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OVERVIEW OF AGRICULTURAL DEVELOPMENT IN JAMAICA

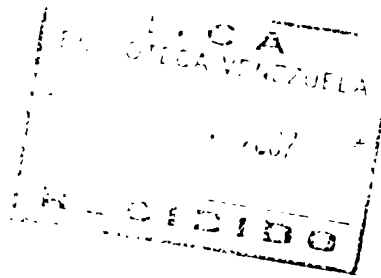
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A REPORT ON THE DEVELOPMENT
IN THE AREA OF CULTURE
AND ARTS

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OVERVIEW OF AGRICULTURAL DEVELOPMENT IN JAMAICA

by

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OVERVIEW OF AGRICULTURAL DEVELOPMENT IN JAMAICA

Any realistic efforts made to improve agriculture should take into consideration, inter alia, its existing status quo in relation to policy, resources in agriculture, problems, technology, services, financing, past performance and the potential for development.

This documentation aims at presenting a panoramic, but brief assessment of the agricultural sector, with a view to indicating areas where emphasis might be placed in improving the profile of agricultural performance.

It is appreciated that the subject of agricultural development covers a very wide area, the main objective of which is to improve the main national resource, humans (farmers firstly in this case), by development of the physical resources. Many variables contribute to this development, which is further affected by rapid short-term changes in those which are structural in nature. This makes it extremely difficult to measure progress, however defined, and by the same token to plan improved development on a rational base, since there is often lacking that realistic period of trial and testing which is so necessary for underpinning development strategies.

The fact that there are continuing complaints concerning the failure of Jamaican agriculture to meet its potential is one which speaks volumes but also raises questions concerning the seriousness of plans for improvement.

The constraints and limitations are not always precisely discernible at any given point in time, and many are often scoffed at as being mere excuses. Again the specific roles and objectives expected of the agricultural sector are not always consistent with the elements of agricultural policy be these implicit or explicit.

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The prime purpose of this exercise therefore is to obtain the framework or skeleton which appears likely to provide an appropriate basis for the utilization of various inputs and strategies for attaining national agricultural improvement.

Percy Aitken-Soux
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J A M A I C A

Background

Jamaica is the third largest of the Caribbean Islands and the largest West Indian Island within the British Commonwealth. It is positioned at or around latitude 18°N and longitude 77°W . The land area covers 4,400 square miles (11,440 Km^2 /2,816,000 acres/1,126,400 hectares) with a maximum transverse length of 146 miles and width varying from 22 to 51 miles (35 - 81 Km).

Topography

There is a close relationship between the topography, soil and climate of Jamaica. For the purposes of this presentation five zones may be identified.

- (a) The Blue Mountains. These dominate the eastern part of the island and attain an elevation of 7,400 feet (2,220m) plains. The metamorphic and sedimentary rocks of this high rainfall area give rise to very steep slopes being subjected to heavy erosion, particularly when not protected by permanent forest.
- (b) The Central and Western Limestone Plateau. Approximately 60% of the island is derived from limestone formations which mostly occur in this plateau. It seldom exceeds 3,000 ft. (1,000m) in elevation and in part shows extreme ^{Karst}~~Krast~~ landforms such as are typified in the Cockpit Country. In broader valley bottoms porous Bauxitic soils may reach sufficient depth to be exploited as a mineral resource. Problems of soils rehabilitation of mined-out land as well as soil and water conservation are important in the agricultural development of these areas.
- (c) The Central Inlier and Similar Areas. The limestone plateau has been breached in 9 areas to expose inliers or 'windows' of easily erodible sediments which are mainly of volcanic origin. Moreover, the intensively cultivated steep-sided valleys have

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little residual forest cover. The heavy rainfall which occurs has contributed to considerable soil erosion especially in areas in which farming has been undertaken under conditions of unsound land use.

- (d) Interior Valleys. These are mainly poorly drained alluvial inland valleys, and include St. Thomas Ye Vale, Queen of Spains Valley, and the Upper Morass of the Black River, the latter now being reclaimed.
- (e) The Coastal Plains, are best developed on the South Coast as most of the perennial rivers flow in this direction. There are many dry river beds in the limestone areas, and these during heavy rains are subject to flash floods. The Southern plains being on the leeward side of the prevailing winds often suffer from a prolonged dry season and so are dependent during those periods on irrigation water for certain crops.

1.2 Climate

A wide range of micro-climates exists in the island. The prevailing winds are east-north easterly. The parish of Portland due to its location and topography, receives the highest rainfall, reaching a maximum of over 200" (5,000mm) annually. The central part of the Southern coastal plain, and the coastal area between Montego Bay and Discovery Bay on the north suffer from severe dry seasons lasting 4 - 5 months of the year. The Central Plateau above the 2,000 ft. (600m) contour receives 60 - 100 inches (1,500 - 2,500mm) rain which falls over a period of 8 - 11 months. The remaining area with an annual rainfall of 20" - 60" (500 - 1,500mm) has a marked dry period of 1 - 3 months. Average rainfall data over a period of 90 years provide a useful general guide. However, within recent years there have been considerable variations from these averages both on annual and on monthly bases. There are two recognizable rainy periods, one peaked on May and the other on October. Rainfall

The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that every entry should be clearly documented and supported by appropriate evidence. This includes receipts, invoices, and other relevant documents that can be used to verify the accuracy of the records.

The second part of the document focuses on the process of reconciling accounts. It explains how to compare the internal records with the bank statements to ensure that they match. Any discrepancies should be investigated immediately to identify the cause of the error and correct it. This process is crucial for maintaining the integrity of the financial data.

The third part of the document addresses the issue of budgeting and financial planning. It provides guidance on how to set realistic goals and allocate resources effectively. This involves analyzing past performance and identifying areas for improvement. By creating a detailed budget, organizations can better manage their finances and ensure that they are on track to meet their objectives.

The fourth part of the document discusses the importance of transparency and accountability in financial reporting. It stresses that all financial information should be disclosed accurately and in a timely manner. This helps to build trust with stakeholders and ensures that they have the information they need to make informed decisions.

The fifth part of the document covers the topic of risk management. It outlines the various risks that can affect an organization's financial health and provides strategies for identifying, assessing, and mitigating these risks. This includes diversifying investments, maintaining adequate insurance, and implementing strong internal controls.

The sixth part of the document discusses the role of technology in modern financial management. It highlights the benefits of using software solutions to streamline processes, reduce errors, and improve efficiency. This includes accounting software, CRM systems, and data analytics tools.

The seventh part of the document addresses the issue of compliance with financial regulations. It explains the importance of staying up-to-date on the latest laws and regulations and ensuring that all financial activities are conducted in accordance with these requirements. This helps to avoid penalties and legal issues.

The eighth part of the document discusses the importance of regular financial reviews and audits. It explains how these reviews can help to identify potential problems and ensure that the financial records are accurate and complete. This is a key component of good financial management.

The ninth part of the document covers the topic of financial forecasting. It provides guidance on how to use historical data and market trends to predict future financial performance. This helps organizations to make more informed decisions and plan for the future.

The tenth part of the document discusses the importance of maintaining a strong relationship with financial institutions. It explains how to communicate effectively with banks and other lenders to secure the best possible terms and conditions for financing.

The final part of the document provides a summary of the key points discussed and offers some final thoughts on the importance of sound financial management for the success of any organization.

is very unevenly distributed and the ability to predict its incidence is very low. This sometimes results in crop loss through diseases, pests, drought, flood, etc.

Temperatures on the plains average 86° - 90°F (30° - 33°C) during the day with a corresponding low of 69° - 75°F (20° - 24°C) at night. Temperatures may be 10° - 20°F (1°-6°C) cooler in the hills where the daily range is 15°F (9°C). It is evident that the varied rainfall and temperature patterns need consideration in the selection of crops and the management of soils.

- 1.3 Soils and Land Capability. Over 90 soils have been identified in soil surveys which were mapped in Jamaica on a parish basis, on a scale of 1:12,500 and reduced for publication to 1:50,000. The soils are conveniently classified according to their geological derivation, and each soil type is given a Map number. Each soil type is typified by texture, structure, and chemical analysis, and fertilizer recommendations are made on this basis. Recommended crops for an area are specified in the Technical Guide Sheets. These recommendations take into consideration the fact that easily erodible soils need appropriate conservation measures and that a favourable soil/crop relationship must be maintained to give a productive economic crop, regardless of slope or soil type.

All available data including information on climate and local agriculture has been used as the basis for placing lands into land capability classes (classes 1 - VI) based on slope (Table 1). The limitations of each class necessitate particular management. Land capability maps have been prepared from the soil survey maps by the Agricultural Chemistry Division of the Ministry of Agriculture. They have been reduced in scale to present a general Agricultural Land Capability map of the island. However when undertaking specific feasibility and development studies for certain types of project, more detailed surveys and land

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Parish	A(0-2°)	slope	B(2-5°)	C5-10°	D(10-20°)	E(20-30°)	F(over 30°)
St. Andrew	800 (320)*		450 (180)	5,750 (2,300)	11,750 (4,700)	55,550 (22,220)	12,100 (4,840)
St. Catherine	20,000 (8,000)		20,000 (8,000)	85,000 (34,000)	45,000 (18,000)	30,000 (12,000)	85,000 (34,000)
Trelawny	432 (173)		41,659 (16,664)	22,956 (9,182)	11,293 (4,517)	39,521 (15,808)	107,202 (42,881)
St. Ann	1,075 (430)		39,793 (15,917)	56,304 (22,522)	59,223 (23,689)	80,680 (32,272)	59,537 (23,814)
St. Elizabeth	5,492 (2,197)		49,816 (19,926)	68,901 (27,560)	3,333 (1,333)	29,327 (11,731)	98,152 (39,260)
Clarendon	21,000 (8,400)		27,000 (10,800)	91,000 (36,400)	38,000 (15,200)	45,000 (18,000)	52,000 (20,800)
Manchester	324 (130)		10,558 (4,223)	60,908 (24,363)	16,614 (6,645)	30,804 (12,321)	82,220 (32,888)
Hanover	870 (348)		15,340 (6,000)	16,200 (6,400)	18,900 (7,560)	18,020 (7,208)	43,625 (17,450)
St. Mary	9,000 (3,600)		10,500 (4,200)	50,500 (20,200)	40,000 (16,000)	18,500 (7,400)	6,250 (2,500)
Portland	5,950 (2,380)		8,050 (3,220)	28,750 (11,500)	17,000 (6,800)	59,900 (23,960)	18,400 (7,360)
Westmoreland	5,392 (2,157)		47,009 (18,803)	24,712 (9,885)	22,934 (9,173)	19,527 (7,811)	66,247 (26,499)
St. Thomas	5,430 (2,172)		19,570 (7,828)	24,465 (9,786)	11,390 (4,556)	59,800 (23,920)	15,305 (6,122)
St. James	1,700 (680)		12,650 (5,060)	13,600 (5,440)	18,650 (7,460)	15,600 (6,240)	74,350 (29,740)
TOTAL	77,445 (30,978)		322,395 (128,966)	549,046 (219,618)	314,087 (125,635)	502,231 (200,892)	720,368 (288,147)

* hectares in parentheses

(A)

(A)

capability maps may be required, depending on the degree of precision needed and the availability of the necessary financing.

Other (ecological and economic) factors determine the final choice of farming systems for any given location, e.g. micro-climate, accessibility, irrigation, drainage, availability of water and marketing facilities, as well as inputs and techniques necessary to secure optimum returns.

1.4 Distribution of Land. The available land, according to Land Capability classes, on a Parish basis is set out in Table 1 & Fig. 1 and was compiled from the Soil Survey reports.

Table 1 indicates that land having slopes E and F, which are not usually recommended for cultivation, occupy more than half the available area in Jamaica. The best land of A and B slopes represents only a sixth of the total land and is mostly used for the production of export crops, e.g. sugar cane and bananas. The E and F slopes of the limestone areas cannot be cultivated and are best left in natural forest, but those occurring, for example, in the Central Inlier and Yallahs Valley are formed of easily erodible sedimentary rocks. Where these occur in high rainfall areas they should only be used for intensive agriculture after appropriate soil conservation practices have been provided and these should be associated with sound land use practices through the cropping systems pursued. Ideally this land would be retained in forest, but can and does serve as an important food growing area. Farming systems suitable to these ecological areas need to be studied so as to increase their productivity and become economically attractive to the farmers.

The Distribution of land in Jamaica is tabulated below (Table II) in terms of number and size of farms.

Table II

Number and Size of Farms 1968

Size group in acres	<u>Number of Farms</u>		<u>Size of Farms</u>		
	Number	% of total Farms	Acres (ha)	Acreage % of total acreage	Average size of farm in ac (ha)
Under 5 (2ha)	149,703	78.0	223,818 (89,527)	14.9	1.3 (0.6)
5-25 (2-10 ha)	36,881	19.9	335,548 (134,219)	22.1	9.0 (3.6)
25-100 (10-45 ha)	3,004	1.6	125,104 (50,042)	8.3	4.6 (1.84)
100-500 (45-200 ha)	699	0.4	148,501 (59,400)	9.9	212.4 (84.96)
Over 500 (200 ha)	295	0.2	676,426	44.9	2,293.0
TOTAL	190,582	100.0	1,507,397 (602,958)	100	8.1 (3.2)

Agriculture (including forestry) occupies approximately 55% of the total land in Jamaica. Farms of less than 5 acres represent 78% of the number of farms and account for only 15% of the land in farms, while those over 500 acres (200 hectares) represent 0.15% of the number of farms and account for as much as 45% of the land in farms. Data from the 1978/79 Agricultural Census is still being processed. Due to the most recent distribution policies since the previous census (1968/69) it is not possible to guesstimate the levels of change in land distribution.

1.5 The Labour Force. The population (unadjusted) of Jamaica at the end of December 1979 stood at approximately 2.1 million. The rural population represents approximately 66% of the total population and also the greater part of the labour force, including many unskilled labourers. Classifying the labour force in sectors, 33.8% (233,000) of the total labour force was involved in agriculture. Statistics show little significant change in labour force figures between 1962

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and 1975. It is stated in the National Physical Plan of Jamaica 1970 - 1990, that it is foreseen that there will be a continuous decline in the portion of the labour force in agriculture with the consequent increase in demand for the jobs in services, manufacturing and other non-agricultural sectors. For many reasons these targets have not been reached.

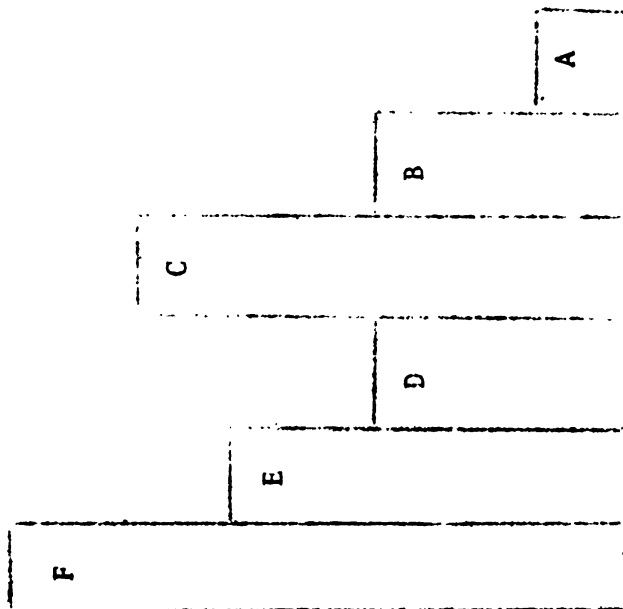
The agricultural labour force represented approximately 40% of total employment in 1960. Some of the factors contributing to projected decreases in the percentage of the labour force in agriculture are:

- (1) The seasonality of agricultural employment produced by the preponderance of a few crops on the larger farms;
- (2) the stigma which traditionally is attached to agricultural labour;
- (3) the higher price paid for unskilled agricultural labour in the bauxite industry, and better incomes which can be obtained in other sectors of the economy;
- (4) low revenue productivity of labour in agriculture due to -
 - (a) scarcity of skills which in turn leads to bottlenecks in production;
 - (b) worsening terms of trade for agriculture particularly in respect to inputs imported from developed countries;
 - (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.

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FIGURE -I
HISTOGRAM OF TABLE I

Total Acreage of Land Capability Class



Acreage by Class (surveyed)

Class A (0° - < 2°)	-	77,445 acres	(30,978 ha)
Class B (2° - < 5°)	-	322,395 acres	(128,966 ha)
Class C (5° - < 10°)	-	549,046 acres	(219,618 ha)
Class D (10° - < 20°)	-	314,087 acres	(125,635 ha)
Class E (20° - < 30°)	-	502,231 acres	(200,892 ha)
Class F (30+)	-	720,368 acres	(288,147 ha)

Fig. I - Histogram of Table I - showing total acreage by Land Capability Class.

A Special Employment Programme within the Soil Conservation Unit under the (Agricultural Engineering Division) was set up in 1975. It was designed to carry out soil conservation works on Government lands employing mainly young people (Pioneers) in rural areas as part of government's policy for increasing employment opportunities. It was undertaken in conjunction with the Social Development Commission. Other Soil Conservation Programmes are carried out on private lands in conjunction with government policy for conserving soil on steep lands. The Smithfield Demonstration and Training Centre continues studies, observations and recordings of soil loss, cropping and forest cover, based on bench terracing. The Allsides Project GOJ/IICA (FSB) while being predicated on bench terracing has a sub-project at Olive River which is investigating and demonstrating cheaper soil conservation measures.

1.6 Irrigation and Drainage Projects. These are important to maintain and boost production and to bring new areas into the scheme. Many areas exist, particularly in the southern plains where lack of water is the main constraint to agricultural production.

(1) Rio Cobre Irrigation Scheme established over 100 years ago embraces 56 miles of canals and irrigates about 30,000 acres (12,000 ha). Most of this water is used for the production of sugar cane, bananas and cattle. The supply is inadequate and the low water table associated with increasing salinity problems has caused the authorities to limit the number of new wells which can be bored. In addition, seepage occurs in the headworks of the dam.

(2) Mid Clarendon Irrigation Scheme started in 1950 with the main objective of providing irrigation water for approximately 25,000 acres (10,000ha) of arid lands in the NW section of the Vere plains.

Other projects while smaller by comparison at the moment have a potential for significantly increasing agricultural production. These include:

(3) St. Dorothy Irrigation System embraces an area of 20,000 acres (8,000 ha) in the St. Dorothy Plains of St. Catherine. It consists of four bore-hole wells and a 17 mile canal system.

(4) The Pedro Irrigation Project is designed to irrigate 2,000 acres of land in the Pedro Plains of St. Elizabeth. Further expansion is expected on the basis of the findings of the United Nations Special Fund Groundwater Survey Project.

(5) The Queen of Spains Valley, Trelawny has also been under preliminary investigation by the same UN Project team. There is evidence of a large reserve of water, a small portion of which has already been tapped for domestic usage in the Montego Bay area. Studies indicate that the water resources of this area can be used for improving both agricultural production and domestic supply considerably.

(6) Black River Upper Morass Drainage and Reclamation Project. Work has already started in this area. The Black River Upper Morass Development Company currently is working on a drainage and Irrigation project being financed from IDB sources. IICA has been given responsibility for providing technical assistance on a consultancy basis using IDB funding, over the next 2 years.

1.7 In addition to the above, attempts have been made to obtain water from a Mini-dam Project, predicated on the storage of rain water in flat areas which have a water shortage problem for agricultural purposes. To date this project has not been very successful. In general terms, while there is a shortage of water for irrigation purposes such water as is available has

not been used efficiently as evidenced by wastage due to overflowing, etc. The Irrigation programme, formerly the responsibility of MINAG was transferred to the Ministry of Local Government in early 1980, leaving only on-farm irrigation to the MINAG.

1.8 Credit and Subsidies

There are credit and subsidy schemes designed to assist small farmers especially in increasing production and productivity. These schemes support and sometimes form an integral part in land distribution (settlement) programmes. The more important credit and subsidy schemes are:

1.8.1 The Self Supporting Farmers Development Programme (SSFDP)

A Loan programme started in 1973 and funded by the IDB with the Ministry of Agriculture providing the technical assistance through the Division of Special Projects. Fifty two (52) area extension officers were assigned to this project, normally to serve farmers having 5 - 25 acres (2-10 ha) giving a maximum loan of \$10,000 to any beneficiary. A total of 3,000 farms were to be developed under this programme. Up to February 1975 loans totalling \$1,500,000 had been approved and included both crop and livestock development. Since 1975 the Jamaica Development Bank assumed full responsibility for the overall administration of the SSFDP).

1.8.2 A crop lien programme was started in 1977 with a view to making credit available to farmers under easier terms.

1.8.3 Government subsidies under the Subsidy Assistance Scheme were provided to enable small farmers to extend production and to obtain socially desirable amenities. There are several schemes under this programme as listed below, mainly for farms up to 100 acres (or 200 acres where the crops are bananas or cane):

- Hill Farming
- Farm Buildings
- Farm water supplies e.g. tanks
- Dairy Development - Pasture improvement
installation of equipment
- Land Preparation
- Farm Housing

1.8.4 Credit for agricultural production is obtainable from the two Statutory Boards: Agricultural Credit Board and the Jamaica Development Bank. The main sources other than these are commercial banks and merchant houses.

1.9 Marketing

Separate organizations exist for marketing agricultural products. The marketing of the major export crops is undertaken by their respective boards or statutory bodies created especially for such purposes. The Agricultural Marketing Corporation (AMC) which was established in 1963 has a major responsibility for crops produced for domestic consumption. The AMC which was created within the Ministry of Agriculture is now under the portfolio of the Ministry of Industry and Commerce. Its main functions are to:

- (1) Establish and maintain an orderly and efficient system of agricultural marketing;
- (2) provide for the collection, transportation, grading, packaging and processing of agricultural produce;
- (3) export produce not otherwise covered by commodity institutions; and
- (4) stimulate the production of crops.

The Ministry of Agriculture has just created a Marketing Section whose main objective is to improve the marketing profile for agriculture. The main channels for the distribution of crops are the Parish Council markets, super-markets and higglers.

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The higgler system handles between 70% and 80% domestic food crops and it is estimated that this gives employment to 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.

2. AGRICULTURAL INSTITUTIONS

- 2.1 The Ministry of Agriculture is responsible for determining and carrying out government's agricultural policy. Since the advent of the ministerial system in the 1950's the name of the Ministry or Ministries responsible for agriculture, as well as the subjects for which they were made responsible have undergone a number of fundamental changes. Currently there is one Ministry of Agriculture, but a number of subjects regarded as being critical in the area of agriculture reside in other ministries. The main controversial areas, judging from current public dialogue are: the Agricultural Marketing Corporation, the Jamaica School of Agriculture, the Cooperative Department, and 4-H Clubs.
- 2.2 Arising from the recommendations of the Agricultural Sector Study carried out by government in 1973/74 a number of structural and administrative changes were initiated. Others have since been introduced. A major change was the creation of the Production Unit which by degrees submerged the role of Extension, and engulfed the roles of key areas within the Ministry. This led to many distortions which are currently being sorted out. These structural changes and their results together with those which are usually expected when there is a change in Government have become a part of a continuing re-organization exercise which has become characteristic of the Ministry of Agriculture since 1976. The rather indeterminate situation which has been associated with these changes has made it extremely difficult to state with any degree of certainty what is the structure of the Ministry at any given point in time.

- 2.3 Experience has shown that in situations such as those identified above, it has been virtually impossible to undertake a realistic evaluation or to comment with a high degree of **confidence** on the effects due to specific structural arrangements of the system, particularly when the point of reference keeps changing rapidly.
- 2.4 As a result of the change in government (October 1980) the new Administration is re-examining the existing structure to decide what changes will be necessary to enable the agricultural sector to meet the goals and objectives set out in the Government's manifesto. Historically speaking the Ministry of Agriculture has within its portfolio a number of Departments and Divisions as well as a number of Statutory Bodies which were created to pursue certain specific functions which it was felt could not be accommodated within the Departments and Divisions themselves.
- 2.5 The main departments, divisions and statutory bodies which fall under the portfolio of the Ministry of Agriculture, as well as a list of some of the main areas of activities of the Ministry of Agriculture are:
- Land Administration Division - Surveys, Titles, etc.
 - Land Development and Utilization Commission
 - Land Authorities
 - Land Lease
 - Production Unit and Extension
 - Forestry and Soil Conservation
 - Agricultural Credit Board
 - Agricultural Engineering Division (On-farm irrigation, Micro-dams, Farm Machinery, Workshops)
 - Research and Development Department (includes Crops and Soils, Agricultural Chemistry, Livestock, Plant Protection, Produce Inspection)
 - Agricultural Development Corporation
 - Veterinary Division

Planning and Policy Review Unit

Physical Planning

Data Bank and Evaluation Division (includes the
Agricultural Library)

Fisheries Division

Agricultural Marketing

Agro-Industry

Produce Inspection

Public Gardens

Jamaica Agricultural Society

Commodity Industries

- Sugar Industry Authority & Sugar Industry Research Industry
- Sugar Workers Cooperatives
- Coconut Industry Board
- Banana Industry - Banana Company
- Citrus Industry
- Cacao Industry
- Coffee Industry
- Pimento Industry

Black River Upper Morass Development Company (BRUMDEC).

3. REDISTRIBUTION OF AGRICULTURAL LAND

3.1 Different approaches have been employed by different governments over the years to redress the imbalances which exist in land distribution. These include:

3.1.1 Land Settlement Programme, started experimentally in 1929, but implemented in 1939. Land acquired by government was made available to farmers on a freehold basis (first on a lease basis until installments were paid). This programme was revised in 1973, discontinued on a freehold basis and continued on a leasehold basis. The new government has already stated that it favours a freehold type of tenure.

3.1.2 Land Development and Utilization Commission Act of 1966 which was enacted to enable Government to exercise powers in

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bringing idle or under-utilized lands into production. In general only farms over 40 hectares (100 acres) have been critically examined.

3.1.3 Project Food Farms was started in 1972 specifically to utilize government-owned lands which had been acquired, in some instances as idle land. Food production was initiated on some ten (10) properties as an intermediate stage in their development. The project was discontinued in 1977.

3.1.4 Project Land Lease was started in April 1973, its major objective being to provide additional lands to small farmers for farming. Three (3) phases, I, II and III were identified.

Phase I - provided supplemental tenancies to farmers who had homesteads within a 2 mile (3.2 km) radius of properties obtained by government from private land-owners on a voluntary lease basis. Lease to farmers was on a 5 year basis, subject to renewal for a further period of 5 years. Farmers obtained credit in kind to be repaid on the harvesting of crops grown.

Phase II - designed to provide supplemental land (owned by Government) on a lease basis to enable farmers to increase their farm size to that of an economic holding. The lease may last for a period of up to 49 years, subject to renewal. Rights of succession are included. Limited infrastructure in the form of roads and water are to be provided by Government in critical areas.

Phase III - predicated on the use of economically viable farms to be developed from government-owned land on a 49 year leasehold basis. The lease is subject to

renewal and rights of succession are provided. Infrastructure - roads, water, housing etc. is included as well as various agricultural services. Implementation of this phase was delayed, and the new government is re-examining land reform programmes.

3.1.5 A number of other specific projects and programmes have been initiated. These include:

(i) Cornwall Youth and Community Development Project

(Nyerere Community Farm) involves 6 properties covering an area of 12,433 acres (4,973 ha). The project involves settlement strategy on a leasehold basis, housing, agricultural production. Special consideration is given to the settlement of youth and of squatters and farmers of the immediate community. The project started with 18 pioneers. Training was provided in basic and remedial education, and community education which should include agricultural and ancillary skills.

(ii) Rehabilitation and Settlement of Bauxite Lands

In February 1980 the Government of Jamaica acquired approximately 200,000 acres of bauxite land owned by the five mining companies (Reynolds, Kaiser, Alcan, Alcoa and Alpart), as part of a policy governing the ownership of land by non-nationals and the expansion of land distribution under a leasehold system of tenure. The bauxite land will be mined in accordance with a pre-determined mining schedule. In the interim portions of these lands which are suitable for agriculture will be leased to farmers until required for mining. In the case of the Reynolds agricultural lands and processing plant acquired by the Government of Jamaica are to be operated by the GOJ through a Company, the operations of which are currently being projectized.

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4. AGRICULTURAL DEVELOPMENT

- 4.1 In 1973 shortly after a change in Government Jamaica sought and obtained assistance from the International Bank for Reconstruction and Development (IBRD) to undertake a full study of the Agricultural Sector. The study (The Agricultural Sector Study) elaborated on identified and current problems and constraints, and suggested methods of improvement and recommendations for achieving those ends.
- 4.2 The philosophy expressed in the Green Paper on Agriculture which resulted from the study which included inputs from a very wide cross-section of the agricultural fraternity, involved the modernization of the Agricultural Sector within the framework of overall national economic development. It emphasized rural development, taking into consideration the high man/land ratio and the need to make the rural environment attractive enough to put a brake on migration to the urban areas. In summary terms it pinpointed major problems, constraints and action which needed to be taken in implementing development programmes. A White Paper on Agriculture which was prepared in 1975, on the findings of the Green Paper, provided the basis of many of the plan proposals presented since then.
- 4.3 Another sequel to the Green Paper was the report prepared by the Jamaica Agricultural Research Reconnaissance Mission. This Mission's study took into consideration the report of the Statutory Bodies' Committee to the Cabinet, which recommended inter alia the transfer to and the co-ordination of the research and extension functions of Statutory Bodies which fell under the jurisdiction of MINAG. There was also the necessity to assist in strengthening MINAG's capacity to implement a programme of land reform and development. Main considerations related to avoidance of duplication

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are:

- centralizing data storage and control in headquarters, while project implementation would be decentralized into 3 Divisions (later increased to 4 Divisions);
- a reorganization of MINAG's Departments and Divisions which would lead to effective co-ordination of research, development, extension and production;
- effective transfer of technology for the benefit of farmers.

4.4 Arising from these proposals Prof. Arnon (under the aegis of FAO) prepared a report titled "Jamaica Agricultural Research Extension and Training" (Mission Report FAO Rome 1979). A year prior to this the IDB undertook to finance an operational programme for Agricultural Research and Development (R&D) and to this extent made certain stipulations in connection with its participation as a financing agent. One major requirement was that MINAG's structure should be stated in precise terms and that the names of senior personnel to fill key posts in this R&D programme should be listed. Although the names of the personnel were stated from as early as 1978 the programme is still in limbo. Tenders are now being examined to select an organization or agency to implement the programme. The short list of firms includes IICA.

5. ORGANIZATION OF THE MINISTRY OF AGRICULTURE

5.1 Different strategies have been adopted over the years with a view to generating interest in agriculture. The question remains that of creating appropriate measures for improving the receptivity of farmers to improved technology. The methods used have been based on assumptions concerning decentralization of Government's operations.

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5.2 These re-organization methods have been pursued with a view to creating opportunities for improving the profile of agriculture's performance, specifically in the areas of increased production and productivity, increased farm income, increased substitution of imported foods, development of agro-industries, increased employment opportunities and increased foreign exchange earnings. These would be expected to contribute to an improvement in the quality of life of rural people, most of whom are dependent on agriculture for a livelihood.

5.3 The information which immediately follows sets out the value of the Main Agricultural Exports for the period 1975 to 1980, and that for the domestic market for the same period.

Table 3

Value of Agricultural Exports 1975-1980 (J)\$'000

Item	1975	1976	1977	1978	1979	1980
Sugar	139,688	55,860	71,517	92,510	103,817	97,446
Bananas	14,654	11,921	16,703	24,907	32,205	16,314
Citrus	4,717	3,955	3,124	5,684	2,677	3,285
Pimento	4,325	4,593	4,979	8,132	7,198	6,927
Cocoa	3,496	3,557	3,177	8,270	11,609	8,015
Coffee	3,116	4,129	6,585	4,350	6,192	9,510
Ginger	303	660	526	843	1,228	829
Rum	5,801	5,981	6,370	7,687	13,710	17,086
Molasses	900	2,339	1,203	3,291	4,293	1,295
Root Crops		830	887	2,958	4,355	6,350
Total	177,000	93,825	115,071	158,632	187,284	167,057

Source: Economic and Social Survey of Jamaica 1980
National Planning Agency.

Table 4

Volume of Agricultural Production 1975-1980

Item	1975	1976	1977	1978	1979	1980
Sugar Cane ('000 tons)	3,524	3,571	3,177	3,515	2,931	2,736
Sugar ('000 tons commercial)	355	357	288	288	279	247
Bananas* ('000 tonnes)	68	77	80	75	69	33
Citrus** ('000 boxes)	1,028	1,000	666	886	703	1,112
Pimento (tons)	2,151	4,181	1,989	2,502	1,249	928
Cocoa (tons)	1,771	1,573	1,614	1,300	1,793	1,368
Coffee** ('000 boxes)	381	230	312	179	451	250
Ginger (short tons)	930	995	423	687	630	438
Rum ('000 proof gal.)	6,455	4,475	5,005	4,278	5,040	5,532
Molasses (tons)	120	118	117	133	102	101
Copra (short tons)	6,308	5,624	3,406	2,124	2,023	1,738
Meat (Million lb)	103	102	111	111	114	109
Fish (Million lb)	36	36	37	37	36	36
Egg (Million)	147	162	152	157	150	102
Milk (Million quarts)	43	42	41	43	40	n.a.
Root Crops*** (Million lb)	460	408	517	656	620	481
Vegetables *** (Million lb)	203	223	276	354	295	290

* Exports

** Deliveries to packaging and processing plants

*** Selected items

Note: Production figures for citrus, cocoa, pimento, sugar cane and coffee are for the crop year.

Source: Economic and Social Survey of Jamaica, 1980
National Planning Agency.

5.4 Sugar continues to be the principal agro-based export commodity. The sugar industry controls 150,000 acres of the best land in the country. It is still the largest single employer of labour, providing employment opportunities for some 60,000 workers in the production of sugar cane on farms and in producing sugar in the factories. This industry with its own authority (Sugar Industry Authority) and its research unit (Sugar Industry Research Institute) continues to keep industry technology at a high level. Exploratory action has been initiated in connection with determining for adoption appropriate multi-cropping systems involving sugar cane. In spite of various

actions for rationalizing the industry, production and productivity of sugar cane continue to deteriorate.

5.5 In 1971 Government acquired, 74,000 acres of sugar cane lands mainly from the West Indies Sugar Company, the second largest proprietor of agricultural land, and a smaller part from the Bernard Lodge estate, for resale to Jamaican cane-farmers, leaving milling operations to the factory owners. These lands were eventually used in the creation of Sugar Workers' Cooperatives, starting with three (3) in 1974, and increasing to 23 by January 1977. The intention was that the lands would be farmed on a commercial basis by former sugar workers and by small farmers who have been elected to join the cooperatives. On this basis about 47,000 acres have been leased to the cooperatives, and of this acreage 39,560 are planted in sugar cane. There are approximately 5,000 members, with about 260 managerial, technical, accounting and clerical staff employed to the cooperatives.

5.6 The Banana Industry which ranks second to the Sugar Industry in terms of land utilization, employment opportunities and export earnings, is also having its share of problems to regain its former level of performance in the over-all economy. This performance within the last two years has been severely affected by successive years of drought and windstorm damage.

5.6.1 The Banana Industry has been subjected to repeated restructuring which had led to the former Banana Board being converted into the Banana Company of Jamaica, and to other changes involving the operations of the All Island Banana Growers' Association (AIBGA). Recent changes have restored the AIBGA to its originally established lines of operation. The main objective is to regain the former production profile of the industry, especially for the export market while at

the same time producing for local consumption. The Banana Company itself has become involved in the production of bananas (grown in pure stand, specifically to meet requirements for the foreign market).

5.7 The Citrus Industry

The citrus industry has the potential for increasing its contribution to the country's foreign exchange earnings, although citrus products enjoy a lucrative local market. The industry, however, is plagued by many problems, many of which also affect other major crops produced locally. The main problems relate to:

- (i) substandard cultural practices which lead to low production and productivity;
- (ii) inadequate and irregular freight for the overseas trade, as well as high cost of shipping and cold storage;
- (iii) ineffective marketing arrangements; and
- (iv) technical industry problems which result in product loss.

Most of the citrus groves (oranges and grapefruits) mainly are as old as 25 years. In many instances groves have been neglected, sometimes due to inability to procure necessary inputs, but often due to farmers not pursuing appropriate cultural practices. Main Proposals in the Five Year Plan (1978 - 1983) included programmes for resuscitation and expansion.

5.8 Other Major Crop Industries

Other main industries are coffee, cacao and spices. Proposals for their development are similar to those for other export crops. Jamaica's performance for these crops for which it

obtains premium prices on world markets is much below the potential, thus proposals were included in the Five Year Plan for 1978 - 1983 for corrective measures. Where new plantings are contemplated in many instances the major crops all compete for the same land and this has created inter-industry disaffections. Involvement in zoning exercises has not been able to resolve these problems.

5.8.1 Vegetables

The production of food for domestic consumption remains an important area in agriculture. Not only is this the case in relation to the objectives set for the sector, but also there is the fact that it continues to be the sub-sector of agriculture which shows the highest increases over recent years. Pre- and post-harvest losses continue to affect the production of vegetables, some cultural practices being handicapped by lack of critical chemicals due to foreign exchange restrictions. These must all be considered within the ambit of sub-standard practices used in many instances.

5.8.2 Grains

All grains are performing well below their potential. The only possible exception is the peanut, the production of which although increasing significantly during the last 5 years can still be increased considerably. Work on rice is continuing both at the field and experimental levels. The development of the poultry and pig industries which rely almost entirely on imported grains creates great pressures for increasing the local production of both grain cereals and grain legumes.

5.8.3 Other Fruits and Exotic Crops

These include avocados, various fruit tree crops, a few soft fruits such as strawberries. The potential for development is largely untapped. Problems are mainly biological, varietal and environmental, in addition to the lack of

appropriate technological packages.

6. CURRENT SITUATION IN AGRICULTURE

6.1 Problems in Agriculture

6.1.1 Over a considerable period of years, performance in the agricultural sector has fallen short of the potential. The contributory reasons are many. They relate, inter alia, to farmers, to the land which they operate and to the conditions under which farming is practised. These reasons are no different from those which obtain in many other countries of the region, but they are of particular relevance in relation to the purposes which the agricultural sector is expected to serve.

6.1.2 In general terms the Agricultural sector is required to provide food, export crops, other agricultural products and to be a source for earning income and developing employment opportunities. Agricultural production has lagged considerably both in absolute and in relative terms and this has been indicated by the continuing decrease in the contribution of the sector to G.D.P. Increased production of some crops grown for domestic consumption has not been adequate to make up for considerable losses in others. Farmers have not been able to produce quantities which lie within the country's potential, thereby losing a great opportunity to exploit the favourable prices which obtain on world markets. This is further aggravated by the high unit production costs of export crops, inefficient management, substandard levels of technology, and inability to procure key inputs (largely imported) due to limitations caused by unavailability of foreign exchange. A number of 'plans', of variable content and characteristics have been developed in the Ministry of Agriculture over the last three or so decades. There have been two such plans for the 1980 decade. No plan as such has been completely implemented and, in fact there has been a tendency for plans to be

extended or "roll". The last of the "rolling plans" was the 1978 - 1983 plan, the preparation of which was finalized after elements of the plan had actually been implemented as a part of an earlier plan formulation.

6.1.3 A change in Government often affects the level of continuity of existing plans and the 1978 - 1983 plan is no exception. With a change in government in October of 1980 and with the stated intention of the new government to effect certain changes, it is relevant to indicate the broad policy guidelines spelt out for the 1978 - 1983 Plan as formulated as a basis for comparison with the policy elements as set out in the manifesto of the new government.

6.1.4 As stated in the Preface of the 1978 - 1983 Plan, a clear statement of the MINAG philosophy, policies, strategies and targets for the various sub-sectors of Agriculture was presented for the period under review. These have been summarized and modified to conform with elements not explicitly spelt out in the plan strategy. Basically, over the years the main thrust for agriculture has not changed but rather the manner in which it was proposed to meet the objectives.

6.1.5 The terms of trade in Agriculture have continued to worsen. Such a chronic situation has been developing since the late 1960's. It has been further aggravated by the increasing population, and by the vagaries of weather (drought followed by flood conditions).

6.1.6 The main problems affecting the performance of Agriculture in Jamaica are set out, not necessarily in order of importance.

- Given the role expected of the Agricultural Sector in rural development in particular and national economic development in general, production inputs

and the facilities provided are inadequate for achieving the agricultural development potential.

- The most (some 80%) of the farmers are small operators who occupy steep land much of which is prone to severe erosion and is marginal for agriculture. These farmers are responsible for most (over 90%) of the production for domestic consumption.
- A significant portion of the land which is regarded as being suitable for agriculture has severe limitations due to lack of water, steep slopes, inaccessibility and low productivity.
- The high man/land ratio coupled with the very unequal distribution of land in farms creates a scarcity of land for small farmers and reinforces the tendency towards the creation of minifundia.
- Many farmers lack the skills necessary for achieving higher levels of production, and continue to use obsolete practices. There is inadequate adaptive research for developing systems capable of increasing food production on a sustained basis.
- Inadequacies in appropriate training facilities and in arrangements for upgrading the skills of farmers and providing qualified personnel required to perform the duties of a dynamic extension service.
- Employment opportunities outside agriculture are limited.
- The age of the farmer is relatively high with a national average of over 50 years.
- There is contempt for work of an agricultural nature due to the stigma which is traditionally associated with many agricultural pursuits.

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- Group activities are inadequately developed particularly among the many thousands of small farmers who could benefit from organized cooperative effort and from the economies of scale which would result.
- There is an inadequacy of credit for farmers generally, but small farmers in particular, thereby making it difficult for them to apply recommended levels of farm inputs to increase production and levels of productivity.
- Continuing escalation in the cost of key production inputs, and in many instances inability to procure them due to foreign exchange problems.
- Marketing and transportation facilities are inadequate.
- The high incidence of praedial larceny continues to be a disincentive for expanding agricultural production.
- Provision of public facilities such as schools, domestic water supplies, health and recreational centres is inadequate, thereby encouraging migration to urban areas.
- The continuing short-term changes in the structure, programmes and administration of the Ministry of Agriculture and related agricultural agencies on an islandwide basis.

6.1.7 Notable effects of these problems are the low productivity and incomes in agriculture, low food production and a resulting increasing dependency on imported foods. There is in addition, under-utilisation of arable land - unimproved pasture land in particular, as well as on farms of all size groups.

6.2 The World Food Conference held in Rome in November 1974, concluded that the stage had been reached where "developed" countries could no longer make large quantities of food available to "developing" countries. The prices of imports would continue to rise, and inevitably developing countries would have to depend to a greater

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extent on their own resources. At that time although the energy crisis had started it was no where near as serious as it is today. It is against such a background that the important role of agriculture should be considered in terms of assisting to reduce reliance on imports, by creating foreign exchange earnings on the one hand, and also by careful management of foreign exchange earnings.

7. THE AGRICULTURAL POLICY GOALS & STRATEGIES FOR THE FIVE YEAR PERIOD 1978/83

Against such a background the policy goals and strategies as proposed for the 1978/83 five year period are set out in the following sections.

7.1 The Agricultural Policy Goals

Based on the government's philosophy for rural development, the principal goals for agricultural development policy over the 5 year period 1978/83 were:

- i) to produce as much of the food and raw materials as is feasible to meet requirements for:
 - a) adequate food and nutritional levels of the population;
 - b) agro-industries;
 - c) export markets;
- ii) to structure production so as to reduce reliance on imports;
- iii) to ensure that all agricultural land is used to its fullest potential which will result in optimum economic and social benefits to the country as a whole;
- iv) to increase rural incomes (particularly farm incomes);

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- v) to improve rural amenities and social infrastructure as a basis for raising the standards of living of rural people; and
- vi) to provide more employment opportunities so as to reduce unemployment.

7.2 Strategies

The broad strategies for achieving the stated goals include:

- i) payment of reasonable prices to farmers for their commodities in order to provide the needed incentives to bring about increased production, allowing them to earn better incomes and pay better wages, thus reversing the adverse terms of trade between agricultural and non-agricultural enterprises;
- ii) acceleration of the land reform programme and an improved land use programme. The proposal is to plan and implement integrated rural development projects to overcome existing problems and meet the objectives and physical targets set for the Agricultural Sector.
- iii) implementation of programmes designed to instill confidence in the farming community in areas such as security of tenure etc;
- iv) implementation of a substantial irrigation programme, thereby removing one of the major constraints to increased agricultural production and productivity;
- v) implementation of a major soil conservation programme to protect the various watersheds and at the same time allow farmers to practice more intensive agriculture in these areas without increasing the risk of erosion;

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- vi) a reorganized and strengthened Research and Extension Service capable of providing more information and better services to farmers in their various agricultural pursuits;
- vii) the provision of major improvements in the distribution and marketing of domestic food crops, with collaboration from the Agricultural Marketing Corporation, in particular, and the Ministry of Industry and Commerce, and the Ministry of Local Government;
- viii) improvement in the administration of agricultural credit and the provision of more credit to all categories of farmers;
- ix) the production of non-traditional export-crops for existing markets which can be exploited, e.g. Avocados and Mangoes;
- x) rationalization of existing export crops such as sugar, bananas and citrus in order that they might "hold their own" on the world markets and take them off the Government budget.
- xi) the improvement and expansion of the livestock (including fishing) industries; and
- xii) a major thrust in education at all levels for farmers, extension officers etc. and an improvement in the communication systems between the Ministry and the farmers and the general public on a whole.

7.3 Summary of Government's Manifesto for Agriculture

The summary of the Government's 1980 (October) manifesto, in relation to agriculture includes the following:

- * Upgrading 200 towns over 20 years, concentrating on services such as health, water, electricity, transportaiton, housing as well as providing better

educational facilities, recreational opportunities and potential for agricultural development;

- * provision of substantial crop incentives and an improved system for marketing of crops;
- * undertaking land terracing schemes, expanding irrigation and extending agricultural credit;
- * increasing employment by encouraging the establishment of factories for food processing, forestry industries and labour intensive industries;
- * expanding the rural electrification scheme and increasing the availability of water for domestic consumption and for irrigation.

7.4 The Government's agricultural policy which is being designed to achieve economic growth and development covers eight (8) main headings as described below:

- (i) Comprehensive Rural Development Programme
- (ii) Improved income-generating incentives
- (iii) Improved Services to agriculture
- (iv) Land ownership
- (v) Irrigation
- (vi) Crop expansion programme
- (vii) Zoning (Development of Food Production Areas)
- (viii) Livestock Programme

7.4.1 Rural Development Programme

This involves the implementation on a phased basis of a comprehensive programme which will include reinforcing the agricultural base of rural Jamaica, upgrading of a number of selected towns throughout Jamaica and improving the quality of rural life. The intention is that such a programme will

encourage skilled and young people to remain in the rural areas, and provide an adequate work force for agricultural production.

The programme will also encourage the establishment of processing and other industries in a number of selected towns so that a market is easily available for products needed for processing and a diversified set of employment opportunities will be available to those who live in rural areas.

7.4.2 Incomes

Substantial incentives are needed to promote increases in agricultural production. In addition to programmes designed to improve the quality of rural life, the Government will offer incentives which are geared towards the production of export crops and compliance with zoning regulations.

Existing commodity organisations for citrus, coffee, cocoa, etc. should be thoroughly restructured with a view to ensuring higher prices to farmers without having to lose a large portion of his income to middlemen.

7.4.3 Services

The Government intends to further reduce existing centralization in Kingston of services provided by the Ministry of Agriculture and government lending agencies, in order to reduce delays in decision-making and action, achieve greater efficiency and disperse activities throughout the rural areas.

The marketing system should be overhauled to include a rationalization of the transportation facilities for reliable and efficient service as well as a more effective collection network, with emphasis on export requirements.

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7.4.4 Land Ownership

The Government favours an ownership rather than a rental or lease hold system, on the belief that this will provide a significant incentive for the farmer to make improvements to his land, because he knows his family will own the land in perpetuity. Accordingly Government will ensure that farmers who desire to own land will have the right to purchase farm lands on the basis of previous easy payments which never proved burdensome in the past. Those farmers who desire to continue to lease land under existing arrangements will be accommodated.

7.4.5 Irrigation

The intention is to improve the irrigation needs of the country's agricultural base. A set of major schemes has been sited to bring water to agricultural areas in St. Catherine, Clarendon, St. Elizabeth, St. James. Major schemes named include the Blue Mountain, Queen of Spain's Valley, Rio Minho and Black River. In addition measures will be taken for recycling of waste water from the Corporate area for use for irrigation purposes.

7.4.6 Crop Expansion

7.4.6.1 Government policy is to provide the necessary inducement for farmers to increase the production of export crops such as bananas, sugar, citrus, cocoa, coffee and pimento, which attract reasonable prices on world markets. In most of these crops there has been a fall in volume available for export at a time when prices are attractive. The intention is to exploit traditional markets with a view to increasing foreign exchange earnings.

7.4.6.2 Shortages of foreign exchange for the purchase of key production inputs such as fertilizers, pesticides, insecticides, machinery and equipment limit production and so the Government

has decided to provide allocation for the necessary foreign exchange. Growing projects will be provided with professional managers where required (e.g. Banana Company's projects) and will be operated on strictly commercial bases. Financing of irrigation and field equipment will be provided on a credit basis on attractive terms.

7.4.6.3 Government endorses the Sugar Worker Cooperatives which they propose to strengthen by providing necessary funds for technical assistance required to improve efficiency. Inter-cropping will be encouraged particularly in the production of banana and coconuts.

7.4.6.4 Speedy expansion of the forestry programme will be pursued as a means to increasing employment opportunity, conserving soil, improving water retention capacity, while increasing quantity of lumber available for building, furniture making and paper-producing industries.

7.4.6.5 In promoting crops such as sorghum, maize, castor beans and other vegetable oils, horticultural products, necessary funds will be provided for research, development, as well as promotion as an inducement for expanded production on a zoned basis to ensure the availability of cost-effective support services.

7.4.7 Development of Food Production Areas

7.4.7.1 In order to achieve the major objective of self-sufficiency in food the intention is to create food production areas through the use of crop incentives and a zoning system. The number of inland ponds for fish farming will be increased, and the necessary inputs will be provided.

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7.4.8. Livestock

7.4.8.1 An expanded livestock programme will be pursued to achieve a greater degree of self-sufficiency, but will examine the potential for concentrating on effort to export more pedigree blood-stock to take advantage of the CARICOM market under the Caribbean Food Plan. In order to exploit the topographical conditions provided by our hilly lands, and to develop the propensity of small stock - sheep and goats - to achieve a higher protein conversion rate than other bovines, measures will be pursued for supporting and increasing programmes for rearing sheep and goats with a view to increasing the supply of milk and to provide raw material to produce goat cheese for export.

7.4.8.2 Implicit in the over-all position as enunciated above is the development of agro-industries requiring agro-based raw materials - milk, processed foods, oils and fats, tobacco, furniture, forest products.

7.5 IICA's PARTICIPATION

7.5.1 IICA's profile of activities includes strong inputs in the areas of institution building and the development of viable cropping systems. Reference has already been made to local problems concerning the constant changing and restructuring of existing institutions.

7.5.2 In so far as cropping systems are concerned there is scope for using IICA's potential particularly in the area of improving the local food production profile for supporting agro-industrial development.

7.5.3 IICA's cursory analysis of existing agro-industrial projects indicates that the main problem which limits their success is the lack of definition of responsibility for the projects which fall within the ambit of agro-industry. The

indications are clear that if agro-industry is to succeed both the agricultural and the industrial aspects of a project must be brought together under one leadership to ensure successful implementation - otherwise we end up with a non-project.

7.5.4 IICA/Jamaica has already been requested to assist in this area and is ~~writing~~^{willing} to deploy resources to this end. Involvement of this nature would bring together many aspects of IICA's operations, specifically in relation to institutional building, cropping systems, agricultural research (adaptive) and extension.

7.5.5 The policies of the Government of Jamaica as expressed after October 1980 considered as main priorities food production, employment, import substitution and the increase in income-generation of farmers. For the application of IICA's prerequisites of compatibility and selection appropriate reference is found in the 1978 PANP for Jamaica.

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AGRICULTURE IN JAMAICA

Collection of Papers of the Office of IICA in Jamaica

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- No. I - 2 Yvonne Lake, "Agricultural Planning in Jamaica", June 1977
- No. I - 3 Aston S. Wood, Ph.D., "Agricultural Education in Jamaica", September - October 1977
- No. I - 4 Uli Locher, "The Marketing of Agricultural Produce in Jamaica", November 1977
- No. I - 5 G. Barker, A. Wahab, L.A. Bell, "Agricultural Research in Jamaica", November 1977
- No. I - 6 Irving Johnson, Marie Strachan, Joseph Johnson, "Land Settlement in Jamaica", December 1977
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- No. I - 8 Jose Emilio Araujo, "The Communal Enterprise", February 1978
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- No. I - 10 Jose Emilio Araujo, "The Theory Behind the Community Enterprise - Seminar in Jamaica", March 1978
- No. I - 11 Marie Strachan, "A National Programme for the Development of Hillside Farming in Jamaica", April 1978
- No. I - 12 D. D. Henry, "Brief Overall Diagnosis of Hillside Farming in Jamaica", April 1978
- No. I - 13 Neville Farquharson, "Production and Marketing of Yams in Allsides and Christiana", May 1978

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The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that every entry should be supported by a valid receipt or invoice. This ensures transparency and allows for easy verification of the data.

In the second section, the author details the various methods used to collect and analyze the data. This includes both manual and automated processes. The goal is to ensure that the information is both reliable and comprehensive.

The third part of the document focuses on the results of the analysis. It shows that there is a clear trend in the data, which suggests that the current approach is effective. However, there are still some areas that need further investigation.

Finally, the document concludes with a series of recommendations for future work. These include improving the data collection process and exploring new analytical techniques. The author hopes that these suggestions will help to further refine the system.

(iii)

- No. III - 5 IICA-MOAJ, "An Approach to Agricultural Settlement of Hilly Lands", October 1979
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The first part of the document discusses the general principles of the proposed system, which is designed to be both efficient and economical. It is intended to provide a comprehensive overview of the various components and their interrelationships. The system is based on a solid foundation of scientific research and practical experience, ensuring its reliability and effectiveness.

The second part of the document details the specific implementation of the system, including the design of the various components and the methods used to assemble them. This section provides a step-by-step guide to the construction of the system, from the selection of materials to the final testing and commissioning. The instructions are clear and concise, making it easy for anyone with the necessary skills to follow them.

The third part of the document discusses the maintenance and operation of the system, providing valuable information on how to keep the system in good working order and how to troubleshoot any problems that may arise. This section is essential for anyone who is responsible for the day-to-day operation of the system, as it provides the knowledge and skills needed to ensure its long-term performance and reliability.

In conclusion, this document provides a comprehensive and detailed guide to the proposed system, covering all aspects from its design and construction to its maintenance and operation. It is a valuable resource for anyone who is interested in this field and who wants to learn more about the system and how to use it.

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Overview of Agricultural
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