27 tons cane per ton sugar) in 35 years.

38. Bananas

This industry continued to be plagued by a number of problems. Uncertainties of all types, including marketing and weather, have affected production and in spite of specific programmes, e.g. Rehabilitation 1970, progress of the industry still has not begun to move in the desired direction. Both Jamaica and Winban have not been able to meet their U.K. export quotas totalling 360,000 tons - 400,000 tons during the last 3 or more years. Local trials with Valery banana give indication of a possible break-through with a variety which has a higher yielding potential than the Lacatan. This is another crop whose contribution to local Agriculture is likely to be affected by the United Kingdom's entry into the EEC.

With a view to improving the quality of product offered for export, boxing plants have been built and others are contemplated. Approximately 84,000 acres are planted in bananas, some in mixed stand. Average yield is about 2.5 tons per acre and yields as high as 10 tons are obtained.

39. Citrus

Local citrus production still falls short of the total demand (export and local-fresh and processed). Local consumption of fresh oranges continues to grow and this, fetching as it does a higher price than that for export and processing, poses certain supply deficiencies. Planned expansion of the industry is proposed. This is one of the crops singled out for special

attention for credit to large farmers under the IBRD loan programme to the Jamaica Development Bank.

40. Coffee

Production in 1967/68 reached the highest attained in several years. Coffee grown under improved management is currently yielding as many as boxes = ——— lb. cherry coffee and _____ dried beans per acre. The current coffee expansion programme is planned to accommodate ___ acres and to increase local production significantly. While there have been increases both in the acreages planted and the yields obtained, the expected increase in production will not be achieved as early as projected. The expansion programme aims at increasing production by planting new acreages and rehabilitating old plantations so as to enable Jamaica to fill its quota for a crop which attracts premium prices on world markets and for which currently there is little competition. Already individual farmers using improved seedlings and adopting improved husbandry practices have been able to increase yields significantly. However, two problems, namely labour shortage and rat damage, are yet to be overcome.

41. Pimento

This crop is of increasing importance to the economy of the country. By way of improving returns to farmers, research is being conducted in methods of propagation, cultural practices and disease control. Results from the new propagation measures have been encouraging.

42. Coconut

Although this is not an export crop, this is one of the more important crops grown in Jamaica. Lethal Yellowing disease has affected most of the tall coconuts and has faced a movement almost fully into the rise of Malayan dwarfs. This programme has made significant strides. At present the area under production is 100,000 acres. Seedlings are produced roughly equally by the Crops and Soils Department of MAF and by the Coconut Industry Board (of the Ministry of Trade and Industry). Copra yields have ranged from 17,626 to 20,599 tons per annum. This is all used locally for the manufacture of

cooking fats, soaps and detergents, leaving a valuable by-product of coconut meal for the production of animal feeds.

43. Administration of Agriculture

On January 1, 1969 the former Ministry of Agriculture and Lands was replaced by two Ministries viz. the Ministry of Agriculture and Fisheries and the Ministry of Rural Land Development. The division of responsibility is as follows:-

Ministry of Agriculture and Fisheries (MAF)

Subjects

Agriculture
Agricultural Development Corporation
Agricultural Marketing Corporation
Banana Industry
Citrus Industry
Cocoa Industry
Coffee Industry
Fisheries Industry
Irrigation and Drainage
Jamaica Agricultural Society
Jamaica School of Agriculture
Land Registration
Livestock Industry
Plant Protection
Sugar Industry
Veterinary Services
Underground Water Control
Wild Life Protection

Departments

Agricultural Credit Board
Agricultural Engineering Division
Agricultural Information Division
Agricultural Planning Unit

Departments Cont'd.

Co-operatives
Crops and Soils Division
Fisheries Division
Land Valuation Division
Registration of Titles
Rio Cobre Irrigation

Ministry of Rural Land Development (MRLD)

Subjects

Agricultural Small Holdings
Farmers' Development Programme
Farmers' Training
Forests
4-H Clubs
Lands (including Crown Lands and Land Settlements)
Land Authorities (excluding the Negril Area Land Authority)
Land Development and Utilization Commission
Public Gardens
Surveys
Watershed Management

Departments

Forests
Lands
Surveys

44. It is not possible at this juncture to discuss in detail all or any of the various departments, agencies and statutory bodies listed above. Suffice it to say that there is a multiplicity of agencies etc. now serving Agriculture. In general terms research is the responsibility of MAF, as well as extension for livestock only. Other extension activities are the responsibility of MRLD. MRLD is responsible for farmer's training and 4-H Clubs, while MAF is responsible for the Jamaica School of Agriculture and the Jamaica Agricultural Society.

45. There are a few agencies which although they are administratively the responsibility of MAF provide services for both MAF and MRLD. These are -

Agricultural Planning Unit
Agricultural Credit Board
Agricultural Information Services

Brief notes on these 3 Divisions are set out.

46. Agricultural Planning Unit

The Agricultural Planning Unit (APU) is concerned with overall planning in the field of agricultural development and services both Agricultural Ministries. The planning function entails the collection and interpretation of statistical data, feasibility studies into various aspects of agricultural development, including the design and analysis of field experiments, studies in farm management, farm profitability, production and marketing. The APU is also involved in the evaluation of the various schemes for agricultural development, inclusive of their impact on the social life of the communities in which they are carried out (see also para. 35).

47. Agricultural Credit Board

The Agricultural Credit Board (ACB) is the major avenue through which Agricultural credit is provided. Other agencies are -

(i) The People's Co-operative Banks (Government sponsored)

(ii) The Jamaica Development Bank (do. do.)

(iii) Commercial Banks

(iv) Merchant Houses.

The ACB is Government operated. There are many defects of the system and efforts are being made to correct them. The main defects include -

(a) inadequacy of total credit of all types

(b) farmers' imprecise knowledge of the amount and type of credit required by them;

(c) unreliability of the availability of credit on a timely basis from all sources which provide credit; and

(d) organizational and administrative problems associated with agricultural credit agencies.

Government itself is heavily involved in providing and administering credit. The major Government agency is the Agricultural Credit Board. Its functions are -

(i) to make loans direct to farmers through 115 People's Co-operative Banks and 21 approved (under the Agricultural Loan Societies Law) organizations;

(ii) to supervise and control activities of the P.C. Banks;

(iii) to operate and administer the Agricultural Credit Revolving Fund;

(iv) to administer funds for loans to farmers under the Dairy Industry Development Programme; and

(v) to administer funds for loans to farmers under the Self-Supporting Farmers Development Programme (SSFDP). This is a supervised credit programme which obtains made available by the IDB to assist development of farms 5 - 100 acres in size. Loans to farmers do not exceed $20,000. Where larger loans are required, these are obtainable when justified from the Jamaica Development Bank.

In addition, ordinarily the ACB makes maximum loans of $20,000. Loans exceeding this need more detailed examination and approval of the Minister of Agriculture and Fisheries.

48. Agricultural Information Services

The Division provides services to both MAF and MRLD. Its main functions are -

(1) Preparation, production and distribution of printed popular technical publications on agriculture (including forestry) and fisheries;

(2) Preparation and publication of press releases;

(3) Holding interviews and preparing radio and television programmes on various agricultural subjects;

(4) Supplying such informative materials as the public may need on agricultural matters;

(5) Participation in Agricultural Shows.

49. Agricultural Marketing

Agricultural Marketing is of such importance that a general statement is made on the Marketing System in Jamaica.

The Marketing System in Jamaica

The marketing system for food items produced in Jamaica can be divided roughly into two segments -

1. The Domestic Market

2. The Export Market.

50. The Domestic Market

The chief outlets for domestic foodstuffs in Jamaica are the Parochial and Municipal Markets, Higglers and the Agricultural Marketing Corporation. There are about 90 Parochial Markets operated by the Parish Councils and 8 Municipal Markets operated by the Kingston and St. Andrew Corporation. It is estimated that these public markets handle roughly 70 per cent of the produce traded in the island's retail markets. Unfortunately, most of these public markets are inadequate for the task they are called upon to perform. In many cases the facilities available to both buyers and sellers are unattractive and unsuitable for the volumes handled, while trading is hampered by crowding and other unsatisfactory conditions. Since 1971 the AMC has been made the sole importer of certain items of food.

The higgler system encompasses both wholesale and retail trading and handles about 75 per cent of the total foodstuff marketed in Jamaica. The system functions mainly through the medium of middlemen, mostly women, who carry out a wide variety of tasks. Depending on the extent of involvement in the market, a higgler will be responsible for providing short term loans to producers, harvesting the crop, assembly in the buying area and transport within villages and chief towns. Some higglers will also sell on the streets or elsewhere outside the public markets.

51. The Agricultural Marketing Corporation was established in 1963 with the primary objectives of stabilizing prices to farmers and improving the efficiency of the marketing of domestic foodstuff throughout Jamaica. The AMC adapts three methods in purchasing crops from farmers -

1. Offering minimum guaranteed prices to farmers for a selected number of items;

2. Offering contracts for a number of items;

3. Purchasing in the open market at prices varying according to supply and demand.

Recently the AMC has established 5 retail outlets.

52. Root Crops, Fruits, Vegetables, etc.

Production in this area continues to attract considerable attention. Jamaica produces all the root crops required for local consumption and also exports some (e.g. negro yams). There is a potential for expanding the production of fruits and vegetables and to reduce the existing levels of imports of these commodities. Associated with these as crops produced only for local consumption are the legumes, particularly congo peas and red peas. Government is currently engaged in research work in vegetables and pulses (e.g. red peas and soya beans). Emphasis is being placed on the production of such crops as maize, onions, and the legumes. The services of the AMC are being geared to encourage production of these crops. In terms of actual quantities, production has tended to fluctuate principally due to weather conditions. This production, however, represents a significant contribution of the GDP from the Agricultural sector, being 32% in 1969 and 34% in 1970 (at Current Factor Cost).

53. Agricultural Development Corporation (ADC)

This institution was set up by Government as a Statutory body in 1951 to stimulate, facilitate and undertake development in agriculture. This involves the ADC in actual production where there are short-falls in production in such areas as sugar cane and beef. The ADC's programme calls for the full development of all lands under its control, and involves the provision of adequate drainage, irrigation and reclamation where appropriate. On-going projects of the Corporation include:-

(i) Farm Machinery Pools

(ii) Dairying - rearing broad stock to provide a pool of animals for development programmes being undertaken by farmers in the dairy expansion programme;

(iii) Commercial trials with various crops;

(iv) Operation of rice milling plant;

(v) Beef project - feedlot operation;

(vi) Sugar cane production; and

(vii) Multiplying planting material e.g. pineapple for distribution to farmers.

The Farm Machinery Pools Scheme although expensive to operate, provides tillage facilities specifically for small and medium-sized farmers, and without this service the level of production would be seriously affected. Commercial trials are being carried out on important crops, e.g. high yielding varieties of rice e.g. CICA-4.

54. Jamaica School of Agriculture

The Jamaica School of Agriculture which has been in existence for over 60 years, provides training for most of the technical staff employed both by Government and by the private sector. In 1967 Government obtained a loan from the IBRD to assist in expanding and improving the training offered by the school. The school now has accommodation for 330 men and 120 women. Two courses are now given, namely a 2-year Diploma course and a 3-year course leading to the Associateship Science degree in Agriculture.

55. Contribution to Gross Domestic Product

The unsatisfactory level of performance of the agricultural sector as indicated in the data shown in Table 3 has continued to attract attention. Agriculture over the ten-year (1959 - 1969) period had a growth rate in real terms of 0.96 per cent per annum, compared with a rate of 4.74 per cent per annum for total Gross Domestic Product.

In part agriculture's poor performance over the later years of the period can be attributed to adverse weather conditions, especially the effects of severe drought in 1966, 1967 and 1968. Labour shortages also affected the industry while difficult export marketing conditions and falling or unstable prices created sufficient uncertainty to restrict the productive efforts of farmers, particularly in the case of sugar and bananas.

In terms of sub-sectoral growth export agriculture, fishing and forestry remained virtually static over the ten-year period while domestic agriculture declined. Only livestock displayed any real growth, improving steadily over the years from a value of $8.5 million in 1959 to $13.9 million in 1969.

GROSS DOMESTIC PRODUCT AT

Fo

	1959	1960	1961	1962		
Sugar Cane	12,906	14,966	14,812	13,932		
Other Main Exports	7,988	7,660	7,036	7,436		
Export Agriculture	20,894	22,326	21,848	21,368		
Root Crops	7,038	6,174	5,186	5,618		
Other Primary Products	10,050	10,118	10,488	9,862		
Domestic Agriculture	17,088	16,292	15,674	15,480		
Livestock & Hunting	8,504	8,452	9,464	9,636		
Fishing	2,508	2,484	2,782	3,006		
Forestry & Logging	2,442	2,394	2,476	2,378		
Agriculture Forestry Fishing	51,436	51,948	52,224	51,868	54,	
Total Gross Domestic Product	405,370	431,752	444,130	451,808	466,900	
Agriculture Forestry Fishing as percentage of GDP	12.69%	12.03%	11.76%	11.48%	11.61%	11.2

Source: National Income and Product 1968 with provisional data for 1969
Jamaica Government, Department of Statistics.

56. Trade

Total visible trade for Jamaica has increased steadily from $268 million in 1960 to $503 million in 1968. The adverse balance of visible trade, which was $42 million in 1960, was cut back to $17 million in 1963 but, from the mid-sixties, began to climb again, reaching $89 million in 1967 and $137 million in 1968. Partial data available for 1969 and 1970 suggest that the upward trend is continuing.

57. Quantum indices, measuring the volume of trade, reveal the more rapid rate of growth of imports compared with exports, while the available price indices show an increasingly unfavourable trend in the terms of trade.

Table 3

	Quantum Indices of Imports and Exports (1965 = 100)		Price Indices of Imports and Exports and Terms of Trade (1965 = 100)		
			Price Indices		Terms of Trade
	Imports	Exports	Imports	Exports	
1960	84.2	81.6	82.8	99.4	120.0
1961	78.4	87.2	86.7	99.6	114.9
1962	81.5	88.0	94.5	98.8	104.6
1963	85.8	91.6	94.1	116.4	123.7
1964	96.4	97.6	98.4	111.0	112.8
1965	100.0	100.0	100.0	100.0	100.0
1966	111.3	106.2	104.0	102.9	99.0
1967	116.9	101.1	108.0	108.6	100.6

Source" External Trade of Jamaica 1968, Trade Statistics Unit 1969

58. Imports

The total value of imports (at current prices) in 1970 was $435 million, an increase of some 180 per cent compared with a 1960 value of $155 million.

This increase was largely due to capital goods, raw materials and food. Although the value of imports was rising steadily throughout the decade, a more rapid growth in import values is noted in the years after 1967, no doubt due in large part to the effects of devaluation in late 1967. Food imports followed the same general trend, increasing by 137 per cent from $29 million in 1960 to $69 million in 1970. The food import bill in 1970 represented 16 per cent of the value of all imports, a little lower than the average for the period in which food imports have generally comprised some 18 or 19 per cent of the value of all imports.

59. The value of imports of meat and meat preparations has increased more than three-fold during the period,while the value of imported dairy products and cereals and cereal preparations has more than doubled. These three major items of the food import bill together were worth $46 million in 1970; in excess of 10 per cent of all imports.

60. Exports

Total domestic exports increased in value from $112 million in 1960 to $279 million in 1970. The value of exports of food items which in 1960 contributed 41 per cent of total export value showed a moderate growth over the period, but declined in relative importance. In 1970 food exports provided some 21 per cent of total export value. Exports of Bauxite and Alumina tripled in value and in 1970 provided 67 per cent of the value of all exports.

61. In 1969, for the first time during the period under review, Jamaica became a net importer of food items and the gap widened in 1970. The value of exports of fruits and vegetables in 1970 was at its lowest level since 1964, and although the value of sugar and sugar preparations was higher in 1970 than in 1969 no clear upward trend can be seen in the major items of food exports. Coffee, cocoa and spices, however, did grow steadily in value throughout the period, although their contribution to total export value was relatively small.

VALUE OF SELECTED EXPORTS (f.o.b.) - 1960 to 1970

1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
				$'000					
31	48,963	65,889	63,664	56,028	59,897	56,586	62,418	57,212	58,193
	5	2	2	*	2	2	1	64	48
58	52	36	62	62	126	113	91	101	158
5	7	14	-	90	67	9	14	23	72
	8	10	5	27	17	12	33	70	101
	13,401	15,786	17,724	19,328	19,497	19,314	19,647	19,406	18,498
	1,004	44,938	41,074	32,484	35,047	32,906	37,301	30,836	32,559
	48	4,975	4,625	3,850	4,993	4,018	5,101	6,375	6,416
		50	46	45	17	1	92	126	56
		4,399	5,285	5,701	5,245	5,205	4,958	6,187	———
		3,198	3,643	4,238	3,859	3,722	3,101	4,013	———
		1,200	1,643	1,463	1,386	1,482	1,857	2,174	———
		59,968	68,709	72,101	76,666	80,907	88,989	118,796	NA
		20	23	33	27	24	20	26	10
		4	3	2	5	21	12	22	23
		94	55	76	32	31	34	2	-
		27,100	31,328	35,618	36,853	37,976	38,049	46,559	75,752
		31,902	36,369	34,985	38,635	41,772	50,834	69,831	111,845
		11	4	12	8	10	98	16	NA

61. Problems and Needs of Agriculture

Many of the major problems of agriculture are associated with the structural defects within the sector. In summary form these problems relate to the following:

(1) the highly skewed distribution of land ownership and the heavy concentration of the very large number of very small farms on land with steep slope and poor quality soils;

(2) the low level of skills, know-how and managerial ability of the farm population, as a result of which outmoded practices are employed in many areas of agricultural production to give generally low yields;

(3) the lack of adequate basic infra-structure and social amenities in the rural areas (roads, water, electricity, etc.) makes living in the country unattractive and encourages the migration of the younger population, as a result of which the average age of the persons engaged in agriculture now exceeds 50 years;

(4) with the unfavourable topography of a large portion of the land in agriculture and the excessive fragmentation of farm holdings, many farms are too small in size to provide a farm family with an adequate income;

(5) although there is a large pool of unemployed and under-employed persons, there is disenchantment with unskilled work in agriculture which leads to labour shortages in the industry;

(6) lack of adequate credit facilities for capital formation (including land purchase) and for working capital;

(7) inability of some farmers to provide legal documentation of ownership of land;

(8) the high level of investment required to bring lands in hilly terrain into profitable production (terracing);

(9) the inadequacy of research for the development of improved varieties of plants and animals and to protect them against pests and diseases;

(10) the need for more effective marketing facilities and the resultant high price spread between farm and retail outlet as well as poor quality of products offered;

(11) inadequate development of group activities among farmers, particularly the small farmer who could benefit from organized co-operative effort;

(12) inadequate training facilities to up-grade the skills of farmers and to supply the qualified personnel required to perform the duties of a dynamic extension service;

(13) inadequate measures to conserve and protect the limited soil resources of the country and ensure they are used to their optimum potential.

63. Agricultural Policy

The general objectives of Jamaican agricultural policy in summary terms are to ensure that -

(a) the agricultural sector makes its fullest contribution to economic development of the country;

(b) there is the widest possible distribution of opportunity for participating in the ownership of agricultural enterprises consistent with the preceding objective; and

(c) the population depending mainly on the agricultural sector receives a fair share of the improved living standard which the country as a whole enjoys and to which their efforts have contributed, thereby narrowing the gap between per capita income in agriculture and in non-agriculture.

When these broad objectives are broken down into specific areas these are found to include -

(a) sound land use patterns;

(b) food import substitution;

(c) production of export crops for sale to our advantage;

(d) improvement in local marketing facilities and arrangements;

(e) removal of the stigma attached to agricultural work at all levels and improving their status;

(f) organizing and establishing greater integration between agriculture and other sectors of the economy; and

(g) providing development incentives for agriculture which are comparable to those offered for the development of industry and tourism.

Inherent in these policy objectives is the necessity for achieving more equitable distribution of land, as well as a more rational and intensive pattern of land use. Income generation therefore ranks high in the formulation of development plans.

64. Policy Measures

The measures to be adopted in achieving these objectives include -

(a) the acquisition and sub-division of lands with good agricultural potential for the creation of viable farm units of medium and small size (depending upon land capability and the predicated pattern of land use);

(b) the harnessing of additional water resources to allow for the expansion and improvement of irrigation and drainage facilities;

(c) the establishment of commercial forests to help meet the growing local demand for forest products and to serve also as a soil conservation measure and a source of labour-intensive employment;

(d) expanding research activities to improve standards of culture and husbandry and to develop improved varieties of planting materials and breeds of livestock for distribution to farmers undertaking the expansion programmes being promoted;

(e) improving and expanding facilities for a better animal health programme;

(f) further development of the beef and dairy industries and increased production of high quality pork and pork products;

(g) the rehabilitation and expansion of the banana, coconut, citrus, coffee and cocoa industries, rationalization of the sugar industry;

(h) expansion of the production of food crops (especially vegetables, legumes and root-crops) for domestic consumption and, where feasible, for export;

(i) the development of organized production of special food crops, such as mango, avocado, ackee, pawpaw, guava, soursop, limes and pineapple, to meet the growing local demand for these products in fresh and processed form, as well as for export;

(j) expansion of the fishing industry through the provision of additional training, capital and marketing facilities;

(k) the provision of adequate credit facilities on attractive terms to stimulate the expansion of agricultural production;

(l) developing the extension service to provide farmers with guidance on the most up-to-date methods of production and assistance in making rational decisions;

(m) organizing training and demonstration programmes for farmers to bring a greater number into close touch with modern techniques of agricultural production;

(n) development of the internal marketing system to provide efficient outlets for farm products, thereby removing some of the uncertainty associated with agricultural production;

(o) fostering a closer link between agriculture and industrial planning so that full advantage may be taken of the opportunities open for forward and backward linkages between the agricultural and industrial sectors.

Prepared by -

Agricultural Planning Unit,
Ministry of Agriculture &
Fisheries,
Hope,

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"BACKGROUND INFORMATION ON LAND AND LIVESTOCK DEVELOPMENT"

Ministry of Agriculture of Jamaica, Agricultural Planning Unit

Kingston

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A. BACKGROUND

LAND DEVELOPMENT

This note purports to highlight the major features to be considered in developing land for agricultural purposes. Agriculture in this context includes forestry. It is assumed that the ultimate and major objective is to develop land for the production of food, raw materials as well as wood. By implication both land and people are involved.

2. At the very outset it is necessary to make a number of general statements in relation to land. Information available to date from the 1968 Agricultural Census indicates that about 1.5 million acres or slightly more than one-half of the land area of Jamaica is in farms. Information on the acreage distribution of the remaining area by broad forms of use is rather imprecise.

Data from the Physical Planning Unit and other sources would indicate that by broad uses the estimated distribution of the total land area is as follows:-

Land Use	Acres	%
Forest	655,000	24.1
Other woodland	538,000	19.8
Agriculture including improved pasture	1,258,000	46.4
Natural Range and grassland	103,000	3.8
Swamp+	50,000	1.8
Mining	7,000	0.4
Urban	100,000	3.7
Barren	4,000	0.1
All Uses	2,715,000	100.0

+Not including mangrove swamp which is included in the Forest and other Woodland categories.

N.B. There is some doubt about the total surface area. Earlier and other information seem to indicate that the area is at least 2.8 million acres.

In addition, a significant (but unqualified) percentage of land in farms is unsuitable for agriculture inclusive of forestry. It is important to note that only about 20% of the land in farms is flat or gently rolling.

3. The earlier settlers naturally used the best lands, concentrating on farming largely for sugar cane production on these lands. The hillier areas gradually became involved in the production of other crops, mainly banana, coffee etc. With Emancipation the demand for land by freed men increased considerably and this forced greater use of hillside lands for farming. The situation is one in which not only topography but farm practices have led to considerable erosion of agricultural land. Rapidly increasing population has caused heavy density even on these very steep lands.

4. Since the purposes of using agricultural land include the conservation or preservation of that land, the use of the land for the production of a variety of crops and livestock in the interests of those actually engaged in agriculture and ultimately in the interest of the total economy, it is useful at the outset to look at the permissive conditions under which land has been used up to now. In capsule form the owner and often the operator who is not always the owner has been free to use land as he pleases. There has been little if any insistence on proper land use.

5. Government's policy for agriculture at the moment derives largely from the stagnant and apparently immutable position into which the agricultural sector has lapsed, notwithstanding heavy annual expenditure both by Government itself and by the private sector. The existence of unused agricultural land, a high level of unemployment and annual increases in imports of agro-based commodities provide a basis for examining existing policy and formulating new ones.

6. The broad policy for agriculture aims at reversing the present situation. The Agricultural sector is therefore being accorded high priority with a view to obtaining optimum utilization of total resources (land, people and capital) involved in the sector. The expected results of the policy are to increase

incomes generated from agriculture; increase the contribution of the sector to national economic growth; and improve Jamaica's trading in agricultural commodities so as to reverse an adverse trading position which has developed over recent years.

7. The multiple policy objectives which are not necessarily presented in order of priority and are not always mutually exclusive include -

(i) producing, where economically feasible, as much of the food (including those of higher nutritional value) and raw materials (for agro-industry) required by the country for domestic and export consumption;

(ii) improving the overall 'climate' (including services, facilities, infrastructure, etc.) within which agriculture operates, thereby assisting in creating such conditions as will attract greater and sustained private sector involvement and participation;

(iii) rationalizing agricultural land utilization in keeping with use capability requirements, particularly to secure an optimum balance between production for export and that for domestic use;

(iv) assisting farmers to obtain higher incomes from farming and ultimately to attain better levels of living; and

(v) enabling the sector to achieve that level of contribution to the total economy which is consistent with the potential of the sector and level of inputs involved.

8. Important aspects of Government's policy where agricultural land is concerned relate to -

(i) ensuring that agricultural land, designated by using appropriate criteria, is not used for non-agricultural purposes such as housing settlements etc.; and

(ii) ensuring that tenurial arrangements are oriented to rights of use (usufruct) rather than of ownership.

Freehold tenure in Jamaica has been associated with much misuse where agricultural land is concerned, and Government has decided as a matter of policy that lands acquired by it for settlement will be operated either on a leasehold basis or under a system of cooperative ownership. This viewpoint is further supported by the high and prohibitive cost of purchasing land for agricultural purposes. Land fragmentation, as obtained under the former land settlement programmes will be discontinued. Emphasis is being placed on the acreage size of farm units which will be able, under varying conditions of land use capability, management and capitalization to generate pre-determined minimum net farm-family income targets.

9. Where communal or cooperative ownership is involved, cooperators will be encouraged as a matter of policy to participate in management and share in the profits. An important adjunct will be the provision of adequate supervision, extension services, credit, etc. to ensure that land will be operated to its optimum potential.

10. In pursuance of these policies and objectives, agro-based imports have been examined with a view to determining that commodities should be produced locally to reduce the reliance on imports. Indeed, importation of a number of items has been already banned. This has led to the determination of priorities and areas in which emphasis should be placed in our production strategy.

11. Positive steps are being taken to improve infrastructure and services, particularly in the areas of marketing, credit, extension, training programmes, cooperatives, transportation and community development. The aim is to create such conditions in the rural areas for those engaged in farming as will discourage, or at least reduce the existing high rural to urban drift of the population to jobs which are non-existent, while much agricultural land is left idle.

12. Government is currently engaged in carrying out an Agricultural Sector Study aimed at formulating action programmes to get agriculture moving. An important feature of the Study is the participation of the private sector in the planning. Assistance is being obtained from the IBRD in carrying out this Study. In addition, the IDB has been involved with Jamaican technicians in preparing Terms of Reference to be used by those engaged in upgrading existing mechanisms for domestic marketing and agricultural credit. Assistance is already being received from the UNDP in exploring the scope for extending the co-operative movement.

13. Areas for a number of immediate action programmes have already been identified and these will be pursued in the interim, efforts being made to ensure flexibility so as to incorporate these into the longer term development programme for agriculture.

14. Specific programmes in which action is already being pursued within the policy framework enunciated above are -

(i) Livestock Development

(a) dairy expansion programme, including both existing and new farms - to increase milk production to a stage where there can be significant reduction in imports of dairy products, and to provide some of the beef required, thus reducing imports of beef;

(b) beef cattle expansion programme, including an integrated feedlot, slaughtering and processing complex;

(c) rationalization of the quality pig industry to ensure orderly production and provide adequate processing facilities;

(d) expansion of other small-stock (sheep and goats) production; and

(e) a health programme geared to reducing significantly and possibly eradicating animal diseases.

(ii) Fisheries Development

(a) extending and improving training facilities;

(b) erecting a fishing port complex as part of an overall programme for expanding deep-sea fishing operations; and

(c) improving beach facilities to accommodate increased fishing operations.

(iii) Crop Improvement and Development including programmes for expansion, rehabilitation and rationalization. Improved husbandry and efficiency are being stressed. Emphasis is being placed on -

(a) export crops - sugar cane, bananas, citrus, coffee, cocoa;

(b) crops for domestic usage - coconut, legumes, (pigeon peas and red peas), peanuts, soya beans, fruits and vegetables.

(iv) Action is being taken on many aspects with a view to achieving the objectives of the broad agricultural policy. This relates largely to the improvement of services, including more meaningful overall research.

(v) Since the overall policy involves sounder use of the physical resources, conservation and watershed protection are being accorded high priority. In partial fulfilment of this objective forestry projects are being increased not only to meet the conservation requirements, but also to provide immediate and continuing employment opportunities, and ultimately to reduce dependence on imported wood and wood products.

It is recognized that the multiple and sometimes conflicting roles which the agricultural sector is required to play have, in part, contributed to the lagging performance of the Agricultural Sector, especially when the Sector is used as it is and then its performance is measured by yardsticks which do not tell the whole story.

15. As a matter of policy Government has intimated that the ad hoc approach to agricultural development planning will cease. It has also recognised that in the past conflicting actions taken by various ministries have tended to create a climate which in some instances proved inimical to the interests of the Agricultural Sector. Under the new approaches for overall and sectoral development, opportunities will be found in the inter-ministerial Economic Council to correct these defects. As a part of the same approach, a multi-ministerial committee has already been formed to deal with the whole question of Agro-Industries, the importance of which to the agricultural sector cannot be over-stated.

16. One of the important results expected from the Current Agricultural Sector Study is the identification of areas in which further guides may be found to assist in more precise enunciation of the agricultural policy on a longer term perspective basis. For example, general policy statements concerning the necessity for increased and improved agricultural training at all levels will be further qualified and then quantified as a basis for determining the policy measures which should be adopted in achieving these objectives and the targets which flow from them.

Zoning

17. Zoning may be considered at different levels. There is the level at which broad types of use are used as the criterion. At the other level zoning may be considered within the area specified for a particular purpose, in this instance agriculture. There is, however, some interconnectedness between the two levels, since no single sector of economic endeavour is completely self-dependent.

18. In November 1965 a multi-disciplinary team prepared a report on "Proposals for Crop Zoning and Better Land Utilization in Jamaica". This was a comprehensive document which, although requiring modifications, brought into focus many of the concepts normally adopted in deriving a zoning strategy. In its Introduction the following statement was made.

> "The existing agricultural production complex is, by and large, one in which any agricultural crop or animal enterprise is pursued in any area where soil and climate permit. Little or no consideration is given to the economics of production of that enterprise as a part of the national agricultural economy. The result is a complex of excessive crop diversification and irrational agricultural production."

19. The proposals in that paper were based inter alia on:

(i) Estimated Distribution of Farm Land among Major Crops (Export and Domestic);

(ii) National Projections of Crop and Livestock, Consumption and Acreage Requirements 1970 and 1975;

(iii) Production Statistics for various crops, etc.

(iv) Ecology and Crop Zoning in Jamaica.

20. These proposals were discussed in its preliminary form before the report was finally tabled. No action was taken on the proposals, but in May, 1970 a Crop Zoning Report was prepared by the Crops and Soils Department of the then Ministry of Agriculture and Fisheries. This Report has been quoted extensively in the National Plan for Jamaica prepared by the Physical Planning Unit. A significant statement showing the background against which this paper was prepared appears in the Foreword of the report and is quoted below.

> "Sugar cane, Bananas, Coconuts, Citrus, Cocoa, Coffee, etc. have been grown in traditional areas for a very long time and any attempt at zoning will have to follow the pattern of using these centres around which development of the crop should take place."

(It is understood that a separate exercise was done for livestock and pasture, but no records of such an exercise are available as a basis for comment).

21. Stated in these terms the suggestions which flow from the Report are likely to be in conflict with what is considered to be an essential feature of zoning, sensu stricto, which is to see not only that production is possible in a given area, but also that there will result optimum benefits to individuals and country alike. Here again a question of definition arises and it is perhaps desirable for the policy makers to indicate what type of zoning they are attempting to pursue. Flexibility is an important element. Changes in land use are bound to be considered and the question as to how to achieve such changes is indeed pertinent. A good example of the type of rigidities faced and permissiveness allowed is exemplified by the transportation subsidy as well as other subsidies given to cane farmers in the Sevens area of Clarendon in 1961/62 firstly to assist in providing additional forms of transport, in this instance by trucks to replace railroad transport for cane (grown beyond the economic distance for transporting canes to factory). Secondly, subsidies were provided to assist farmers to change land use. Resultant effects? The granting of the subsidies has become institutionalized and the proposed change in land use has not taken place.

22. No exercise in zoning can reasonably be attempted or presented for easy consumption without recourse to maps, showing various land features. It is impracticable to include these in this brief paper. One general statement can be made that in a sense many of our crops are growing in areas which are ecologically suited to them. But zoning sensu stricto implies considerably more than ecological aspects. Some of the land which is now used for agriculture in many areas should not be used for agriculture at all and in some instances, not for existing cropping patterns. Some lands should not (because they cannot effectively and safely) be used for cropping without the adoption of certain conservation practices. In the absence of certain disincentives unsound land use is likely to continue. Changes of the type demanded by the situation require time, training and heavy expenditure. The data presented in paragraph 23 indicates current estimates of land used for different agricultural crops.

23. The estimated acreage of major crops is as set out below.

Crop	Acreage
Sugar Cane	168,000
Banana	84,000
Citrus	25,000
Pimento	27,000++
Cocoa	27,000++
Coffee	15,000++
Coconuts	100,000
Pineapple and Miscellaneous	2,000
Miscellaneous legumes+	11,000 multi-cropping
Peanuts	1,500
Vegetables+	15,000 multi-cropping
Potatoes and Yams	24,000
Other Tubers (Cassava, Cocoa, Dasheen)	11,000
Maize	8,000
Condiments+	1,500
Tobacco	2,000
Plantains	3,000
Improved Pasture	200,000

++ Indicates area on which trees are found but not necessarily in pure stand.

\+ Due to the short term nature of many crops, it is implied that more than one crop is grown per year.

24. Since land is used for the production of various crops it is necessary to examine the anatomy of supply. The total supply available is made up of local production plus imports. To obtain the amount available for local consumption, exports must be deducted, leaving the gross balance to meet the requirements for all uses. In this context it is pertinent to observe that food imports as such include human food items as well as animal feeds. The importation of "foods" using groupings as obtain under the SITC over the years 1966-1971 is as shown in Table attached.

Local consumption includes food used by the tourist industry and a part of raw materials are processed (agro-industries), sugar production being our best example. Agriculture must be regarded as being only involved in the production of food. Raw materials such as tobacco, and fibres must also be considered.

Projections of the demand for all agro-based commodities are being derived as an important input for the Agricultural Sector Study (SSA). As implied earlier, the calculation of this demand goes beyond calculations based merely on population projections. This demand study will include commodities for both local and export requirements.

Once these quantities have been determined, a more rational basis for planning agricultural development is available. This must now be considered against policy objectives already stated. It is a matter of policy to determine the extent to which a country should become self-sufficient, bearing in mind such aspects as comparative economic advantage. It is also important to determine whether a cheap food policy should be adopted and if so what instruments must be used to place farmers in a position in which they would not be economically disadvantaged.

Against this background it is proposed to examine in relation to the physical requirements for Agriculture:

(a) Demand and Supply;

(b) Legislative Content;

(c) Organizational Responsibilities;

(d) State of Knowledge.

It is understood that the coverage should include:

(1) General considerations;

(2) Zoning policies - including priorities
consequences
mechanics
what is expected
types of use by areas
economic costs and benefits.

Prepared by: Agricultural Planning Unit,
Ministry of Agriculture.

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"GREEN PAPER ON AGRICULTURE - AGRICULTURAL DEVELOPMENT STRATEGY"

Ministry of Agriculture of Jamaica, K. A. Munn, Minister

Kingston

November 23, 1973

GREEN PAPER ON

AGRICULTURAL DEVELOPMENT STRATEGY

INTRODUCTION

The modernization of the Agricultural Sector must be considered within the framework of overall development of the economy. This implies that rural development centred on agriculture must be accorded greater emphasis than has been applied in the past. This rural development must take fully into consideration the relative scarcity of land resources in relation to the large rural population, and must be geared to making the rural environment so attractive as to reduce migration of people into towns and cities.

2. There is an urgent need to expand employment opportunities in both the urban and rural sectors to help provide jobs for the large number of persons currently unemployed, and to help absorb annual additions to the labour force. At the same time, there is a necessity to improve the productivity and incomes of thousands of under-employed workers in low-income, low-skill jobs.

3. Even a rapid increase in industrial expansion will not provide employment opportunities to accommodate the growing labour force. It is imperative therefore that an appropriate rural development strategy be developed to enable as large a percentage as possible of the country's growing labour force to be retained in productive employment in rural areas.

4. The Government's philosophy for rural development is to create the basic infrastructure which will provide rural people with easy access to adequate housing, water, health, education, as well as improved facilities for electricity, transportation and communication. This will necessitate an integrated approach to rural development planning for the provision of social facilities and amenities.

5. Within this rural setting a climate must be created to enable the Agricultural Sector to expand output and increase productivity while taking into full consideration inter-relationships between agriculture and other sectors of the economy, particularly industry and tourism.

6. Based on the above philosophy for rural development, the principal goals for agricultural development policy are to:

(1) Use to its fullest potential all agricultural lands.

(2) Improve the standards of living of the rural population, which implies not only an increase in farm incomes, but also the provision of adequate infrastructure and social amenities.

(3) Establish appropriate and achievable income targets for existing and potential farmers, without which performance in the sector is unlikely to improve.

(4) Produce as much food and raw materials for domestic consumption and export as is economically and technologically feasible.

(5) Improve the "climate" within which agriculture operates in order to attract greater and sustained private sector participation.

(6) Structure the production so as to reduce the growing reliance on imports, and reverse the adverse trade balance in agriculture.

7. The strategy for achieving stated goals includes:

(1) The achievement of a more equitable distribution of agricultural land consonant with the optimisation of social and economic goals.

(2) Improved training and education and the development of skills among agricultural workers and farmers.

(3) Improvement of extension services, including a more effective co-ordination in the provision of these services.

(4) The re-organization and expansion of research activities.

(5) The introduction of new technologies in some areas and a wider application of existing and appropriate technologies.

(6) The production of non-traditional export crops for markets which exist and which can be exploited, e.g. Avocadoes and Mangoes.

(7) The creation of a co-ordinated and efficient credit system capable of rendering the type of services required by the agricultural sector.

(8) Improving the organizational structure and staffing of the Ministry of Agriculture and its agencies.

RESOURCES IN AGRICULTURE

8. The 1968 Agricultural Census records a total of 1.489 million acres of land in farms. This acreage represents a significant decline since 1958.

Acres of Land in Farms 1958, 1961, 1968

year	Total	Culti-vated	Grassland and Pasture	Other
1968	1,489,200	581,400	430,000	447,400
1961	1,711,400	445,300	630,400	635,700
1959	1,822,800	612,700	709,300	501,800

Jamaica has approximately 1.2 million acres of land suitable for the cultivation of crops including pasture, and an additional 462,000 acres suitable for tree crop cultivation. This land is distributed by classes as follows.

Soil Class

	I	II	III	IV	V
Acres	78,500	280,400	598,800	262,800	461,780

9. A major problem associated with most of the land used for agricultural purposes is unfavourable topography. This to a great extent results in problems of use such as soil erosion, restriction in cropping patterns and the inadequate provision of infrastructure. This leads to the necessity for adopting appropriate soil conservation measures. Associated with locational distribution of farms is the distribution of rainfall. Land on the steeper slopes of the northern and central areas have adequate rainfall, while land in the rain-shadow area which consists of the southern coastal plains experiences considerable water shortages which limit agricultural production.

10. The extremely wide variation in the size of farms constitutes one of the major obstacles to agricultural development. Farms of less than 5 acres representing about 78 percent of farmers occupy only 15 percent of the land, while farms of over 500 acres accounting for only 0.15 percent of farmers occupy 43 percent of farm land.

11. In addition to this uneven distribution in the size of farms, small farms are usually found on hilly and less fertile lands, and are too small to generate satisfactory levels of income. Both the quantity and quality of land available to these farmers constitute a severe constraint to increased production. There is thus the need to take appropriate steps to redress this imbalance in the distribution of land of suitable quality so as to make available to farmers better opportunities for earning satisfactory incomes from agricultural pursuits.

Acreage of Land in Farms by Size Groups of Farms, 1968, 1961, 1958

Year	Total Acreage	Less than 5 acres	5 to less than 25 acs.	25 to less than 100 acs.	100 to less than 500 acs.	500 acres and over
1968	1,489,200	229,200	340,800	127,200	148,000	644,000
1961	1,711,400	198,000	399,400	167,600	185,600	771,000
1958	1,922,800	270,300	546,300	176,900	131,000	697,800

12. The rather large agricultural population (about 30 per cent), giving a ratio of persons engaged in agriculture to acreage of cultivated land of approximately 3 as against 1.20 in the U.S.A. and 1.10 in Western Europe, and the relative scarcity of cultivable lands make it necessary for the country to make optimum use of every acre of arable land.

13. In spite of the demand for cultivable land large acreages are idle or under-utilized. The following Table illustrates.

Acreage Adjudged Idle on Farm Units of 100 Acres and Over at June 22, 1973 (Acres)

Parish	LAND CLASS					
	I	II	III	IV	V	Total
St. Andrew	-	100	102	252	128	582
St. Thomas	40	1,987	2,413	1,488	385	6,313
Portland	347	769	2,806	2,303	435	7,160
St. Mary	15	605	2,039	2,089	284	5,032
St. Ann	15	1,265	4,063	1,489	154	6,886
Trelawny	-	928	865	1,095	395	3,283
St. James	-	1,551	1,679	1,160	410	4,800
Hanover	-	1,714	1,725	1,183	975	5,597
Westmoreland	-	1,639	1,867	2,926	507	6,089
St. Elizabeth	-	1,661	5,715	1,698	100	9,174
Manchester	-	104	5,660	2,037	60	7,861
Clarendon	6	3,653	3,738	764	1,813	9,174
St. Catherine	94	1,663	8,265	621	318	10,961
JAMAICA	517	17,689	40,937	19,605	5,173	82,921

Census data indicate that there are also substantial acres of under-utilized lands on farms of less than 100 acres.

14. Most of the land in agriculture is owned and operated on a freehold basis. The traditional desire to own land as a status symbol or for purposes of security (particularly in the case of small farmers) accounts in some measure for the present land use pattern. The 1961 Agricultural Census data indicate that over 94 per cent of farm land is occupied by the owners of the land.

Acreage of Farm Land by Type of Tenure and Farm Size (1961)

Farm Size (acs.)	Total*	Freehold	Rented
under 5	198,000	162,700	26,800
5 - under 25	389,400	348,600	28,400
25 - under 100	167,600	153,200	10,200
100 - under 500	185,600	170,700	12,600
500 and over	770,800	750,300	20,400
All Farms	1,711,400	1,585,500	98,400

* Includes other forms of tenure.

15. Two important facts emerge. Firstly, the proportion of capital invested in the purchase of land is high, depletes farmers' resources, and leads to inadequate cultural practices. Secondly, laws protecting the rights of tenant-farmers are inadequate, causing farmers to avoid this type of tenure. There are many laws affecting tenure and use of agricultural land, but these laws are concerned primarily with the distribution of the "bundle of rights" in property between the public and private sectors.

16. Unavailability and inefficient use of irrigation water are two other obstacles to the optimum utilization of land resources, particularly in the southern regions. Ground and surface water surveys have been undertaken with the assistance of the Food and Agriculture Organization of the United Nations.

There are some 50,000 acres now under irrigation, but resources are available to improve supplies over part of this acreage which is now inadequately served and to increase irrigated acreage to over 140,000 acres. The main areas of concentration are the Martha Brae Valley, the Black River Valley, the Rio Minho Valley and the Rio Cobre Valley. Other areas of importance are the Dry Harbour Mountain River Basin, the Bull Savannah area and the Hounslow area. In addition there is a large area of swamps and poorly drained lands which could be used for agricultural purposes if properly drained. Soil erosion is also a major problem associated with current agricultural land use.

17. Labour force statistics for October 1972 show that of the total labour force of 808,500 persons (which includes 73,900 persons seeking work for the first time) 224,700 persons or 28 per cent were in the "Agriculture, Forestry, Fishing and Mining" industrial group. Within the classifiable labour force of 734,500, the "Agriculture" sub-group accounted for 31 per cent of the total. In the industrial breakdown of the classifiable labour force in 1960, 1968 and 1969, "Agriculture" accounted for 39 per cent, 35 per cent and 35 per cent respectively, of the total labour force.

18. Although the agricultural labour force has declined in absolute and relative terms, the sector continues to be the most important employer of labour. The 210,500 persons employed in the "Agriculture, etc." industrial group of the employed labour force represented 34 per cent of total employment in October 1972, compared with 40 per cent in 1960. In October 1968 and 1969, "Agriculture" accounted for 38 per cent of the employed labour force. This decline occured in spite of the fact that agricultural labour has been in such short supply for many years. This is attributed to many causes, chief among which are:

(1) The seasonality of agricultural employment due to the preponderance of a few crops on the larger farms;

(2) The stigma which traditionally attaches to agricultural labour;

(3) The rising reserve price of agricultural labour, due in some measure to the incomes earned in the bauxite industry, but to incomes in other sectors generally;

(4) Low revenue productivity of labour in agriculture due to -

(a) scarcity of skills which in turn leads to bottlenecks in production;

(b) the worsening terms of trade for agriculture particularly in respect to inputs imported from developed economies;

(c) inadequacy of training facilities for providing lower-level skills in agriculture;

(d) poor marketing and storage facilities and the waste that ensues; and

(e) inefficient and inadequate processing facilities.

19. The number of "farmers" as defined in the 1963 Census of Agriculture included many who technically speaking are rural dwellers rather than farmers. For example, the number of persons operating farms less than 5 acres was 147,000. The estimated number of farmers who fall into the under 10 acre size group is 172,000 with an average farm size 2.3 acres. This group includes thousands of farmers who are in the subsistence category and have been responsible over the years for a large percentage of the food produced for local consumption. Many schemes regarded largely as welfare schemes have provided assistance to farmers in this group. The goal is to create economically viable farms by increasing their average size and productivity. For example, by increasing the average size of small farms by 50 per cent, and yields by 50 per cent, the latter as a result of applying improved practices, their output could be doubled. The additional land for increasing the size of many of these could come from the large acreages of idle lands which exist.

RECENT PERFORMANCE IN AGRICULTURE

20. The purpose of this section is to review the performance of the agricultural sector over the most recent decade, that is for the period 1963-72. The performance of the sector will be assessed in terms of -

(i) production levels as determined by national accounts data and as given by the physical output data for the major sub-sectors;

(ii) external trade in agricultural commodities;

(iii) income levels in agriculture;

(iv) measures of productivity in agriculture;

(v) the ability of the sector to provide the nutritional needs of the population; and

(vi) capital formation within the sector.

Production Levels

21. The contribution of Agriculture, Forestry and Fishing to Gross Domestic Product (at factor cost) expressed in current values grew from $68.4 million in 1963, to 105.6 million in 1972, giving an average rate of growth of 4.9 per cent per annum. During the same period, Gross Domestic Product (at factor cost) for the total economy grew from $511.6 million to $1,157.6 million, or at an average annual rate of growth of 9.3 per cent. Agriculture lagged steadily behind the rest of the economy during the decade and declined in importance as a productive sector. Whereas, in 1962, Agriculture contributed 13.4 per cent of the Gross Domestic Product (current prices) and ranked fourth among the industrial sectors as a contributor to GDP (following Manufacturing, Distribution and Miscellaneous Services) in 1972, Agriculture's contribution to GDP had fallen to 9.1 per cent and it ranked sixth among contributors, as the following Table indicates.

Percentage Contribution Made by Industrial Sectors to Gross Domestic Product at Factor Cost - Current Prices

Item	Industrial Sectors	1963	1966	1969	1972
1	Agriculture, Forestry & Fishing	13.4	11.0	8.9	9.1
2	Mining, Quarrying & Refining	8.9	14.4	14.4	12.2
3	Manufacturing	15.4	14.5	14.0	14.3
4	Construction & Installation	10.2	10.2	12.1	11.3
5	Electricity, Gas & Water	1.2	1.3	1.5	1.6
6	Transportation, Storage & Communication	7.4	7.1	7.3	7.3
7	Distribution - Wholesale & Retail	15.0	13.4	12.6	13.9
8	Financial Institutions	3.7	4.3	5.2	6.6
9	Ownership of Dwellings	3.3	3.2	2.8	2.7
10	Public Administration	7.3	7.4	9.2	9.4
11	Miscellaneous Services	14.2	13.2	12.0	11.6
	Total	100.0	100.0	100.0	100.0

22. On the evidence above, Agriculture displayed a rather poor performance in current terms, compared with the rest of the economy. The healthy record of economic growth for the economy as a whole was not shared by Agriculture. In real terms (1960 prices) the agricultural sector grew at an average annual rate of 3.2 per cent, compared with GDP's real growth of 5.3 per cent per annum, during the period 1962 - 1971. The sector actually suffered negative growth during the years 1967, 1968 and 1969.

23. The Table which follows gives the contribution of Agriculture to GDP at factor cost by sub-sectors for the period 1962 to 1971, expressed in constant prices (base year 1960). The Table also shows calculations of the percentage change in contributions between 1962 and 1971, as well as the rate

of growth in each sub-sector during the 10-year period. Only two of the major sub-sectors, "domestic agriculture" and "livestock and hunting" had real growth rates of more than 5 per cent per annum. Domestic agriculture achieved a 5.4 per cent growth rate, mainly as the result of the large increase in the output of root crops in 1971. Export agriculture as a whole remained virtually stagnant during the decade, with sugar cane, its major component, actually suffering a small decline. Fishing and Forestry grew by less than one per cent per year.

Table ....

CONTRIBUTION OF AGRICULTURE TO G.D.P. AT FACTOR COST
BY SUB-SECTORS - 1062-1971

(Constant Prices - Base Year 1960 - Mill. $)

	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	% Change 1962-71	Average annual rate of growth 1962-1971
Export Agriculture	21.4	22.7	23.3	24.2	25.2	23.9	23.6	20.9	20.9	21.9		0.3
Sugar Cane	14.0	15.2	15.7	15.8	16.6	15.3	15.1	13.5	13.6	13.7	- 2.1	- 0.2
Other main exports	7.4	7.5	7.6	8.4	8.6	8.6	8.5	7.4	7.2	8.2	10.8	1.2
Domestic Agriculture	15.5	16.5	17.6	17.6	19.6	18.4	16.1	16.3	17.4	24.9	60.7	5.4
Root Crops	5.6	5.9	6.5	7.3	6.9	7.8	6.7	6.9	7.4	13.3	137.5	10.1
Other primary foods	9.9	10.6	11.0	10.3	10.9	10.6	9.4	9.4	10.0	11.6	17.2	1.6
Livestock and Hunting	9.6	10.2	10.7	11.3	12.1	13.0	13.5	14.0	15.5	16.3	64.6	5.7
Fishing	3.0	2.6	2.8	3.0	3.2	3.3	3.1	2.6	3.2	3.2	6.7	0.7
Forestry and Logging	2.4	2.3	2.3	2.4	2.5	2.3	2.4	2.3	2.5	2.6	8.8	0.9
TOTAL	51.9	54.2	56.7	58.5	32.8	61.0	58.7	56.1	59.4	68.9	32.75	3.2

24. When the above real growth rates in agriculture are compared with the growth rate of population of 2.5 per cent per annum and with the growth rate of real income per capita of 3 per cent, the poor performance of the sector in terms of its failure to play a significant role in providing the requirements of a growing population becomes evident. The result was a rapid expansion in the importation of agricultural products. For the majority of products, a peak in output was reached around 1966, after which there was a steady decline in production. For most domestic food crops, there was a revival of production by 1971, and this is especially true in the case of root crops and vegetables which enjoyed very large increases above their previous high points. Meat products as a group also showed substantial gains, due largely to the expansion of production of pork and poultry meat during the decade. On the side of crops produced mainly for export, a state of depression still exists in terms of output levels, and particularly so in the case of sugar, bananas and citrus, the major export crops.

25. The decline of agriculture during the decade under review can be partly attributed to the adverse weather conditions which prevailed during the period, particularly the effects of severe drought conditions between 1967 and 1969. Other contributing factors were labour shortage in certain export crops, especially sugar and bananas, which created much uncertainty and served to dampen the productive efforts of farmers.

External Trade in Agricultural Products

26. The relative importance of the agricultural sector in export trade has declined significantly during the decade. This was due in a large part to the decrease in the value of sugar exports. Whereas the value of primary and secondary agricultural products accounted for 41 per cent of total domestic exports in 1962 and for 40 per cent in 1965, the percentage had fallen by 1969 to 29 per cent and was only 27 per cent in 1972.

27. A comparison of the broad categories of food imports and food exports indicates that whereas the value of food imports increased at an average annual rate of 10.1 per cent during the decade, the value of food exports increased at an average rate of only 2.3 per cent per year.

28. The falling off of export earnings from traditional agricultural products has contributed to the weakening of the country's balance of payments position. While the net trade balance on all goods and services deteriorated from a deficit position of $7.4 million in 1963, to reach a deficit of $180 million in 1972, the trade balance on food items moved from a surplus position of $32 million in 1963, to a deficit of $28 million in 1972. The relative decline in agricultural exports during the decade and the rapid growth of food imports would indicate that the agricultural sector has failed to perform its traditional role as a major supplier of domestic food requirements and an important net earner of foreign exchange.

Income Levels in Agriculture

29. A rough measure will be used to give some indication of the level of income earned in agriculture relative to income earned in the economy as a whole. This is derived by expressing National Income (current values) on a per worker employed basis and comparing this with National Income earned in agriculture expressed on a per worker employed in agriculture basis.

	1960	1968	1969	1972
National Income per Employed Worker ($)	648.6	1,224.8	1,284.8	1,692.6
National Income in Agriculture per Worker Employed in Agriculture ($)	216.1	353.8	321.7	493.0

The figures indicate the wide disparity that exists between the average income per employed member of the agricultural labour force and the average income of the total employed labour force.

Productivity of Agriculture

30. Some indication of the low labour productivity in agriculture is given by the figures below, which relate total GDP at factor cost (constant 1960 prices) to employment for the economy as a whole and GDP produced in agriculture to employment in agriculture.

GDP at Factor Cost (Constant Prices 1960) per worker

	1960	1968	1969	1971
Real GDP per employed worker ($)	762.2	1,030.6	1,051.1	1,147.5
Real GDP in Agriculture per employed worker in agriculture ($)	226.6	279.6	243.9	337.1

Labour productivity in agriculture, as measured by the method used to derive the figures in the above Table is less than one-third of what it is for the economy as a whole. In general, productivity per acre for most agricultural commodities is low.

Contribution of Agriculture to Nutrition

31. As population and the level of economic activity increase, so has the demand for food. Although imports of food expressed as a percentage of total imports changed from 21.2 per cent in 1963 to 14.4 per cent in 1972, the change in value terms over the same period has more than doubled, increasing from $34.3m. to $71.3m. The most important items in the group are Meat and Meat preparations, Dairy Products, Fish and Fish preparations, Cereal preparations and Fruits and Vegetables.

32. Over the same period, production of meat from cattle fell from 30 million pounds to 27 million pounds, pork production rose from 13 million to 15 million pounds, and poultry rose from 26 million pounds to 34 million pounds. Pork and poultry production rely heavily on imports of animal feeds and grain corn. Jamaica produces only limited quantities of cereals, chiefly

rice and maize and must continue to import these items if it is to maintain existing levels of poultry and pork production. Caloric requirements from root crops are satisfied but there is a great need for increasing supplies of vegetables and fruits, as well as animal proteins. Imports of fish constitute 75 per cent of requirement.

Capital Formation in Agriculture

23. The data below show the level of fixed capital formation in Agriculture, Forestry and Fishing in current values for the years 1962 to 1971, as well as fixed capital formation for the economy as a whole. Also given is the value of fixed capital formation in "Agricultural Machinery and Equipment" for the same period.

$ million

Years	Fixed Capital Formation			Agricultural Machinery and Equipment
	Total	Agriculture	% of Total	
1962	98.2	10.3	10.5	2.3
1963	91.6	8.4	9.2	2.1
1964	111.8	14.4	12.9	6.9
1965	124.2	11.7	9.4	7.3
1966	146.0	13.0	8.9	4.2
1967	170.0	10.8	6.4	5.6
1968	221.4	9.8	4.4	4.4
1969	252.1	11.1	4.4	5.0
1970	265.9	11.7	4.4	5.1
1971	286.2	12.6	4.4	7.4

The item "Sugar, Rum and Molasses" appears under Manufacturing and fixed capital formation in this sub-sector increased from $1.9 million in 1962 to reach a high of $4.9 million in 1966, then declined to $4.0 million in 1968. It has been rising since and stood at $5.2 million in 1971.

34. The data indicate the relative decline of investment in agriculture compared with the economy as a whole - a growth rate of 8.6 per cent per annum for the economy compared with 2.2 per cent per annum for agriculture.

THE AGRICULTURAL SECTOR STUDY

35. The continuing poor performance of the Agricultural Sector had reached the stage where it became necessary to examine the Sector critically to determine what remedial action should be taken. Government therefore sought assistance from the IBRD to enable it to undertake a full study of the Sector. An IBRD team of experts was made available to work with a local team of officials, drawn from the Ministry of Agriculture (mainly from the Agricultural Planning Unit) and the National Planning Agency, to prepare appropriate Terms of Reference for the Study.

TERMS OF REFERENCE

> "The Agricultural Sector continues to be stagnant for many reasons, the more important of which include piece-meal and technically inadequate planning, faulty implementation and in some cases non-implementation of projects; some of the roles (e.g. welfare) which the sector is sometimes required to play; structural defects and institutional constraints.
>
> Government is according high priority to measures which must be taken to revitalise agriculture, and is undertaking a thorough study of the sector as a basis for providing a master plan for its reform and modernization.
>
> The expected result of this study will be to identify those projects which appear to have a high priority. Among these will be some which are sufficiently prepared to be ready for early consideration by external financing agencies. Whilst emphasis will be placed on identifying and preparing these short-term projects in the interim, this should not obscure the necessity to continue data collection and analysis leading to long term overall plans.
>
> Since the sugar and banana industries are currently of vital importance to the overall economy, measures will be taken to improve their effectiveness in the short run without prejudice to the findings which will result from the in-depth development planning now proposed.

The study will -

(a) examine the role currently required of the Sector;

(b) determine the role which it should play in the overall economy; giving due consideration to the total available resources; and

(c) determine the measures necessary to -

(i) increase production at a rate adequate to provide as much of the food (bearing in mind improved nutrition) and raw materials adjudged necessary to support the growth rate which will be determined;

(ii) improve the levels of living of rural people;

(iii) achieve equitable income distribution within agriculture and to redress the marked imbalance between incomes in agriculture and those in the other Sectors of the economy.

The approach to be followed in the study will rely on extensive decentralization of the planning exercise so as to ensure the involvement and participation of those engaged in the various activities of the sector."

36. The work to be undertaken was divided into a number of broad functional headings as follows:-

Background Studies

1. Structure and Physical Resources
2. Sociological Aspects
3. Structure of Institutions
4. Agrarian Reform, including zoning.

Sub-Sector Studies

(Covering the major industries - Sugar, Bananas, Citrus, Coconuts, Cocoa, Pimento, Tobacco, Tree Crops, Food Crops, Livestock including by-products, fishing, forestry, agro-industries).

Services to Agriculture

(Including Credit, Marketing, Education, Training and Extension, Research and technology, Cooperatives and Conservation).

A Fourth set of studies was designed to bring the preceding elements together in an overall perspective and provide a basis for determining the content of future agricultural development policy, from which would flow appropriate programmes and projects.

37. The main participants were:-

The Official Team of Jamaican technicians;
The Advisory Team of External Experts;
The Ministerial Team.

The Official Team consisted of local persons drawn from the public and private sectors with expertise in specific areas of agricultural activity.

The Advisory Team, led by Sir Arthur Lewis, was selected by the International Bank for Reconstruction and Development and the Ministry of Agriculture. There were twelve advisers in addition to the Chairman. This team began its work in Jamaica on 1st June, 1973, during which month meetings on topics dealing with many aspects of Agriculture were held with Jamaican technicians in both the private and public sectors. External advisers visited many places, and held discussions in situ with technicians in various industries.

38. From these meetings and discussions, brief summaries (Ministerial Briefs) containing findings and recommendations were prepared by the Advisory Team and sent to the Ministerial Team. During July all three teams met in some nine sessions to discuss these Briefs and determine possible Government action in the sector. The findings and recommendations of the Advisory Team are given in the Sections below.

FINDINGS AND RECOMMENDATIONS OF SECTOR STUDY

Agricultural Land and its Uses

39. There exists a considerable acreage of idle agricultural land, land used for agriculture which should not be farmed, and land cultivated on slopes without the benefit of appropriate land use practices such as soil conservation measures. There was much discussion on the inequitable distribution of agricultural land, and urgent need for undertaking an appropriate land reform programme.

40. The critical issues related to land and its uses are:

(1) Relative scarcity of good agricultural land and the need to use land in the most efficient manner.

(2) Inadequate distribution of land among farmers.

(3) Under and non-utilization of agricultural land on existing farms.

(4) Irrational cropping patterns in relation to ecological and economic factors.

(5) The need for more irrigation and more efficient use of irrigation water.

(6) The need for better and more widespread use of soil and water conservation measures.

(7) The need for an appropriate land policy.

41. In relation to the vital role which land plays in agriculture and on the basis of the points made above, it was recommended that Government pursue the following measures:-

(i) Press ahead with permament settlement of lands purchased for

settlement, and acquire more lands for this purpose.

(ii) Increase effectiveness of the Land Development and Utilization Commission; extend its powers to cover farms of between 10 and 100 acres, and increase its funds and resources.

(iii) Maintain pressure on the mining companies to develop their tenant-farming and resettlement programme.

(iv) Obtain expertise to advise on a general land reform programme.

(v) Invest adequately in rural infrastructure and ensure that the privately-owned public utilities do the same.

(vi) Invest adequately in the preparation of land for settlement.

(vii) Prepare a code of settlement for choice of tenants, size of farms and conditions of tenure.

(viii) Ensure that adequate services are available to small farmers through the Cooperative Department of the Ministry of Agriculture.

(ix) Encourage the amalgamation of small holdings into large farms when the settlement of new lands has eased the pressure of lands now under cultivation.

(x) Update studies of the reclamation of the Black River Swamps.

(xi) Expedite irrigation of the Pedro Plains.

(xii) Review the recommendations of the FAO/UNDP Watershed Management Project as soon as they are available and take appropriate action.

(xiii) Implement irrigation schemes in the Rio Minho basin as soon as current studies are completed.

(xiv) Determine a rational basis for allocating the use of water from identified sources between the Kingston Metropolitan Area and the St. Catherine plains.

(xv) Rationalise the existing irrigation authorities and enforce economical use of water, with special emphasis on wastage on farms as well as in irrigation systems.

(xvi) Initiate research on the economic use of irrigation water on various crops as a necessary adjunct to the formulation of policy.

Small Farmers

42. The population in agriculture continues to decline. For the benefit of the total economy it is desirable to make agriculture attractive enough to accommodate almost all its current labour force. The key to the problem is to increase income per head.

43. Jamaica has a history of land settlement dating back to 1895. This has not been as successful as it might have been because a number of the rules for land settlement have been persistently violated. These may be listed as follows:

(i) provide adequate infrastructure
(ii) prepare the land adequately
(iii) provide adequate equipment
(iv) make farms of adequate size
(v) choose settlers carefully
(vi) make central services available
(vii) use suitable forms of tenure.

44. It was recommended that Government should:

(i) Invest adequately in rural infrastructure, and ensure that the privately owned public utilities do the same;

(ii) Make available for land settlement another 120,000 acres of cultivable land, including improved pasture;

(iii) Invest adequately in preparing this land for settlement;

(iv) Prepare a code of land settlement covering such matters as choice of tenants, size of farms and conditions of tenure (this is urgent);

(v) Ensure, through the Cooperative Department and the Ministry of Agriculture, that adequate centralised services are available to small farmers;

(vi) When the settlement of new land has eased the pressure of lands now under cultivation, to encourage the amalgamation of holdings into larger farms; and

(vii) examine the implications of the new law abolishing illegitimacy for land tenure and for eliminating fragmentation of farms.

Services to Agriculture

45. Most of the services available to the agricultural sector are financed from public funds. Sometimes services for a particular purpose are the responsibility of sereral agencies. This leads to duplication of effort and inefficient use of scarce financial resources. Inadequacy of some of the services provided is due to a number of reasons such as improper structure, a misconception of the functions of the agency, non-performance of functions and inadequacy of funds. There is inadequate coordination between agencies. Some services have not been successful due to poor response to the particular service and the lack of dynamism by those responsible for providing the service. A major constraint, however, is the inability to attract appropriate staff for providing service, due partly to lower salaries paid agricultural technicians. This is indicated by the many staff vacancies which exist in many service agencies.

46. Many services require machinery and other physical inputs and structures. There are recognised shortages of those for the Agricultural Sector as a whole. Specific examples include services for land preparation, the provision of adequate infrastructure and the development of agro-industries (including the processing of by-products which have considerable value-added potential). There are problems and deficiencies relating to the provision of such important inputs as fertilizers and other chemicals, and animal feeds. A critical area of concern is the inadequate provision of improved planting material and breed-stock. One of the associated constraints is the inadequacy of financing. Areas in which these defects occur include Credit, Marketing, Extension, Research and Education, Animal Health, Cooperatives and Land Preparation.

Agricultural Credit

47. Agricultural Credit is provided by a number of agencies. The system is un-coordinated and inadequate, particularly for small and medium-sized farms and for some crops, notably those for domestic consumption. This unstructured sy tem of credit induces farmers to produce crops on the basis of the ease with which they can obtain loans, as well as on the relative ease with which they may avoid repayment of loans, rather than on the productivity of their enterprises. This situation is counter-productive. The Agricultural Credit Board is responsible for the major portion of loans to farmers, but most commodity Boards, the Jamaica Development Bank (JDB), Commercial Banks and other private institutions all extend credit to agriculture.

48. Credit now outstanding seems to be adequate, even somewhat excessive for some types of farms and crops in relation to the level of production (see Schedule appended hereto). There is no evidence that over recent years credit has contributed an increasing application of modern technology and significant capital formation. Credit may have helped however, to maintain production at its level and unfortunately to postpone drastic changes in methods of production.

49. On the other hand, non-repayment of loans has been a source of waste of credit funds. In order to improve the recovery of payments due under the Self-supporting farmers' Development Programme, loans from this programme are to be administered by the Jamaica Development Bank. However, as observed in

the Sector Study -

> "JDB is not equipped to play a role in the distribution of various types of credit to numerous small farmers. Its field of activities should remain restricted to financing investments in large-scale agriculture on strictly commercial terms...It seems worth investigating, however, whether the JDB's agricultural credit section can be the nucleus of a specialized agricultural credit bank or can be amalgamated with a new bank after it has overcome its likely teething problems. The second solution seems preferable in order to avoid any disruption in JDB's activities and quest for resources."

50. Had there been a better system for administering agricultural credit more credit would have been made available to the sector for commercially viable agriculture. In order to accommodate handling of loans for various purposes ad hoc arrangements have been made in the past. Government now contemplates the effective co-ordination and restructuring of the credit system by establishing an Agricultural Credit Bank.

51. If credit is to produce its required results there must be -

(a) A clear understanding of the productive role of credit and the need for broad delineation of the activities of the credit system;

(b) Appropriate safeguards to insulate the system from undue political and 'vested interests' interference, and to give it adequate powers and financial strength;

(c) Adequate decentralization (agricultural credit systems should be close to borrowers and be expeditious in granting loans);

(d) A clear position on key lending policy issues such as interest rates, subsidization and the basis for lending.

52. It was recommended that Government should -

(i) Establish an administratively and financially autonomous credit bank, operating a network of branches able to take care of all

credit requirements of economically or potentially viable farmers and rural artisans, and mobilize savings.

(ii) Ensure that the bank will make loans for productive purposes at realistic terms and conditions and within the limits of the borrowers' repayment capacity, based mostly on the incremental return generated by the credit.

(iii) Ensure that borrowers' requirements for non-agricultural credit be obtainable on securities which the bank shares with other lending agencies on a pari passu basis.

(iv) Capitalize the bank adequately, and provide special conditions for programmes designed to lift marginal farmers to the point of self-sufficiency.

(v) Decide on the future of the People's Co-operative Banks.

(vi) Divest Land Authorities and approved lending agencies of their credit functions.

(vii) Wind up operations under the Farm Loan Act.

Marketing

53. Marketing of export crops is done by the various Commodity Boards. Generally unit costs are high and prices to farmers fail to reflect levels of revenue received by the Boards. In many cases Government has had to meet some of the expenses of the Boards from general revenue. Some co-ordination in marketing activities, particularly in the areas of transportation and shipping, could in all likelihood substantially reduce unit costs.

54. The main channels of distribution are:

(1) Parish Council Markets
(2) The Agricultural Marketing Corporation

(3) Supermarkets and Green Groceries

(4) Higglers.

55. There are 96 Parish Council Markets located entirely in the towns, a number of which are operated by the Parish Councils and others leased to private operators. These markets are the main outlet for higglers.

56. The domestic market first received official recognition during the Second World War when the Marketing Department was established. In 1963 the Agricultural Marketing Corporation was formed and absorbed the assets of the Marketing Department.

The Agricultural Marketing Corporation has as its main functions:

(i) To provide and maintain adequate marketing outlets for agricultural produce grown primarly for domestic consumption;

(ii) To buy and sell agricultural produce;

(iii) To provide for the collection, transportation, storage, grading, packing and processing of agricultural produce;

(iv) To import and export agricultural produce; and

(v) To distribute agricultural output in the local economy.

The AMC is estimated to handle less than 20% of the output of domestic crops. In addition to its central market in Kingston, it operates 8 branches and 122 buying stations. It has established retail stores in the Kingston Metropolitan area and in some parish capitals. The AMC is now involved in the processing and distribution of pork. Recently it has been given sole responsibility for importing specified agricultural commodities for local consumption.

57. The higgler system handles between 70 per cent and 80 per cent of domestic food crops and is estimated to employ approximately 20,000 persons weekly. The wholesale higglers not only purchase for resale to retail higglers but also reap, assemble, transport and store crops, as well as grant credit to farmers.

The whole marketing structure needs to be reviewed and modified. Specific decisions concerning the marketing of particular commodities appear in the relevant sections.

Co-operatives

58. Co-operatives warrant special emphasis in view of Government's policies. Their lack-lustre performance may be attributed to non-attractiveness to farmers due to the manner in which they have been organized on the one hand and on the other to the fact that farmers themselves have tended to be too individualistic. Co-operatives have for the most part been organized for single purposes and have not covered the entire spectrum of appropriate activities. As a consequence it has not been possible for farmers to derive significant benefits from participation in co-operative efforts.

59. Even if the average size of the potentially viable farms is increased by 50 per cent, these would still be small farms and would benefit significantly from the economies of scale resulting from co-operative activity. For these reasons, and because an important goal is to improve the benefits which accrue to small farmers, government, as a matter of policy, is projecting the development of co-operative activity in agriculture.

Research, Extension and Education

60. The key problems which the sector briefs in both research and extension have identified are the plethora of agencies engaged in research and/or extension with the attendant problem of control, deployment of resources of both manpower and money, duplication of efforts, etc. It is imperative that order be brought to this unsatisfactory situation if the country is to benefit from the dollars spent on these activities.

61. Research, extension and education have been provided over the years, partly from government funds and partly from private sources (commodity association, etc.). The overall performance has been unsatisfactory. One major area for immediate action relates to the provision of adequate co-ordination and centralization of research to ensure appropriate management and to see that the research is beamed on clearly defined projects with rational time-frames for conclusion. Many areas of research have been neglected and there is a question of determining priorities specifically in relation to the development programme envisaged.

62. Where extension is concerned similar problems of organization and structure arise. Already there is a movement towards a project oriented deployment of extension staff, examples being the SSFDP, Food Farms and Project Land-Lease. The ability to recruit and retain staff must be improved by making conditions of service more attractive.

63. Education in agriculture is a recurring problem. It has for a long time been recognised that there was a necessity to fill out the whole spectrum of training offered in agriculture. At the vocational level, the necessity for more vocational schools of the Knockalva type has been recognised. The programme for training farmers and farm workers needs to be expanded to provide a wider coverage of training. Some of this expansion is already underway.

64. Since a major goal is to improve over-all technology in the agricultural sector, it is necessary to ensure close co-ordination and liaison between those agencies responsible for providing these services.

It was recommended that the Government should:

(i) Initiate immediately a re-organization of the research activities within the Ministry of Agriculture, so as to bring all under one Director. Sugar and bananas will retain their respective programme, and the role of the Coconut Industry Board will be re-examined.

(ii) Assume the responsibility for all research under the Ministry of Agriculture, the sugar industry to be the only exception.

(iii) Establish two advisory bodies; one an in-house body, the other an Agricultural Research Council including members from quasi-government bodies (like the ADC) and from the private sector.

(iv) Re-examine the functions of the Scientific Research Council in relation to Agricultural Research.

(v) Ensure co-ordination of all extension services within the Ministry of Agriculture. To this end the Ministry of Agriculture will:-

(a) take decisions on the administration of all agricultural extension services - whether they should all be administered by that Ministry or not;

(b) decide on the operation of extension services, whether they should be:

- programme-oriented;
- divided into specialist areas;
- staffed by general practitioners.

(vi) Concentrate extension services on the development of viable farm units while simultaneously maintaining a general extension service.

(vii) Improve the salaries and conditions of work of extension officers.

(viii) Re-classify extension services personnel in status and salaries to recognise A.Sc. graduates as distinct from holders of the Diploma from the J.S.A.

(ix) Provide for a greater number of J.S.A. graduates to receive University training. In this context seek improved training facilities in livestock science at the U.W.I.

(x) Reclassify professional agriculturists in the Government service into grades no lower than those of engineers.

(xi) Establish two more vocational schools on the pattern of Knockalva.

(xii) Provide more training centres for farmers and young persons likely to enter the agricultural labour force.

(xiii) Re-examine the total agricultural training programme and its effects on agriculture generally and to the Extension Services in particular.

Administration

65. The Ministry of Agriculture is administratively responsible for several agencies, departments, divisions and statutory bodies. Many of the Ministry's institutions have overlapping functions, while some have ill-defined ones. In some instances the functions currently discharged by an agency are different from those for which the particular agency was originally created.

66. Some institutions have been either ill-conceived or created without adequate preparation. Most statutory bodies are virtually autonomous, and in some instances although they fall constitutionally under the jurisdiction of the Ministry of Agriculture, are not obliged under their enabling law to be guided by Ministerial directives (a case in point is the Banana Board). This leads to confusion, lack of control and other disabilities.

67. Statutory bodies, besides proving costly to operate, in many instances draw heavily on qualified and experienced staff from other Ministry agencies who are stopped from filling on a permanent basis the vacancies created by

these staff transfers. The statutory bodies usually pay salaries which are considerably higher than those paid for similar work performed in Central Government.

68. The net effect is that money is either wasted, spent on the wrong activities, or is otherwise ineffectively used. Apart from a low benefit-cost ratio, many of these bodies operate on annually increasing budgets. This and other factors lead to a structure in the Ministry of Agriculture which is cumbersome, undesirably fragmented, overlapping, ill-organized, un-coordinated, and having too diffuse a chain of command.

69. The over-all goal is to move Agriculture out of its existing stagnation. A major and important initial step, therefore, is to redress the unsatisfactory structural position which obtains. This defect has been fully recognized, and currently the administrative and organizational structure of the Ministry is undergoing detailed examination, with a view to arriving at appropriate adjustments.

70. This defective situation has been further complicated by the fact that other Ministries are involved with, and take decisions relating to, or which affect the operations carried out by the Ministry of Agriculture. There is thus the necessity for greater co-ordination between these ministries on matters which pertain to the Agricultural Sector.

71. The weakness in management was identified as a major constraint to the effective implementation of programmes and projects.

72. It was recommended that the Government should:

(i) Initiate immediately a comprehensive study leading to recommendations for -

(a) appropriate functions of the Ministry of Agriculture;

(b) lines of authority and responsibility; and

(c) administrative structure and manpower requirements;

to enable the Ministry of Agriculture to be effective in promoting agricultural development.

(ii) In connection with (i) above obtain the services of Management Consultants to advise on -

(a) the re-organization of Statutory Bodies; and

(b) the internal organization of the Ministry of Agriculture.

(iii) Establish an appropriate and effective machinery to improve and strengthen the links between the Ministry of Agriculture and other Ministries, particularly the Ministry of Mining and Natural Resources with respect to land and water resources.

Sugar Industry

73. There has been much argument concerning the role which the sugar industry should play. In spite of recent and continuing setbacks in the industry it remains the largest single employer of labour, and one of the main foreign exchange-earners. Much of the dialogue is related to the fact that sugar cane occupies the best lands and is found on some of the largest farms.

74. All three of the quota agreements under which Jamaica's sugar is marketed come up for re-negotiation during the course of this year and next. It will therefore not be possible to come to a decision about the future size of the sugar industry before the end of next year. Current costs of production are about J$155 a ton. Thus, if costs can be contained in the next few years in spite of doubtless continuing inflationary pressures, the Jamaica Sugar Industry can become once more commercially viable, but only if costs can be contained.

75. The Team concluded that it is quite unrealistic to think in terms of extending the total acreage under cane. If a rehabilitation programme involving a fully co-ordinated approach, from land preparation right through to milling is successfully launched, it should be possible to achieve a minimum of 3 tons of sugar per acre reaped. This will make it possible to take out of cane cultivation lands now considered marginal for sugar cane, but suitable for other crops.

76. The question of sugar cane by-products has not been fully explored, particularly in areas related to animal feeds, using bagasse and molasses as bases. The derinding (comfith) projects if feasible could revolutionise the position concerning the use of marginal lands for producing sugar cane for animal feeds at levels which would then result in profitable operations.

77. It was recommended that the Government should:

(i) Require the Sugar Industry Authority to delineate cane growing zones for each factory with proper safeguards for farmers in each zone.

(ii) Foster the development of extension services for sugar cane cultivation with emphasis on schemes to promote group action in re-planting, irrigation and the use of services and equipment.

(iii) Empower the Sugar Industry Authority to offer price, services and other incentives to farmers within the zones. (Farmers outside the delineated areas would not be eligible for these incentives. Lands designed for sugar cane would not be eligible for subsidies or incentives if used for other crops).

(iv) Require the Sugar Corporation to prepare a detailed plan for the rationalization of factories based on cannibalization* at lowest cost and involving no new factories.

* Using serviceable parts from dismantled factories to equip others.

(v) Require the Sugar Industry Authority, in collaboration with the Sugar Corporation, to prepare a five-year development programme for the industry.

(vi) Support appropriate schemes for increasing labour productivity per ton of sugar.

(vii) As a matter of urgency, re-organize the Frome/Monymusk Land Company with clear policy guidelines and emphasis on increased productivity.

(viii) Through the National Planning Agency commission a port and shipping study to include sugar interests.

Banana Industry

78. The Banana is another industry which continues to be problematic. A major concern is the low tonnage per acre. This results from inadequate application of technology, water shortage and problems associated with reaping transportation and marketing of fruit. The existing system of export marketing makes the production of bananas for export by competent farmers more expensive than it ought to be.

79. The main thrust for the industry should be on steps to increase yields per acre, offering premium prices for bananas produced and transported under approved methods, increasing the quantity of bananas of exportable quality and in particular, geographical zoning of the activities of the Banana Board. There is a number of potential by-products which can be produced. The new thrust for future development of the industry must take into consideration not only an important and potentially expandable local market, but also the implications of the U.K.'s entry into the ECM.

80. It was recommended that Government should:

(i) Require the Banana Board to identify areas best suited for the production of high quality bananas for the export trade.

These are to be delineated as Banana Board Zones and all services (other than spraying against leaf spot disease) to be available only inside Banana Board zones.

(ii) Require the Banana Board to enter into contracts with banana growers within these zones for the purposes of controlling field practices and the guarantee of purchase of fruits for export and specified services.

(iii) Require the Banana Board to pay a premium for bananas grown on contracted fields under approved practices.

(iv) Cease to pay subsidies for any crop grown on fields identified for bananas in Banana Board zones. (This applies to subsidies which may be granted by other commodity boards).

(v) Maintain the right of farmers inside Banana Board zones to grow other crops, and of farmers outside the zones to have their export quality bananas purchased by the Board.

(vi) Pay half the cost of leaf spot control, and the total cost of research.
(Decision on extension services must await the deliberations of the Ministry of Agriculture).

(vii) Provide for appeals of banana growers in relation to the zoning of areas and the termination of contracts or refusal of contracts by the Banana Board.

Food Crops

81. Local production of food crops account for about 35 per cent to 70 per cent of food crops consumed. Cereals are important exceptions as imports account for at least 95 per cent of quantity and value of cereals consumed.

The percentage of legumes and vegetables imported is considerably less. From a nutritional point of view, however, since the cereals are better than the starches, this means that including the quantities of animal (including fish) products imported, the country is relying on imports for a high percentage of the protective elements required for improved nutrition.

82. Jamaica is currently exploiting the potential for a break-through in the production of rice, using improved varieties and appropriate practices on land which does not compete for other crops. There already exists considerable under-used milling capacity. The break-through is expected to reduce our reliance on imported rice, originating outside the CARICOM area.

83. The situation with maize is completely different, as even with the highest yielding varieties available, it would require over 50,000 acres of best lands to achieve self-sufficiency at marginal returns to farmers. If reliance on maize imports is to be reduced, the potential of other cereals, e.g. sorghum, will have to be examined. Current work on soya beans gives hope that local production should lead to a significant reduction in imports.

84. Increase in the production of root crops has largely been obtained by expanding acreage. Existing yields per acre are very low. A major goal should be to increase considerably the yields per acre, thereby releasing excess acreage for the production of other crops. Within a short period self-sufficiency in vegetables can be achieved. For these and for many of the crops grouped as food crops, a major prerequisite is that of finding suitable improved and high yielding varieties; developing a package of appropriate practices to be adopted in their production and concentrating on greater efficiencies in both production and marketing.

85. It was recommended that Government should:

(i) Improve the facilities (funds and personnel) for research on food crops.

(ii) Increase the facilities for propagating high yielding material,

and encourage private agencies to undertake this service.

(iii) Continue to review the functions of the Agricultural Marketing Corporation, improve its storage facilities, while encouraging greater private enterprise participation in the processing and distribution of food.

(iv) Assist and encourage the expansion of the local processing industry and encourage contractual agreements for local production of raw materials.

(v) Intensify research on sorghum, soya bean, rice and maize.

(vi) Deny trade protection to processors of imports of semi-processed foods whenever on examination the imported price of finished products could be less than the selling price of the locally processed commodity.

Other Crops

86. The performance of such export crops as citrus, coffee and cacao has been well below the potential. This is largely the result of faulty technology, sub-standard management, the non-application of inputs such as fertilizers, pesticides, etc., resulting in low yields per acre. Jamaica has the potential for producing considerably larger quantities of Blue Mountain coffee to supply a market for which the price remains excellent.

87. Citrus, coffee, coconuts and cacao are administered through commodity boards whose activities cover production, research and extension marketing, and in some instances, processing. In relation to marketing, some statutory commodity agencies help to keep down output. Farming is made unprofitable because the Board's margin is too large, e.g. the Banana Board paying the farmer $37 per ton out of an f.o.b. price of $95 per ton (1971), or the Citrus Growers Association paying the farmer $0.80 for oranges which become $2.50 of concentrated orange juice.

Elements of this are:

(i) The Boards' transportation policies, as a result of which those who ship economic quantities from economic places have to subsidize the uneconomic producers.

(ii) The Boards make subsidies, or loans which partly become subsidies at the expense of the more economic producers.

(iii) Many of these subsidies do not increase production, because their use is not supervised.

(iv) The Board meets the cost of research or extension or spraying for the industry as a whole, domestic and export, but in some cases levies a charge only on the exports.

(v) The cost of processing is given first priority on the proceeds of sales. This is particularly damaging as volume diminishes. As processing throughout diminishes, cost of idle capital increases processing cost per unit of output. This reduces the price to the farmer. This in turn reduces farmers' output; increases the processing cost per unit, further reduces the price to the farmer, and so on cumulatively. For the processing plants to be operating well below capacity seems to be the norm; as is also an excessive number of processing plants and buying points.

(vi) The marketing agencies are highly political bodies, protected from competition, and some are in consequence inefficient marketers or processors.

88. Marketing agencies should give up most of their present functions except marketing. The farmers should arrange their own transport, the smaller farmers forming co-operatives for this purpose. Processing should in most cases be left to private plants, with the agency where necessary fixing a maximum

processing margin. If the agency also organises research, extension, subsidies or loans, the cost of these should be borne by the general revenue, and not by the marketing agency.

89. Some of the problems are organizational. Others relate to inadequacy of research and extension, and in some instances a failure to adopt improved practices. In spite of considerable expenditure over the years performance has not kept pace with expenditure. Coconuts are perhaps the only exception, in spite of the ravages of the lethal yellowing disease.

90. In general there has been reluctance in planting on commercial scales, tree crops which take a long time to mature. Part of the reason lies in the unavailability of suitable advice concerning the type and level of inter-cropping to offset prematuring costs for periods of up to 6 years. This is a major consideration to which early attention should be paid and the necessary research undertaken. Avocadoes and mangoes have a potential for increased production. Currently a study is being undertaken with technical assistance from the IDB to determine the feasibility of expanding production of these two crops and if so to formulate a production project which would attract financing by the IDB.

91. It was recommended that the Government should:

(i) Amend the relevant legislation to modify the functions of statutory commodity boards with emphasis on marketing. If required to perform other functions, these must be performed as agents of Government and at Government's expense.

(ii) Investigate, as a priority, the citrus industry with special emphasis on marketing.

(iii) Review the forestry programme in relation to the expansion of coffee production on some forest lands.

(iv) Through the Tobacco Industry Control Authority, explore all possibilities of collaboration with private interests for the expansion of tobacco production and restrictive importation of some types of tobacco in order to achieve this.

(v) Initiate the pioneering work necessary to the commercial production of mangoes, avocadoes and flowers.

(vi) Analyse the present structure and effects of subsidy programmes, to produce a rational structure which would ensure that the desired effects from granting subsidies are achieved. Such programmes should be evaluated annually.

(vii) Expeditiously examine the possibilities of establishing a cotton industry in Jamaica.

Livestock and Livestock Products

92. Jamaica produces a range of livestock products including beef, milk, pork, goat's flesh, mutton, broiler meat and eggs. While the production of broiler meat has been successful, the same cannot be said about other livestock products. Within a relatively short period of time self-sufficiency has been achieved in broiler meat, while at the other extreme programmes developed for expanding milk production have not met with the success expected, and importation of milk powder, butter and cheese continues to increase. Where beef is concerned, local production accounts for about 70 per cent of the requirements. It should be possible to attain self-sufficiency within a relatively short period. Where quality pork is concerned, the main problem relates to processing.

93. In the first stage the main goal is to increase the production of milk to the stage where importation of milk powders is eliminated. This would require an approximate doubling of production over the next five years. Self-sufficiency in the production of cheese and butter is clearly unrealistic in the foreseeable future.

94. The development strategy proposed for the cattle industry is to concentrate on the expansion of the dairy industry from which enough beef can be produced to make the island virtually self-sufficient in beef. For the cattle industry there is the overall problem of shortages in the number of breeding stock and the consequential high price which has to be paid for those which are available. For beef-cattle slaughtering facilities in general are sub-standard. For dairy-cattle too high a percentage of milk for the fluid market is unpasteurized. Not only are milk yields too low, but inefficient transportation affects farmers' returns.

95. For livestock in general and particularly for poultry and quality pigs which require highly concentrated feeds, the country is in the unfavourable position of having to import most of the feeds or feed ingredients. This implies that efforts should be made to reduce reliance on imported feeds, the prices of which continue to rise due to general world shortages.

96. The economy is losing much revenue due to non-utilization of waste products. Not only do these have a considerable value-added potential but could reduce significantly the quantity of some of the feed ingredients and other commodities imported. Other losses occur due to diseases and pests, which although not yet reaching serious proportions, need to be watched carefully, especially in view of the processed expansion programme. These programmes necessitate a co-ordinated approach in which all aspects of livestock research, animal husbandry, animal health, processing of waste products, and proper slaughtering facilities are considered.

97. It was recommended that the Government should:

(i) Seek to establish a "Comfith" plant (for derinding sugar cane to be used for cattle feed).

(ii) Explore the implications of a transfer of meat inspection services to the Veterinary Division of the Ministry of Agriculture, and if feasible change the Law to give effect to this.

(iii) Plan a country-wide coverage of milk and meat processing, including by-products rendering.

(iv) Require the Agricultural Development Corporation to concentrate on the breeding and rearing of dairy heifers.

(v) Re-organize the marketing of milk. Based on quality and a common marketing system, cause a pooled price to be paid for all milk produced.

(vi) Prohibit the sale of raw milk to the public after a specified date.

(vii) Give high priority to research on crops suitable for use as feeding stuffs for animals.

(viii) Control the quality of milk offered for sale.

(ix) Investigate and if feasible, prohibit clinical work by Government vets on the larger farms, in order to create the atmosphere in which private veterinary services will develop.

(x) Improve existing quarantine facilities.

(xi) Train more veterinarians and meanwhile recruit more from overseas.

(xii) Take the initiative in organizing a regional school for the training of veterinary assistants.

(xiii) Shift the emphasis in the livestock research programme from breed improvement to herd and pasture management.

(xiv) Co-ordinate the services now rendered to the livestock industry by four separate agencies.

(xv) Provide a production programme aimed at reducing dependence on imported livestock products.

Fisheries

98. On the basis of the fresh weight equivalent, imports in a processed form are equivalent to about one-half of the fish consumed. There is potential for increasing local supply mainly from off-shore deep-sea fishing and from expanding fish-pond culture. Once technological problems can be overcome there could develop a viable shrimp industry.

99. Small fishing vessels, largely canoes, some with out-board motors, can exploit in-shore waters but there is a necessity to provide an improved type of small boat which would reduce the hazards to which canoe operators are now exposed. In order to exploit off-shore fishing banks, larger boats capable of spending days at sea are required. A more important hurdle to overcome, however, is that of obtaining permission to fish in waters regarded as territorial waters of South and Central American countries. Training is an important feature and although there is already a nucleus of trained captains more are needed who will in turn provide training for their crews.

100. In addition, it is necessary to provide more appropriate conditions such as a fishing port complex with facilities for berthing, bulk-handling of large catches for distribution to retailers. Initial steps have been taken along these lines, and it thus remains to accelerate finalization of the project. Internal distribution of fish is inefficient and must be improved as an integral part of any programme designed to increase considerably the local supply of fresh fish.

101. The provision of duty-free petrol, encouragement of fishermen's co-operatives, improvement of training facilities and the use of more sophisticated gear have contributed to an increase in the local catch of fish. However, the magnitude of these operations should be expanded to generate the level of catch which will reduce significantly the quantity of fish products imported.

102. It was recommended that the Government should -

(i) Intensify research in fish pond culture, with special attention to the selection of varieties best suited to Jamaican conditions.

(ii) Expand training programmes for fisheries officer, commercial fishing captains and fishermen.

(iii) Guarantee loans for the purchase of deep-sea fishing boats as trained crews become available.

(iv) Actively pursue negotiations with other countries, particularly with Colombia and Guyana to obtain treaties which would allow Jamaican Fishermen to operate within their territorial waters.

(v) Make final site selection for the fish port complex and guarantee loans to develop the facilities required.

(vi) Undertake an aerial survey of fishing potential around Jamaica's coasts - such a survey to be undertaken over a period of one year.

General Observations

103. Jamaica is ready to move forward with the expansion of a number of agricultural enterprises and to embark on new ones, but may be lacking entrepreneurship. One can identify entrepreneurs to whom Jamaica has owed the initiation acceleration of its banana, citrus, cattle industries. Similar leadership is needed now.

104. The ADC has a role to play in the absence of private entrepreneurship. It could pioneer the planting of new crops on a commercial scale and provide data on costs and returns. Clear definition of the role of the ADC is required.

105. Alternatively when waiting to try out a new crop on commercial scale the Government could contract with private entrepreneurs to plant specified acreages, subject to price guarantees.

106. In one way or another, some quickening of agricultural entrepreneurship is needed.

GOVERNMENT'S PROPOSAL FOR ACTION

107. The Sections which follow indicate -

(1) the proposals which have already been accepted in principle and are being pursued by Government;

(2) short-term proposals which are deemed capable of implementation within the near future;

(3) remaining proposals that would be implementable in the long run.

Proposals already accepted

108. Land The Government has recognised the need for an active programme of land reform, and in particular will -

(i) Accelerate and extend the settlement of suitable agricultural land. This will include pre-settlement work, e.g. soil conservation and the provision of adequate rural infrastructure.

(ii) Introduce an appropriate basis for settlement to include the choice of settlers, the size of farms and the terms of tenure;

(iii) Take steps to ensure a reduction in the quantity of idle agricultural land, and in this regard extend the powers of the Land Development and Utilization Commission.

(iv) Take necessary action to develop an appropriate land reform programme, to include considerations of co-operative farming where desirable.

109. In relation to water required for agricultural use the Government will -

(i) expedite the extension of irrigation in the Pedro Plains area;

(ii) rationalize the existing irrigation authorities and enforce economical use of water, with emphasis on reducing wastage on farms and in irrigation systems; and

(iii) initiate research on the economic use of irrigation water for various crops.

Services

110. This is one of the important areas within any agricultural development strategy. In relation to those already accepted in principle and which are being pursued, the emphasis will be placed on Research, Extension, Co-operatives, Marketing, Irrigation and Soil Conservation. More specifically Government will:

(i) re-organize research activities within the Ministry of Agriculture and determine measures necessary to improve and restructure the entire research programme in agriculture;

(ii) co-ordinate and intensify research on sorghum, soya bean, rice and maize;

(iii) co-ordinate all extension services within the Ministry of Agriculture, with particular emphasis on its administration and operation;

(iv) re-examine the total agricultural training programme and its effects on agriculture generally, and on the Extension Services in particular;

(v) increase the facilities for propogating high-yielding material, involving private agencies in this exercise;

(vi) rationalize the operations of the AMC, improve its storage facilities and encourage greater participation by the private sector in food processing and distribution;

(vii) involve the ADC more fully in providing a link between research and extension activities in the interests of farmers;

(viii) examine the functions of the commodity boards with particular reference to their marketing activities;

(ix) expand and improve the services offered by the Co-operative Department, to place it in a position to encourage the development of co operative activities among farmers;

(x) establish in the Ministry of Agriculture a Soil and Water Conservation Unit to accommodate on-farm activities.

Production of Crops and Livestock

111. Sugar - Government will:-

(i) require the Sugar Industry Authority (SIA) to delineate cane-growing zones for each factory within which prices, services and other incentives will be offered to farmers;

(ii) require the Sugar Corporation to prepare a detailed plan for the rationalization of factories, and together with the SIA, prepare a 5-year development programme for the industry;

(iii) re-organize the Frome/Monymusk Land Company with clear policy guidelines and emphasis on improved management and increased productivity.

112. Banana - the Government will:-

(i) require the Banana Board to identify areas best suited for the production of high quality bananas for the export trade. These are to be delineated as Banana Board zones and all services (other than spraying against leaf spot disease) to be available only inside Banana Board zones.

(ii) require the Banana Board to enter into contracts with banana growers within these zones for the purposes of controlling field practices, the guarantee of purchase of fruits for export, and the provision of other specified services.

113. Other Crops - the Government will -

(i) review the forestry programme in relation to the expansion of coffee production in some forest lands;

(ii) explore all possibilities of collaboration with private interests for the expansion of tobacco production;

(iii) initiate the pioneering work necessary to the commercial production of mangoes, avocadoes and flowers;

(iv) expeditiously examine the possibilities of establishing a cotton industry in Jamaica.

114. Livestock - the Government will -

(i) seek to establish a "Comfith" plant (for derinding sugar cane to be used for cattle feed);

(ii) plan a country-wide coverage of milk and meat processing, including by-product rendering;

(iii) require the Agricultural Development Corporation to concentrate on the breeding and rearing of dairy heifers;

(iv) in order to create the atmosphere in which private veterinary services will develop, investigate and,,if feasible, restrict clinical work by Government vets on the larger farms;

(v) improve the existing quarantine facilities;

(vi) train more veterinarians and meanwhile recruit more from overseas; and

(vii) take the initiative in organizing a regional school for the training of veterinary assistants.

115. Fisheries - Government will -

(i) intensify research in fish pond culture, with special attention to the selection of varieties best suited to Jamaican conditions;

(ii) expand training programmes for fisheries officers, commercial fishing captains and fishermen;

(iii) guarantee loans for the purchase of deep-sea fishing boats as trained crews become available;

(iv) actively pursue negotiations with other countries, particularly with Colombia and Guyana to obtain treaties which would allow Jamaican fishermen to operate within their territorial waters.

(v) make final site selection for the fish port complex and guarantee loans to develop the facilities required.

Short-term Proposals

116. Government intends to examine the advisability of implementing within the next 2 years or so a number of proposals as listed below.

Land

(i) Reclamation of the Black River Swamps for use for agriculture;

(ii) implementation of an irrigation scheme in the Rio Minho basin.

Services

(i) Accepting financial responsibility (under the Ministry of Agriculture) for all agricultural research, with the exception of sugar;

(ii) concentrating extension services on the development of viable farm units, while maintaining a general extension service;

(iii) development of extension services for sugar cane cultivation with emphasis on schemes to promote group action in replanting, irrigation, and the use of services and equipment;

(iv) requiring the Banana Board to pay a premium for bananas grown on contracted fields under approved practices;

(v) ceasing to pay subsidies for any crop grown on fields identified for bananas in Banana Board zones. (This applies to subsidies which may be granted by other commodity boards);

(vi) maintaining the right of farmers inside Banana Board zones to grow other crops, and of farmers outside the zones to have their export quality bananas purchased by the Board;

(vii) paying half the cost of leaf spot control, and the total cost of research;

(viii) analysing the structure of existing subsidy programmes and taking steps to ensure that the desired effects from granting subsidies are achieved;

(ix) establishing a Milk Industry Board with functions to include the control of quality, pricing and the sale of raw milk.

Long-term Proposals

117. There are other proposals now under consideration but which may be implemented only within a longer time frame. Among these are:-

(i) The amalgamation of small holdings into larger farms when the settlement of new lands has eased the pressure on lands under cultivation;

(ii) the establishment of more vocational schools on the pattern of Knockalva;

(iii) re-examination of the total agricultural training programme and its effects on agriculture, and the provision of vocational training centres for farmers and young persons likely to enter the agricultural labour force.

Invitation to Comment

118. The public in general and interested parties in particular are invited to comment on these short-term and long-term proposals, so that their views may be taken into consideration in any modification which appears desirable for the formulation of future programmes and projects.

K. A. Munn,
Minister of Agriculture,
21st November, 1973.

MINISTRY PAPER NO. 18

THE EMERGENCY PRODUCTION PLAN - 1977/78 *

I. BACKGROUND AND STRATEGY

The Emergency Production Plan for the financial year 1977/78 was prepared against the background of the acute foreign exchange crisis affecting the country at the beginning of 1977 on the one hand, and on the other hand the government's mandate, provided by the elections of December 15, 1976, to pursue its policy of social reforms and people-oriented programmes and the building of Democratic Socialism. These circumstances dictated the basic parameters of the plan strategy, which were to identify sources and means of mobilising idle domestic resources in order to produce goods and services which are basic necessities for the masses of the population.

In the preparation of the Plan the following methodology was used:

1. An evaluation of existing productive capacity in the principal productng sectors of the economy;

2. An approximation of production targets for these producing sectors;

3. An estimate of the resources of foreign exchange, capital and manpower required to support the production targets;

4. A specification of the mobilisational and implementational implications of securing required resources and meeting the production targets.

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* This section of the Emergency Production Plan deals only with Agriculture. Sections III - X will not be included in this document.

Accordingly, working committees were constituted to deal with the following:

Agriculture
Manufacturing
Construction
Tourism
Bauxite
Fuel and Energy
Employment and Manpower Utilisation
Financial, monetary and foreign exchange
Foreign Economic Relations
Mobilisation and Implementation

The Reports of these committees were reconciled and integrated by the National Planning Agency and submitted to Cabinet. Specially constituted Cabinet sub-committees then produced the final drafts of the Sector Plans for final approval by Government.

The over-riding objective of the Production strategy is to produce the maximum amount of goods and services that are consumed by the mass of the population, subject to the foreign exchange constraint. Therefore, the emphasis is placed on activities that are oriented towards the low income groups in the population, and that utilise little foreign exchange, and on activities with a high foreign exchange-earning potential. Accordingly, agricultural production for domestic consumption is one of the fundamental bases of the production strategy. This simultaneously satisfies the criteria of the existence of idle or underutilised resources, the production of necessities, and the minimisation of foreign exchange costs.

The second major basis of the production strategy is Construction, where it is planned to increase by 50 per cent the level of housing starts in the current financial year. The third major element is the Craft Industry and Small Business, both of which have a significant employment potential. The fourth basis is the Export Manufacturing sector, which it is hoped, will generate increased foreign exchange earnings.

As regards the major export industries, i.e. bauxite and alumina, tourism, sugar and bananas, the difficulties being experienced on the demand side means that it was not possible to project increases in export sales over the original projections for the year 1977.

The Plan has identified a mix of organizational forms through which production will be organised. The Government is committed to the concept of a mixed economy within the framework of the democratic socialist organisation planned for Jamaica. Within this context, the State will dominate public utilities, mining, banking, tourism and those large production units which are essential for national needs, such as the cement factory and the steel mill. The State will also control the import and export trade. Joint ventures are anticipated with foreign and local capital in mining, tourism, banking and oil and gas exploration. Private enterprise will be fully involved in agriculture, fishing, manufacturing, tourism, construction, distribution and other services. Worker participation will be actively promoted in both the public and private sectors of the economy. Cooperative forms of organization will also continue to be promoted.

The Plan will also seek to develop a new form of economic organisation - Community Enterprises Organisations - as a basis for rural re-construction and development. CEOs will be based on the land and on farming activities, but will also seek to embrace craft and cottage industry activities, construction activities, and other economic activities suitable for undertaking at the community level. CEOs will seek to answer the social problem of job opportunities, the economic problem of concentrating a complex of productive activities within a rural community, and the political problem of decentralisation and democratisation of ownership and control. A number of specific areas for the initiation of community enterprise organisations have been identified.

For the implementation of the plan strategies and targets, certain concrete changes in the organisation and structure of the apparatus of government are being undertaken. These include changes in the majority of ministries and a large number of agencies falling under ministerial jurisdiction. Machinery for monitoring plan implementation has also been established.

Sections II to VII below outline the main elements of the production strategies and targets for agriculture, manufacturing, construction, tourism, bauxite and alumina, and fuel and energy. (It should be noted that the dollar value figures in the text and the tables are expressed in prices prevailing before the adoption of the dual exchange rate on April 22, 1977. Prices for certain imported raw materials, consumer goods and capital goods should be adjusted to take account of the new exchange rate for certain transactions.*)

Sections VIII and IX indicate the main implications of these strategies and targets for employment and manpower utilisation, and foreign economic relations. Section X outlines the main strategies and changes involved in mobilisation for and implementation of the Plan. The financial and monetary provisions for the Plan, including provisions for foreign exchange, have been incorporated into the Budget for 1977-78.

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* For details, see the Ministry Paper on Multiple Exchange Rates appended hereto.

AGRICULTURE

The Emergency Food Production Programme covers the financial year 1977-78 because some agricultural activity beginning during 1977 will produce output in early 1978. The Plan calls for a substantial increase in the output of food in order to replace food imports which have been restricted and to increase levels of food consumption somewhat above 1976.

The terms of reference for the Agriculture sector plan were based on Government's Agricultural Development Policy, the main elements of which are:-

(1) to produce more food and raw materials to feed the nation,

(2) to achieve adequate nutritional levels, to reverse the adverse balance of trade, and to develop and establish agro-industries,

(3) to ensure optimum economic and social benefits from maximum utilization of all agricultural lands,

(4) to create conditions which will improve rural life and provide greater and more equitably distributed opportunities for farmers and rural dwellers to participate in the control of the resources necessary for production, and to share in the profits therefrom.

Against that background, the Emergency Production Plan has identified strategies to further implement the objectives of this policy. These ingredients chiefly centre on land policy, the organization of production and marketing, and the re-organization and rationalisation of input structures to facilitate the flow of resource services to agriculture.

In order to establish targets and priorities for the Production Plan, consumption targets were first identified and then the resources to meet these targets were estimated.

FOOD CROPS

Output Targets

The 1975 food import bill totalled $111.81 m, 35% of which was spent on cereal and cereal products (138,978 short tons) and 5% on fruits and vegetables, including beans, peas, onions and Irish potatoes (10,280 short tons). The proportion of demand supplied by domestic productions was as shown in Table II.1.

TABLE II.1

Domestic Production of Food Crops

Food Group	1975 production (short tons)	% Demand
Legumes	7,050	51.2
Cereals	17,200	8.1
Starch roots, Fruits, Tubers	239,600	80.9
Vegetables	61,700	100
Condiments	3,650	39.7

One of the principal objectives of the Plan is to increase the production of all food crops in 1977 over the 1975 level. This is indicated in the following table, Table II.2.

TABLE II.2

Proposed Domestic Food Crop Production

Food Group	Proposed 1977 Production (short tons)	% Demand
Legumes	12,775	93
Cereals	36,115	13
Starchy Roots, Fruits & Tubers	342,150	115
Vegetables	65,400	106
Condiments	9,700	106

If these targets are to be achieved the demand for legumes will almost be supplied (93%) and there will be a slight increase above the 1975 demand for starchy roots, vegetables and condiments. Although there will be a significant increase over 1975 production, a level of 150% is desirable to cover losses in production, marketing and increases in population.

The production of both gungo peas and red peas is to be increased, but greater increases are proposed for gungo peas as this crop can be easily grown and requiresonly marginal lands, red peas being very sensitive to climatic conditions.

In the case of cereals it is planned to increase production by reaping two crops per year. Simultaneously, the feasibility of increasing the existing mill capacity or of purchasing small mills to be placed near centres of production is being examined. The demand for corn of 170,000 short tons is mostly used for animal feed and other sources of animal feed will be developed (e.g. sorghum) so as to allow more corn for direct consumption. Table II.1 gives proposed increases of all the food crops.

Inputs Required to Develop Crop Targets

Land

In order to estimate the supply of land suitable for the proposed crop expansion, a survey was undertaken of all idle and unused land. This is summarized in Table 3 which gives a breakdown of potential arable land by parish. Table II.4 gives the target acreages for selected crops for 1977.

TABLE II.3

Parishes	Bauxite	Government	Private	Total
St. Elizabeth	4,797	1,070	7,880	13,747
Manchester	8,075	200	6,656	14,931
Westmoreland	-	2,265	6,676	8,941
St. Andrew	-	307	2,282	2,589
St. Mary	-	927	10,181	11,108
St. Ann	-	891	4,334	5,225
Hanover	-	2,327	6,000	8,327

TABLE II.3 Cont'd.

Parishes	Bauxite	Government	Private	Total
Portland	-	1,924	10,860	12,784
St. James	-	800	7,861	8,661
Trelawny	-	51	1,421	1,472
St. Thomas	-	589	6,874	7,463
St. Catherine	-	4,245	16,279	10,524
Clarendon	-	7,987	5,490	13,477
TOTAL	12,872	23,583	93,048	129,503

Of the required lands some 22,000 acres will come from Government tenanted farms now identified as idle. Most of the remainder will come from A.D.C. properties, recently acquired farms, or privately-owned farms leased to Government.

In order to achieve the above targets certain inputs are extremely necessary, namely, planting materials, fertilizers and agricultural equipment.

Planting Materials

Table 5 indicates the costs and requirements for planting materials. More than 100 tons of material have already been ordered. In addition, eighty (80) acres of land have been earmarked for the production of certified seeds for contract farmers who will, in turn, produce high quality seeds for other farmers.

TABLE II.4

Target Acreages for Secected Crops for 1977

(all figures in acres)

Crops	1977 Targets	Region	General Location
1. Legumes			
Red Peas	1,500	Western	Hounslow, Cornwall Project
Cow Peas	800	Southern	Serge Island
Gungo Peas	6,000		Government Agricultural Stations
Peanuts	1,600	Western	Elim/Barton Isle Goshen, Luana
		Southern	Yallahs, St. Catherine, Clarendon
2. Cereals		Western	Elim, Mayersfield
Rice	4,370	Southern	Amity Hall, St.Thomas
		Northern	Heart Hill, Windsor Castle, St. Ann
Corn	10,000	Southern	North & South Manchester
		Western	St. James and Trelawny
3. Starchy Roots & Tubers			
Yam	4,500	Northern	Bauxite properties St. Ann
		Western	Bauxite properties St. Elizabeth
		Southern	Bauxite properties Manchester
Dasheen	500	Northern	Golden Vale Land Lease Property
Coco	800	Western	Trelawny, Hanover
		Southern	Manchester
		Northern	Portland
Sweet potatoes	2,000	Southern	Bauxite property Manchester
		Northern	St. Ann, Portland
		Western	Hanover
Cassava	2,800	Western	St. Elizabeth bauxite lands
4. Vegetables			
Onions	15,000	Western	Hounslow Braco Spring Ground
		Southern	Serge Island Albion
Tomatoes	120	Western	St. Elizabeth, Hounslow Spring Ground
		Southern	Albion

TABLE II.5

Planting Materials Required

Planting Material	Quantity	Costs Involved ($)
Gungo Peas	36 tons	60,000
Red Peas	45 tons	112,500
Cow Peas	12 tons	24,000
Peanuts	64 tons	96,000
Rice	219 tons	52,440
Corn	75 tons	175,000
Yam	15,750 tons	7,605,000
Dasheen	375 tons	112,500
Coco	800	240,000
Sweet potato	-	100,000
Cassava	-	84,000
Onions	4 tons	18,000
Tomatoes	120 lbs.	3,000
TOTAL		8,682,440

Fertilizers

The need for fertilizer to carry out the production drive is a major one. This represents a major item of foreign exchange required for the agricultural sector. Local substitutes are not available in sufficient quantities to affect the import needs.

Cost of fertilizers required is shown in Table 6. Usage was calculated at 3.5 cwt. per acre, at a cost of $9 per cwt.

TABLE II.6

Cost of Fertilizer required to achieve 1977 Crop Production Targets

Crops	Quantities	Cost ($)
Red Peas	5,250	50,085
Cow Peas	2,000	25,200
Gungo Peas	2,100	19,215
Peanuts	5,600	52,717
Rice	12,250	110,250
Corn	435,000	315,000
Yam	2,740	24,664
Dasheen	1,750	15,750
Coco	2,800	25,200
Cassava	9,800	88,200
Vegetables	3,619	39,955
Tomatoes	420	3,780
TOTAL		766,217

Machinery

Table II.7 summarizes equipment presently under-utilized by type, number and location. There is a lot of equipment idle because they are in need of repairs. There is however, a problem of obtaining spare parts, particularly for land preparation and irrigation equipment. A central pool for repairs will be established, where all equipment can be called in and then be re-issued to where they are needed as the plan is implemented.

The importation of critical agricultural equipment has been identified as a top priority and with reorganization in the Trade Administrator's Department the current delays should be considerably reduced.

Labour Requirements

The need for additional acreage to be brought into production also means the need for additional employment in agriculture. The figures for labour requirements given in Table 8 are for seasonal employment and do not mean that people will be employed all year round. People will be doing specialized jobs at different periods of the year.

Total Cost of Production for 1977 Crop Targets

This is based on costs from land preparation to reaping this crop and includes fertilizer costs and all other costs occurring to the farmer. The total cost of production figure is in the region of $26,500,000. A breakdown by crop groups is given in Table II.9.

TABLE II.7

INVENTORY OF AGRICULTURAL EQUIPMENT

Type of Equipment	Total Number	EQUIPMENT UNDERUTILIZED			
		Number	Location	Region	State of Repairs
CRAWLER TRACTOR	50	3	Bodles	Southern	Good
Wheel Tractor	148	7)	Bodles	Southern	Good
		1)	Truro	Western	Good
		2)	Silver Spring Food Farm	"	"
		)			
		2) 21	Cape Clear Food Farm	Northern	"
		2)	Albion Food Farm	Southern	In need
		7)	Lawrence Field	"	In need
Trecking Tractors	64	1	Charlton	Southern	In need
		2	Silver Spring Food Farm	Western	Good
DISC HARROW	38	2)	J.S.A.	Southern	Good
		1)	Truro	Western	Good
		1) 5	Charlton	Southern	Good
		1)	Cape Clear Food Farm	Northern	Good
BEND PLANTER	29	2)	J.S.A.	Southern	Good
		2)	Albion Food Farm	Southern	In need
		3) 8	Hounslow Food Farm	Western	In need
		1)	Truro	"	Good
TYME CULTIVATOR	16	1)	Lawrence Field	Southern	Good
		1)	Truro	Western	Good
		2) 5	Hounslow Food Farm	"	In need
		1)	Albion Food Farm	Southern	" "
LINE BLOWER	165	1)	Charlton	Southern	In need
		9)	Tru[illegible]		
		34)	[illegible]		
		6) 56			
		6)			
IRRIGATION UNIT	27				
TRAILER					
THRESHER					
HARVESTE[illegible]					

TABLE II.8

LABOUR REQUIREMENTS TO ACHIEVE 1977 CROP PRODUCTION TARGETS

CROPS	PERSON 1977 TARGET	REGION	GENERAL LOCATION
1. Legumes			
Red Peas	1,500	Western	Hounslow, Cornwall Project
Cow Peas	800	Southern	Serge Island
Gungo Peas	6,000		Government Agricultural Stations
Peanuts	2,694	Western	Elin/Barton Isle Goshen, Luna
		Southern	Yallahs, St. Catherine Clarendon
Sub-total	10,994		
2. Cereals			
Rice	3,500	Western	Elin, Meyersfield
		Southern	Amity Hall, St. Thomas
		Northern	Heart Hill, Winsor Castle, St. Ann
Corn	5,000	Southern	North & South Manchester
		Western	St. James & Trelawny
		Northern	St. Ann
Sub-total	8,500		
3. Starchy Roots & Tubers			
Yams	3,380	Northern	Bauxite properties, St. Ann
		Western	Bauxite properties,
Dasheen	375		
Coco	640		
Sweet Potato			
Cassava			

TABLE II.9

TOTAL COST OF PRODUCTION OF CROPS

CROPS	TOTAL COST OF PRODUCTION ($)
1. Legumes	
Red Peas	722,400
Cow Peas	343,200
Peanuts	676,800
Gungo Peas	2,068,800
Sub-total	3,811,200
2. Cereals	
Rice	1,744,650
Corn	2,445,400
Sub-total	4,390,050
3. Starchy Roots & Tubers	
Yam	11,925,000
Dasheen	315,000
Coco	660,000
Sweet Potato	1,083,400
Cassava	1,499,680
Sub-total	15,473,080
4. Vegetables	
Onions	1,452,000
Tomatoes	132,360
Sub-total	1,584,360
GRAND TOTAL	35,268,690

APPENDIX II.1

PRODUCTION TARGETS 1977

SHORT AND MEDIUM TERM PRODUCTION

FOOD GROUP	Present Production S. Tons	Total Demand S. Tons 1977	Additional Supply (1977) S. Tons	Acreage Required	Planting Time	Duration Crop Months
Cow Peas	800	1,000	560	800	June	4
Red Peas	2,300	5,000	525	1,500	Sep/May	4
Gungo Peas	2,400	5,275	3,450	6,000	April	9 - 12
Peanuts	1,200	7,000	1,040	1,600	June	5
	6,700	13,275	5,575	9,900		
2. Cereals						
Corn	14,300	170,000	10,000	10,000	March	4
Rice	2,900	43,000	8,915	4,320	Feb/March	4
	17,200	213,000	18,915	14,370		
3. Starchy Roots Fruits & Tubers						
Yam	145,300	200,000	31,500	4,500	March	12
Cocoa	15,000	15,000	4,000	800	May	12
Dasheen	20,000	20,000	4,750	500	July	12
Sweet Potato	16,000	16,000	9,000	2,000	Feb.	6
Cassava	25,500	25,000	19,600	2,800	March	9
	221,800	276,000	68,800	10,600		
4. Vegetables						
Onions	2,400	8,000	5,600	1,500	Oct.	7
Tomatoes	9,400	10,000	600	120	Nov.	3
	11,800	18,000	6,200	1,620		
TOTAL	257,500	520,275	100,540	36,490		

LIVESTOCK

Dairy Industry

a) Public Sector Farms

(1) The 1977 target is to increase production at Rhymesbury and Goshen to 299,700 quarts in the first 6 months, and to 419,400 in the second 6 months, yielding an overall increase over present production of 119,700 quarts.

(2) Bodles current rate of production is 370,475 quarts. Production in 1977 is expected to be 400,476 quarts, an increase of 30,000 quarts.

b) Government Sector Farms

At present there are 70 Government Farms with an estimated average herd of 10 milkers on each farm. Funding of $1 million will put 90 farms into proper production with 1620 cows (90 x 18) producing 1,405,250 quarts in 1977, an increase of 127,750 quarts.

c) Private Sector Farms

An increase of 10 - 25% is anticipated from purely private sector farms depending on their response to the opportunities of the production programmes.

Cattle Feeding Projects

These are aimed at import feed substitution and provision against periods of drought. The project is designed to produce in 1977, 12,215 tons of silage and 1,727 tons of concentrate feed. This is expected to increase livestock production to 2,104 million pounds (lbs.) of beef or an increase of 8.94 million quarts of milk.

Capital costs are concentrated in the first year of the project and is the magnitude of $533,000. Funding is required to purchase drying and blending equipment, irrigation equipment and accessories and machinery such as tractors and for establishing silos.

Preservation of Breeding Stock

This programme involves purchase of dairy calves 3 - 10 days old from farmers. This will have the effect of reducing calf mortality by 15%, while allowing farmers to produce more milk because he will not need to rear replacement heifers. Calves will cost $100 each, rearing cost for 6 months $180, total recovery cost for first year is $268. Heifers will be sold after two years at $700 (allowing for 10% deaths). Funding required for water and irrigation equipment is $76,000 in 1977.

Sheep and Goats

Emphasis in the 1977 production plan is placed on small stock, rather than on beef cattle. Sheep and goat rearing has considerable potential, especially for production of lamb and mutton meat, a great deal of which is now imported.

Projects to be developed are ongoing projects at Negril Spots, Denbigh Kraal, Grove Place, Hounslow and Pedro. The projects will provide animals for slaughter and also seed stock to build up herds, as it is estimated that 22,575 lbs. of mutton can be produced in 1977. Within the first year there will be a deficit in terms of financing but in 1978 value of production will increase to produce a surplus of $9,500.

TABLE II.10 LIVESTOCK PROJECTS SUMMARY TABLE

PROJECT	QUANTITY 1976 Total	QUANTITY 1977 Target	QUANTITY Increase 77/76	VALUES $ 1977 Target	VALUES $ Increase 77/76		
A. Milk Production	Quarts						
1. ADC Farms	584,000	719,000	135,000	230,112	43,232		
2. Settlement Farms	1,277,500	1,405,250	127,750	341,317	31,937		
	370,000	400,000	30,000	100,000	7,500		
SUB-TOTAL	2,231,500	2,524,350	292,850	671,429	82,669		
B. Cattle Feeding	Tons						
1. Concentrate Feed	None	1,725	1,725	204,000	204,000		
2. Hay	9	115	106	11,500	10,600		
3. Sorghum	None	750	750	120,000	120,000		
SUB-TOTAL		2,590	2,581	325,500	334,600		
C. Breeding Stock Preservation	-	400 Heads	400 Heads	186,200	186,200	-	
D. Small Stock	-	38,575 lbs.	13,375	57,862	57,862		
Sheep and Goats		1,043 head	1,043	54,408	54,408	50	14
TOTAL				1,295,399	715,739	99	145

FISHERIES

Fishing is an important part of the economy and a very important source of protein. Although estimates made in 1974 indicated total landings from all sources in Jamaica vary from 11,000 metric tons to about 20,000 metric tons, or 23 or 40 million pounds a year, the demand is also rapidly rising and $19.4 million worth of fish and fish preparations were imported into the island in 1975.

The major expansion of fisheries in the 1977 production plan is to be achieved by stocking of inland ponds and rivers with fresh water fish. The following projects have been identified as having the potential to increase production levels.

(1) Fish Ponds at Mitchel Town

This project involves the development of 20 acres of fish ponds at Mitchel Town by the Fisheries Division. The yield at the start of the operations is 6,000 fingerlings per acre and is expected to increase to 8,000 fingerlings per acre by the end of 1977.

Total production in 1977 will be 160,000 lbs. of fish and 5,000,000 fingerlings, estimated at a value of $96,000.

(2) Fish Ponds at Negril

The establishment of ponds at Negril to produce 60,000 lbs. of fish in 1977 and 1,600,000 fingerlings, estimated at a value of $36,000.

(3) The Fisheries division is to stock all mini-dams with fish. In 1977 only two dams will be stocked to produce 500,000 lbs. of fish estimated at a value of $300,000.

FORESTRY

Forestry is a long term activity, but if some immediate steps are not taken in the short term, some benefits, both of a short and a long term nature, will not occur.

In 1975 the country imported $50 million worth of forest products, of which $24 million were for wood and manufactures of wood, and $26 million were for paper and paper products.

The most obvious and tangible reason for commercial afforestation is greater domestic production of forest products, but other major benefits occur as well. Those of major interest to the 1977 production plan are as follows:

(a) import substitution of forest products, dollar saving and possible earnings for export;

(b) production from land of low agricultural productivity;

(c) provision of job opportunities in rural areas;

(d) out of season employment for rural workers, particularly for youth.

Industrial Forest Plantations

This forms part of Government's on-going programme of Forest Development, and includes afforestation of 300 acres of commercial pine plantations in 1977. In addition, another 1,000 acres of hardwood species will be planted for conservation purposes. Together with other maintenance works, these activities will generate casual employment for 10,000 to 12,000 persons.

At the same time Government will take steps to encourage commercial forestry on 1,000 acres of suitable land in private ownership, particularly in the watersheds of St. Andrew, St. Thomas, Portland, St. Mary, St. Catherine and Clarendon. In addition to the benefits mentioned above, these new forests will enhance the recharging of the nation's underground water storage in the long run.

Forest Industrial development

In addition the Forest Department will continue the following production activities.

(a) logging and sawmilling to produce 1 million board feet of lumber in 1977;

(b) production of posts and poles for fencing farm buildings and electricity distribution. The targets include 100,000 treated fence posts and 1,000 utility poles in 1977. The production of poles will be increased annually in order to meet the current demand of the J.P.S. as soon as possible and thereby achieve considerable foreign exchange savings.

(c) Charcoal production from waste logs resulting from land clearing operations linked to afforestation projects.

Initially 40 portable steel kilns will be constructed locally and these will be located in batteries of two kilns per work site within selected communities. Each battery will be operated by two trained workmen and will produce four tons of charcoal per five-day week.

Forestry Skills and Community Relations

In order to achieve some of the short-term targets for 1977, as well as set the stage for future growth of the sector, a Forestry Work/Study Training programme will be launched, aimed at developing integrated professional, technical and vocational cadres.

The training programme envisages a wide exposure to practical forestry activities, and participants will learn new skills and new technology. It is expected that this practical approach will generate productive returns while stimulating young people to enter a forestry career. For example, there will be a national drive to collect pine seed locally and thereby save foreign exchange. Also the programme will embark on a continuous forest resource survey and determination of related land capability factors, resulting in increased knowledge of our forestry potential.

Apart from the programmes which were designed as part of the Emergency Plan, a number of important developments were taking place while the plan was being prepared. These included the training of Impact Workers as budders to take part in the national mango and citrus programmes.

ORGANIZATION FOR PRODUCTIVE ACTIVITY

The task of bringing over 20,000 acres into production seems formidable. It requires mobilization and it must embrace all existing forms of productive organization. Accordingly, a mix of organizations is proposed, of which two new methods of organizing agricultural production are introduced, namely:

The Public Sector Agricultural Enterprise and
The Community Enterprise Organization.

1. Land Lease and Small Private Farms

These are the bed-rock of domestic food supply and in terms of the organization of land for production, Project Land Lease, under which more than 24,000 farmers now operate, will continue to be the main instrument for providing land for the people. During the year another 10,000 farmers will be settled.

It is proposed that the strategy for expansion of food production be based on expansion of Project Land Lease II and III under Project Land Lease. Phase II small farmers will be encouraged to form co-operatives in order to secure economies in the cultivation of certain crops and to facilitate the provision of resource services in land preparation, crop protection and cultivation, wherever they show the desire and interest.

2. The Public Sector Agricultural Enterprise

This form of production will be based on intensive cultivation over large acreages of specialist crops (e.g. soya beans, livestock, rice, pineapple) required for manufacturing, processing export or local consumption. This can be done either through involvement of already existing public sector enterprises able to participate in agricultural production, or by state enterprises specially set up for this purpose. The objective would be to provide, on Government land, the kind of infrastructure or risk capital that is required to put such large acreages under intensive cultivation.

The enterprise would be organised in such a way that long term supply contracts and/or management contracts could be entered with manufacturers, processors or food distribution agencies for providing inputs such as management skills and systems; extension services; transport and distribution networks; planting materials, fertilizers, equipment tools, pesticides, etc.

Workers on these enterprises will be selected from the local communities. In addition to receiving adequate wages immediately, they would also get a commitment from the enterprise and management that these enterprises would be developed over a specified period for community take-over.

In addition, workers would benefit from improved social amenities such as housing and be provided with facilities for establishing vegetable gardens and small livestock units.

3. Community Enterprise Organizations

In addition to developing co-operatives among Project Land Lease III settlers, it is intended to introduce increasing elements of co-operative organization throughout the farming community wherever this is feasible and possible.

Jamaica must deal with the problem of equity between the various sectors of the society as they are defined by different kinds of economic activity.

So long as rural life rests upon the growing of crops alone, while urban life attracts all the manufacturing processes, there will be a problem of equity between the two. Even if it is dealt with by finding means to support farm prices, the problem of rural life is not dealt with because land can only provide work outlets for a certain number of people. Thus, rural communities either support increasing numbers of people who can find no work to do, or the rural unemployed set out for the cities in search of these outlets.

What is needed is a form of organization which provides a viable framework within which are found opportunities for farming as the foundation upon which other opportunities rest and around which other forms of productive activity are organized. If this form of organization is to work, it must answer the social problem of job opportunities, the economic problem of concentrating different forms of production in a rural community, and the political problem of a genuinely democratic form of ownership and control.

Community Enterprise organizations are being proposed as a possible answer to the problems outlined above. Essentially these organizations will take the land as their central point of departure. They will concentrate on getting men and women to organize themselves into special communities with the boundaries of these communities defined, not so much in terms of traditional residential patterns, but more so by the pursuit of a collectively motivated group of individuals linked together in the performance of a whole cluster of economic activities.

These new communities will involve people working together for themselves on lands provided either by Government or voluntarily by private individuals. The land will constitute a base for farming and other agricultural activities. In addition, other opportunities, such as the establishment of craft production, construction activities, purchase and marketing of consumer goods and small manufacturing activities will be created within communities where such community enterprises are located. The fully developed CEO will offer possibilities for engagement in virtually every type of economic pursuit relevant to the life of the community in which it is located.

A small Inter-Ministerial Committee chaired by the Prime Minister and the Ministers of Youth and Sports; Local Government; National Mobilization and Human Resources Development and Justice has been set up, and will be charged with the responsibility of converting this idea into reality.

Large Private Farms

Farms over 100 acres will be requested by the Ministry of Agriculture to put 10% of their lands not in other use into food production. Ownership of these lands will not be disturbed, provided that the land is farmed properly

and energetically, and that owners are willing to co-operate in the development of practical measures for worker participation.

Utilization of Mined-Out Lands

The main emphasis in the Emergency plan is the utilization of these lands for the growing of castor oil (Ricimus Communis). Discussions resulted in an agreement with Alcoa, Alpart and Kaiser, respectively, for each to provide 10 acres of mined-out land for a castor-bean project. Detailed scheduling will be worked out between the Ministry of Agriculture, the companies and the Jamaica Bauxite Institute, but it is expected that planting will commence about May 1977.

Urban Agriculture

There are a number of proposals for urban and sub-urban agricultural projects as part of the 1977 Emergency Food Production programme. In view of the general water shortage, the original plans for a substantial production drive within the city have to be curtailed. However, where water could be made available - e.g. from wells, urban agriculture projects are being identified for development.

The most important urban agriculture projects are considered to be those which can be developed in close proximity to the city. It was considered that the 10% requirement for large-farm food production could be carried out on an area of land at both Caymanas and Innswood. Such projects would provide employment opportunities for youth from the area, together with urban youth who could be organized into work brigades on a commuting basis each day. The railway offers direct transportation for such purposes. Tables 1 - 14 are summaries of the proposals, showing costs and likely employment generation.

TABLE II.11

COST OF PRODUCTION AND REVENUE

SUB-URBAN AGRICULTURAL PROJECT

INNSWOOD ESTATES

Crop	Cost of Production p.a.	Acreage	Total Cost of Production	Yield (tons)	Total Revenue $	Time of Planting	Labour Required
Corn	1,500	250	375,000	562.5	112,500	March, Aug. Sept.	125
Red Peas	486	100	48,600	45.0	52,200	Nov-Feb: Apr Aug-Sept.	50
String Beans	799	25	19,975	75.0	45,000	Mar-Apr Sept-Nov.	12
Gungo Peas	523	50	25,150	28.75	28,750	Mar-June: Sept.	25
Onions	1,140	75	85,500	281.25	213,750	Sept-Jan	37
TOTAL		500	554,225	992.5	452,200		249

It is assumed that apart from Gungo Peas two crops per year will be grown, therefore, the Costs and Returns shown above will be doubled.

The total number of workers will be employed weekly during the crop period which averages 4 months except for Gungo Peas.

TABLE II.12

COST OF PRODUCTION AND REVENUE

SUB-URBAN AG

Crops	Cost of Production p.a.	A
Red Peas	4	
Onions		
Bee		

TABLE II.13

CAPITAL COSTS SUB-URBAN AGRICULTURAL PROJECTS

		$
1	House for Farm Manager	30,000
1	Store room and shed	10,000
1	Office	5,000
		15,000
4	Ploughing Harrows	4,000
3	Tractors - 1/8 - 8	15,600
1	(Ball T^5 Tractor)	
	(1 MF 520 Combine)	20,000
2	1.3.5. Small Agricultural Tractor	7,643
3	Tipping Trailers	2,500
2	165 High Clearance Tractors	7,405
2	185 Tractors	10,516
2	E70 Rotovators	2,067
2	E50 Rotovators	1,798
5	4 Row Seeders	3,000
1	4 Row Seeders	295
3	Disc Ploughs	1,216
3	3 Row Furrowing Tools	700
3	Mist Blowers	245
	Small tools	1,000
		77,985
		45,000
		122,985

TABLE II.14

IRRIGATION COSTS - 500 ACRES - SUB-URBAN AGRICULTURAL PROJECTS

20	Irrigators - acreage	16,000
	Canal Maintenance	2,000
	Partial Flame	500
	Electricity Charges - 250 Cubic Yards	11,500
	Surface Water Cost	875
	Demand Charges	2,600
		$33,475

Outside of the problem of land and organization of land for production, there are several other factors that affect agricultural production. These include drought, praedial larceny, land capturing, import restrictions and availability of credit.

Water

The following islandwide rainfall figures 1969 - 1976 indicate the seriousness of the problem of drought.

1969	-	87.88"
1970	-	84.91"
1971	-	71.01"
1972	-	73.07"
1973	-	81.94"
1974	-	73.89"
1975	-	63.13"
1976	-	55.1" (estimated)

To understand the true meaning of drought in the context of Jamaican agriculture, it must be understood that outside of cane, only 73,000 acres or 5% of the 1.5 million acres of arable land is under irrigation. The St. Catherine Plains are estimated to have approximately 50,000 acres of irrigable land of which 15,000 acres are not irrigated. Approximately 35,000 acres are currently under furrow and sprinkler irrigation of which 20,000 are in sugar cane.

The fact that there is virtually no irrigation outside of canelands indicates 300 years of neglect, and also indicates that there is need for long term solutions to this problem.

For the Emergency Plan, however, there will be substantial increases in the budget allocations for water. Last year just over $12 million was spent on water supplies, with just over $1.4 million devoted to irrigation. This year the budget calls for $19 million to be spent on water and over $5½ million of this has been earmarked for irrigation. This figure does not include $2 million to be spent under the tank building programme.

Irrigation has been identified as a priority area for which international financial assistance will be sought to speed up the process of bringing more water to the farmer.

The Government also proposes, in the short term, to declare all of Jamaica a critical area under the Underground Water Control Act of 1959. This is being proposed as an interim measure, pending the implementation of the longer term solution. What this means is that those areas not already declared under the Underground Water Control Law as critical areas will now be so declared, thus the entire country will be considered a critical area for purpose of the application of the Law.

This Law, which applies to water under the surface of the ground, deals with the promotion of water conservation, the proper use of underground water resources and the control of these resources. This is a critical issue, given the nature of the present drought, and the need for implementation of the major food production drive.

The cloud seeding programme will continue and also the construction of mini-dams, with the aim of completing 234 dams by 1982.

Praedial Larceny

With respect to steps to prevent praedial larceny in the long run, community vigilence will be the key to containing the problem. This will be a proper area for systematic and organized Home Guard activity. In the short run, recommendations from the Jamaica Agricultural Society are being studied by the Minister of Agriculture.

Credit

In order to finance the Emergency Food Production Plan, $20.7 million has been provided as special credit, including $18 million to the Project Land-Lease type farms and the traditional small farmer with small parcels of land, to cover the full production without a long delay for processing of applications.

The strategy is to have all loans made through the People's Co-operative Banks on the recommendation of the Extension Services which have been reorganized to fulfil needs of this nature. This loan will be called a "Supervised Crop-Lein Loan".

The loan figure provided is over and above:-

(1) the normal Project Land-Lease provision of $5.7 million;
(2) ordinary contribution to credit fund of $1,000,000;
(3) subsidies of $6 million (Fertilizer, Housing, Crops, Livestock) provided to assist small farmers.

Extension Services

In addition to the loan facilities, the implementing capability of the Ministry of Agriculture has been reorganized along regional lines, so that the 1,225 extension officers will be better able to assist and advise farmers.

The provision of credit will be co-ordinated with the extension services, in order to have a concerted impact on agricultural production. Government will also examine the training of agriculture field staff in order to develop a more coordinated approach towards training. At present different organizations each run their own training programme, leading to confusion.

The newly created Production Unit has undertaken the urgent task of upgrading the Ministry's capability for project analysis, design, costing and implementation and control, with a view to a better utilization of local and foreign funding and control of resources.

Marketing

Distribution is one of the main problems in the food sector. The marketing linkage is critical to ensuring adequate returns to farmers and reasonable prices for consumers. Because of the general inefficiency of the system in Jamaica, substantial quantities of foodstuff go to waste for one reason or another. Spoilage from inadequate storage, low farm prices that

make it unprofitable to harvest and sell some fruit, and imports of raw materials that substitute for these very fruit in food processing, are some of the reasons for the massive waste.

The marketing problem will be improved by an appropriate price policy and by improvements in the organization of marketing. A.M.C. will play a critical role in the strategy for distribution of expanded production during 1977.

The Ministry of Industry and Commerce and the Ministry of Agriculture are now studying recommendations to make the Agricultural Marketing Corporation a more effective instrument in the service of the farming community. This is taking into account the fact that higglers play an important role in the Jamaican food marketing system. They move large quantities of foodstuffs, perhaps 85% or more of the total from farms to consumers through municipal markets.

It is proposed that Government will examine the possibility of introducing retail price controls in essential consumer foods such as peas, beans and onions. These ceiling prices would be posted weekly in public markets and price control inspectors could then police the system.

Land Capturing

With respect to land capturing, there will be no support given to illegal capturing of property, whether publicly or privately owned. The policy of making land available to farmers will be continued so that there can be disciplined and organised settlement of people on the land.