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## **LIST OF ABBREVIATIONS**

<b>ACP</b>	African, Caribbean and Pacific
<b>AMS</b>	Aggregate Measures of Support
<b>BAIC</b>	Bahamas Agricultural and Industrial Corporation
<b>BAPA</b>	Bahamas Agricultural Producers Association
<b>BCLL</b>	Bahamas Cooperative League Limited
<b>BDB</b>	Bahamas Development Bank
<b>CITES</b>	Convention on the International Trade in Endangered Species
<b>CM</b>	Centi Metre
<b>DMR</b>	Department of Marine Resources
<b>DOA</b>	Department of Agriculture
<b>DOC</b>	Department of Cooperatives
<b>EU</b>	European Union
<b>FAO</b>	Food and Agriculture Organization of the United Nations
<b>GAP</b>	Good Agricultural Practices
<b>GATT</b>	General Agreement on Tariffs and Trade
<b>GDP</b>	Gross Domestic Product
<b>GRAC</b>	Gladstone Road Agricultural Complex
<b>ha</b>	Hectare
<b>ICT</b>	Information Communication Technology
<b>LAU</b>	Land Administrative Unit
<b>M</b>	Million
<b>MAMR</b>	Ministry of Agriculture and Marine Resources
<b>MIF</b>	Multilateral Investment Fund
<b>OIE</b>	World Animal Health Organization
<b>PS</b>	Permanent Secretary
<b>SPS</b>	Sanitary and Phyto-Sanitary
<b>USA</b>	United States of America
<b>WTO</b>	World Trade Organization



## **1 EXECUTIVE SUMMARY**

This exercise, the development of a five year plan for the agricultural and fisheries sector, is a result of a request from the Ministry of Agriculture and Marine Resources (MAMR) to the Food and Agricultural Organization of the United Nations (FAO), and follows from the rapid assessment exercise. This report addresses the agricultural aspect of the sector.

Development of the plan was facilitated by the conduct of a rapid assessment of the sector through the review of existing data and documents and interviews with key personnel operating in the sector. The focus of the Plan is on six main areas. These are vegetables, root crops and herbs; tree crops; ornamental horticulture; livestock; agro-processing; and land and water. Teams were formed to address the six areas. Field trips were undertaken to various islands and discussions held with stakeholders. The results of the Rapid Assessment, the reports of the teams and a list of recommendations were amalgamated into a draft report. This draft report was presented to a consultation with stakeholders including the multidisciplinary team, from SLC comprising technicians from FAO, consultants and Ministry of Agriculture and collaborating agency personnel. At the end of the review, the feedback of the stakeholders was incorporated into the final document.

Economic growth in The Bahamas slowed during 2008. The Gross Domestic Product (GDP) for 2008 was initially projected at 3% and has since been revised to 1.1%. Tourism, which accounts for more than 60 percent of GDP and employs over 50 percent of the labor force, was adversely affected by the global financial crash that resulted in a decline in visitor arrivals. This resulted in significant job losses in the hotel sector and the wider economy. Since more than 80% of visitors to The Bahamas are from the United States of America (USA), the negative impact of the recession in the USA continues to affect economic performance in 2009. The financial services sector has traditionally accounted for about 15% of both GDP and employment. Agriculture's contribution to GDP has been and continues to be minimal. Together with the fisheries sector, they account for about 5% of both GDP and employment.

Since the Bahamian economy is heavily dependent on the Tourism and Financial services sectors, its policies have been oriented towards the promotion of these sectors. Yet, its natural resource base is dominated by large tracts of lands suited to agriculture and a rich marine resource. These physical resources are supported by a relatively small human population, but one that is well educated and highly trainable. Proper utilization of the land and marine resources is a logical approach if The Bahamas is to reduce its reliance on a narrow sectoral base and promote the diversification of its economy.

The MAMR is the main institution with responsibility for developing the sector. Its mission is "to enhance the ability of the farming and fishing sectors to fuel economic development in New Providence and the Family Island communities so as to improve their quality of life by channeling human, financial and technical resources into areas where competitive advantage exist, while providing the enabling regulatory environment for the protection of our natural resource base for all their commercial activities to flourish".



One of the major policies in place is the development of the Family Islands, which is supported by the Family Island Development Encouragement Act. Within this framework, imports of machinery for land clearing, farming or construction is free of import or excise taxes. One of the immediate impacts of this policy is an increase in the number of farmers and entrepreneurs in the Family Islands participating in the revitalization of the sector.

The government's agriculture land policy is designed to foster the long-term development and conservation of the national agricultural resource base as well as to protect the country's future capacity to produce. The government is committed to facilitating domestic investment in agricultural activities as well as foreign investment in the sector to facilitate the transfer of technology and expand exports. The land policy enunciates specific land use issues as well as related incentives to promote development in the sector.

There is interest among the hotels and resorts to purchase local produce, but there are problems associated with the quality, quantity and consistency of supply. This creates frustration among producers as well as hoteliers. The tourism and agricultural sectors can be strengthened by integrating their activities so that each reinforces the other and at the same time conserve the fragile environment. The seeds of an alliance between the two sectors were sown in the year 2002 at a workshop involving personnel from both sectors including fresh produce and craft producers from the Family Islands. Follow up action should be taken to ensure that the potential for beneficial linkages is not lost.

It is also important that links be forged between the agricultural and the health and education sectors. The methods and cultural practices used in producing food have implications for public health. These methods can affect the quality of soils, air and water and contribute to biodiversity loss and climate change. They can also result in hazards for workers, communities and consumers due to contaminants in foods. It is also important to note that producing the right kinds of foods can help reduce or control the incidence of certain diseases. A case in point is the incidence of diabetes. While carbohydrates are an important part of our diet, the consumption of simple as opposed to complex carbohydrates can add to problems in controlling this disease. Putting the right policies in place can reduce problems associated with control. Educating the population can be a means of providing critical support.

The MAMR has taken the lead in improving food security as well as nutrition by integrating "garden based learning" in the curriculum of primary schools. The Ministry of Education is fully on board with this activity as well as the Ministry of Health. In furthering of the objectives of this exercise, workshops have been conducted in various communities; resources have been provided whereby participants have been provided with a starter kit including planting material, irrigation tubing, fertilizers and a basic gardening booklet; and workshop implementers were provided with the necessary equipment to facilitate the process. Intensification of these relationships could lead to improved performance in the sector to the benefit of the society as a whole.

An examination of the performance of the agricultural and fisheries sector over the four year period 2005 to 2008 shows a constant decline in output for the major sub sectors of fisheries and crops, while the other sub sectors of poultry, red meats and ornamentals indicates a slight upward trend. The value

of output of crops declined to \$41.7M in 2008, down from \$46.2m in 2005. A review of exports of selected agricultural commodities indicates a decline in value of \$5M between 2003 and 2007. The food import bill in 2007 was over \$400M and increased annually from \$262M in 1999.

The plan includes elements that cut across sectors as well as elements that are specific to the six areas of focus. The cross cutting elements should be initiated in the first two years of the plan period for maximum impact. These elements cover the areas of credits and investments in the sector; land tenure; commodity insurance; marketing; information communication technology; and strengthening of the Planning, Evaluation and Communication area of the MAMR.

The table below summarises the budgetary allocations for plan execution. These funds are in addition to current budgetary allocations.

**Figure 1. Summary of Indicative Budgetary Allocations (\$)**

ORGANIZATIONAL INDICATORS, BY SUB-SECTOR	Yearly Indicative Budgetary Allocations by Sub-Sectors				
	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEARS5
Cross Cutting Elements	370,000	360,000	220,000	220,000	220,000
Vegetable and Root Crops	16,700	173,000	213,000	341,000	173,000
Tree Crops	288,000	122,000	140,000	1,140,000	197,000
Ornamental	25,000	40,000	60,000	40,000	40,000
Livestock	740,000	2,596,000	2,170,000	680,000	630,000
Agro-Processing	145,000	160,000	420,000	150,000	90,000
Land and Water	160,000	125,000	85,000	85,000	85,000
<b>Grand Total</b>	<b>1,891,700</b>	<b>3,886,000</b>	<b>3,528,000</b>	<b>2,876,000</b>	<b>1,655,000</b>

## **2 INTRODUCTION**

### **2.1 BACKGROUND**

This assessment exercise, is a result of a request from the Ministry of Agriculture and Marine Resources (MAMR) to the Food and Agricultural Organization of the United Nations (FAO). This report addresses the agricultural aspect of the sector. A separate exercise, covering the fisheries aspect, has been undertaken.

Preparation for a plan was facilitated by the conduct of a rapid assessment of the sector through the review of existing data and documents and interviews with key personnel operating in the sector. The focus of the Plan is on six main areas. These are vegetables, root crops and herbs; tree crops; ornamental horticulture; livestock, agro-processing; and land and water. Teams were formed to address the six areas through field trips to various islands and discussions with key operators. The results of the Rapid Assessment, the reports of the teams and a list of recommendations were amalgamated into a draft report. This draft report was presented to a consultation with stakeholders for comments, which were incorporated in the final plan.

This Agricultural Sector Plan is a reflection of these efforts. The strategy in designing the plan is to recommend marginal rather than revolutionary changes to result in better outcomes in the sector. The costs to implement the plan indicate funds required in addition to current budgetary allocations.

### **2.2 THE BAHAMIAN ECONOMY**

The Bahamas is an archipelago of over 700 islands and cays stretching from the southeastern tip of the United States of America (USA) to the northwestern side of Cuba. The capital Nassau is located on the island of New Providence, the most densely populated island. The second most densely populated island is Grand Bahama. The other islands are called Family Islands and make up most of what can be defined as the rural community.

Food prices rose in 2008. This triggered interventions by the MAMR aimed at positively impacting small farmers and consumers. One of the major adjustments was bringing the main operatives in the sector i.e. the Department of Agriculture (DOA), the Bahamas Agricultural and Industrial Corporation (BAIC) and the Department of Cooperatives (DOC) within the MAMR. Another intervention was the launch of a “backyard gardening program” as one of the steps towards greater food security. The aim is to foster greater participation by individuals in the production of food.

## **2.3 SECTORAL CONTRIBUTION TO GDP**

Economic growth in The Bahamas slowed during 2008. The Gross Domestic Product (GDP) for 2008 was initially projected at 3% and has since been revised to 1.1%. Tourism, which accounts for more than 60 percent of GDP and employs over 50 percent of the labor force, was adversely affected by a decline in visitor arrivals. This resulted in significant job losses in the hotel sector and the wider economy. Since more than 80% of visitors to The Bahamas are from the USA, the negative impact of the recession in the USA continues to affect economic performance in 2009. The financial services sector has traditionally accounted for about 15% of both GDP and employment. Agriculture's contribution to GDP has been and continues to be minimal. Together with the fisheries sector, they account for about 5% of both GDP and employment.

## **3 THE EXTERNAL ENVIRONMENT**

### **3.1 WORLD TRADE ORGANIZATION FREE TRADE ARRANGEMENTS**

The economy of The Bahamas is highly open and will therefore continue to be increasingly influenced by the rapid pace of globalization and trade liberalization. The implementation of these features demand, inter-alia, that countries and industries keep abreast of major emerging trends in the global market place. The dynamics of the international environment were extended to agricultural trade which, prior to 1994, was heavily regulated by regional, hemispheric and international agreements. The 1986-1994 Uruguay Round marked the first time in the history of the General Agreement of Tariffs and Trade (GATT) negotiations, that agriculture was not insulated from the general free trade principles.

The Uruguay Round of the GATT negotiations sought to reduce the distortions in international trade of agricultural products arising from government intervention and support for agriculture. These negotiations were continued at DOHA in 2001. The main agreements affecting agriculture are the Agreement on Agriculture and the Sanitary and Phyto-Sanitary (SPS) agreement.

#### ***3.1.1 The Agreement on Agriculture***

The Agreement on Agriculture entered into force in January of 1995 and deals with three binding commitments viz. market access, domestic support and export subsidies.

**(i) Market Access** commitments require the conversion of all non-tariff border measures (import quotas), to tariffs, which provide the same level of protection. Tariffication is to be followed by a reduction in all tariffs by 24%. Provision is also made for the institution of a minimum access tariff quota, initially set at 3% in 1995, to increase to 5% by 2004. Countries are, however, allowed to include special arrangements in their minimum access commitment and to allocate their minimum access to exporters with special arrangements, such as with the European Union (EU) and sugar. Special safeguard provisions were also included for tariffed products that will allow additional duties to be applied in cases where shipments priced in domestic currencies fall below a certain trigger or in the case of import surges. This introduced at least, the possibility of new protective measures being used in agriculture, which may represent a weakness in the agreement.

At present, among World Trade Organization (WTO) members, agricultural products are protected only by tariffs. In some cases, the calculated equivalent tariffs (original support measures that were tariffed) were too high to allow any real opportunity for imports. So a system of tariff-rate quotas was created to maintain existing import access levels and to provide minimum access opportunities. This means lower tariffs within the quotas and higher rates for quantities outside the quotas.

The discussion since the Uruguay Round has focused broadly on two issues: the high levels of tariffs outside the quotas (with some countries pressing for larger cuts on the higher tariffs) and the quotas themselves ie. their size, the way they have been administered and the tariffs charged on imports within the quotas.

A number of developing countries complain that they face difficulty if they try to increase their incomes by processing the agricultural raw materials that they produce. This is because the countries they see as potential export markets impose higher duties on processed imports than on the raw materials in order to protect their own processing industries. Some countries see tariff and other import barriers as necessary in order to protect domestic production and maintain food security. Some developing countries say they need flexibility in deciding the level of import duties they charge to protect their farmers against competition from imports whose prices are low because of export subsidies.

Special Agricultural Safeguards are contingency restrictions on imports taken temporarily to deal with special circumstances such as a sudden surge in imports affecting tariffed commodities. They normally come under the Safeguards Agreement, but the Agreement on Agriculture has special provisions (Article 5) on safeguards. Safeguards can take the form of higher duties which are triggered automatically when import volumes rise above a certain level, or if prices fall below a certain level.

Special Agricultural Safeguards cannot be used on imports within the tariff quotas and they can only be used if the government reserved the right to do so in its schedule of commitments on agriculture. In practice, the Special Agricultural Safeguard has been used in relatively few cases.

Proposals range from continuing with the provision in its current form, to its abolition, or its revision to prevent its use on products from developing countries. Some developing countries have proposed that only they be allowed to use special safeguards.

Thirty-eight WTO members currently have reserved the right to use a combined 6,072 special safeguards on agricultural products.

**(ii) Domestic Support** commitments require reductions in the level of expenditures on domestic agricultural support measures which distort genuine trade. These are called Aggregate Measures of Support (AMS). They include acreage payments, certain subsidized loan programmes, input subsidies and price supports.

Subsidies in general are identified by “boxes” which are given the colours of traffic lights: green (permitted), amber (slow down or be reduced) and red (forbidden). The Agreement on Agriculture has no red box, although domestic support exceeding the reduction commitment levels in the amber box is prohibited; and there is a blue box for subsidies that are tied to programmes that limit production. There are also exemptions for developing countries.

#### **The ‘amber box’**

For agriculture, domestic support measures considered to distort production and trade (with some exceptions) fall into the amber box. The total value of these measures must be reduced. Various proposals deal with how much further these subsidies should be reduced and whether limits should be set for specific products rather than having overall “aggregate” limits.

Thirty (30) WTO members have commitments to reduce their trade distorting domestic supports, or AMS’ in the amber box. Members without these commitments have to keep within 5% of the value of production (i.e. the “de minimis” level), 10% in the case of developing countries.

#### **The ‘green box’**

In order to qualify for the “green box”, a subsidy must not distort trade, or at most cause minimal distortion. These subsidies have to be government-funded (not by charging consumers higher prices) and must not involve price support. They tend to be programmes that are not directed at particular products and include direct income supports for farmers that are not related to (are “decoupled” from) current production levels or prices. “Green box” subsidies are therefore allowed without limits, provided they comply with relevant criteria. They also include environmental protection and regional development programmes. Canada has proposed setting limits on all “boxes” combined, which would mean limits on green box subsidies as well.

Some countries say they would like to review the domestic subsidies listed in the green box because they believe that some of these, in certain circumstances, could have an influence on production or prices. Some others have said that the green box should not be changed because it is already satisfactory. Some say the green box should be expanded to cover additional types of subsidies.

### **The 'blue box'**

The blue box is an exemption from the general rule that all subsidies linked to production must be reduced or kept within defined minimal ("de minimis") levels. It covers payments directly linked to acreage or animal numbers, but under schemes which also limit production by imposing production quotas or requiring farmers to set aside part of their land. Countries using these subsidies (there are only a few) say they distort trade less than alternative amber box subsidies. Currently, the only members notifying the WTO that they are using or have used the blue box are: the EU, Iceland, Norway, Japan, the Slovak Republic and Slovenia.

At the moment, the blue box is a permanent provision of the agreement. Some countries want it scrapped because the payments are only partly decoupled from production, or they are proposing commitments to reduce the use of these subsidies. Others say the blue box is an important tool for supporting and reforming agriculture and for achieving certain "non-trade" objectives and argue that it should not be restricted as it distorts trade less than other types of support. The EU says it is ready to negotiate additional reductions in amber box support so long as the concepts of the blue and green boxes are maintained.

**(iii) Export Subsidies** commitments require reductions in the value of direct export subsidies by 21% and in the volume of subsidized exports by 14% between 1995-2004. Developing countries were exempt from commitments on marketing of agricultural exports or internal transport subsidies.

Some countries are proposing the total elimination of all forms of export subsidies, in some cases with deep reductions right at the start of the next period as a "down payment". Others are prepared to negotiate further progressive reductions without going so far as the subsidies' complete elimination and without any "down payment".

Many developing countries argue that their domestic producers are handicapped if they have to face imports whose prices are depressed because of export subsidies, or if they face greater competition in their export markets for the same reason. This group includes countries that are net food importers and also want help to adjust if world prices rise as a result of the negotiations.

In addition, many countries would like to extend and improve the rules for preventing governments circumventing their commitments on export subsidies – including the use of state trading enterprises, food aid and subsidized export credits.

Some countries, such as India, propose additional flexibility for developing countries to allow subsidies on some products to increase when subsidies on other products are reduced.

Several developing countries complain that the rules are unequal. They object in particular to the fact that developed countries are allowed to continue to spend large amounts on export subsidies while developing countries cannot because they lack the funds and because only those countries that originally subsidized exports were allowed to continue subsidizing – albeit at reduced levels. One group of developing countries compares the effect of various types of export subsidies with “dumping” that harms their farmers. As a result of all these concerns, some proposals envisage sharply different terms for developing countries.

The Association of South East Nations and India, for example, propose scrapping all developed countries’ export subsidies while allowing developing countries to subsidize for specific purposes such as marketing. Some developing countries say they should be allowed to retain high tariff barriers or to adjust their current tariff limits, in order to protect their farmers, unless export subsidies in rich countries are substantially reduced. Some other developing countries counter that the barriers would also hurt developing countries that want to export to other developing countries.

Twenty-five WTO members can subsidize exports, but only for products on which they have commitments to reduce the subsidies. Those without commitments cannot subsidize agricultural exports at all. No Caribbean country is included among the twenty-five WTO members.

### **Export restrictions and taxes**

A number of importing countries, for example Japan, say their food supplies could be disrupted if exporting countries restrict or tax exports. They propose disciplines on export restrictions, for example converting them to taxes that would then be reduced (similar to “tarrification” of import restrictions). Switzerland proposes eliminating these completely, but with some flexibility for developing countries.

The Cairns Group of net exporters has submitted a similar proposal, but linked it to reductions in “tariff escalation” i.e. higher duties on processed products, which hamper the development of processing industries in countries that produce raw materials. The group also proposes flexibility for developing countries.



### **3.1.2 Sanitary and Phyto-Sanitary (SPS) Agreement**

This agreement covers food safety and animal and plant health regulations. The agreement stipulates that the use of these measures should only be in instances where human, animal or plant life or health is threatened. The Bahamas is encouraged to base its national SPS measures on international standards, guidelines and recommendations; higher standards may only be imposed if there is scientific justification.

## **3.2 TRADE BETWEEN THE EUROPEAN UNION AND THE BAHAMAS**

Trade between The Bahamas and the EU is for the most part, under the aegis of the Economic Partnership Agreement (EPA). The EPA has its roots in arrangements which have evolved over a period starting in 1975 when the EU agreed to provide aid and trade opportunities through successive Lome Conventions to the African, Caribbean and Pacific (ACP) countries, of which The Bahamas is a part.

There were four Lome Conventions between the period 1975 and 1999. These conventions provided ACP countries with duty free access for trade in agriculture and minerals and quota free access for trade in sugar and beef. In 2000, the fourth Lome Convention was replaced by the Cotonou Agreement. Both these agreements provided ACP countries with one way benefits to the EU markets. These agreements were challenged by the USA for being in violation of the Most Favoured Nation rule of the WTO. The Dispute Settlement Body of the WTO agreed with the USA and the EU applied for a waiver pending acceptable arrangements. The WTO granted a waiver until December 31<sup>st</sup>, 2007. Under these circumstances, negotiation between the EU and the ACP countries commenced in September, 2002, resulting in new rules of trade encompassed in the EPA arrangements. The main distinguishing feature of these new arrangements is the principle of “Reciprocity”, a two way flow of benefits.

The objectives of the EPA are poverty reduction and eradication; sustainable development; and progressive integration of the ACP countries into the world economy. The EPAs also present the ACP countries with opportunities to:

- a. Realise regional integration, economic cooperation and good governance through an effective, predictable and transparent regulatory framework for trade and investment;
- b. Facilitate the gradual integration of the CARIFORUM States into the world economy in conformity with their political choices and development priorities;
- c. Improve the CARIFORUM States’ capacity in trade policy and trade related issues;

- d. Support the conditions for increasing investment and private sector initiatives and enhancing supply capacity, competitiveness and economic growth in the CARIFORUM region;
- e. Strengthen the relations between the EU and CARIFORUM countries on the basis of solidarity and mutual interest;
- f. Support a new trading dynamic between the EU and CARIFORUM through the progressive, asymmetrical liberalization of trade between them; and
- g. Reinforce, broaden and deepen cooperation in all areas relevant to trade and investment.

While measures agreed to during negotiations on the EPAs provide increased market access to Bahamian producers, negative impacts on the sector are also possible. As, under the principle of reciprocity enshrined in the agreement, The Bahamas will face increased competition from EU products, including products subsidized under the EU's Common Agricultural Policy.

## **4 THE AGRICULTURAL SECTOR**

### **4.1 HISTORY OF AGRICULTURAL DEVELOPMENT IN THE BAHAMAS**

WJG Eneas in his book *Agriculture in The Bahamas*, identifies the Arawaks as the earliest settlers of The Bahamas. Their method of farming the land, influenced in the main by soil conditions, still has some influence on farming methods used today.

A Land Resource Survey was conducted in the early 1970's and on the basis of soil capability and vegetation, the lands of the Bahamas were placed into two broad categories, Pine Islands and Coppice Islands. The Pine Islands are found mainly in the North and include Andros, Abaco, Grand Bahama and New Providence. They tend to have larger supplies of fresh water and lend themselves more easily to extensive tilling. Estimates of the distribution of lands with potential for agriculture, place 50,000 acres in Abaco, 100,000 acres in Andros, 30,000 acres in Grand Bahama and 12,000 acres in New Providence.

The Coppice lands are found mainly in the other Islands which tend to be narrower in width and thus prone to have more saline water lenses. The soil is interspersed with hard rocks, which make land preparation difficult and expensive. However, from the time of the Arawaks a system of "Pothole" farming was developed. Over time, the holes in the rocks would become filled with soil and humus material and be the medium for growing crops. There are 709 acres of arable land in New Providence.

The next settlers were the Eleutheran Adventurers who settled on the island of Eleuthera from Bermuda about the mid 17<sup>th</sup> century, in an effort to avoid religious persecution. Apart from the cultivation of food to feed their members, the Eleutherans exported the Braziletto wood to the USA for use in the Dying industry. They also mined salt in the Turks Islands.

The British Loyalists came to The Bahamas late in the 18<sup>th</sup> Century, after the USA won its independence from Britain. Many of the Loyalists were from the south of the USA and brought the enslaved people with them thereby ensuring a ready supply of labour. The Loyalists also introduced the plantation system of large scale agriculture. Cotton was the main crop produced on the Coppice Islands of Crooked Island, Long Island, Cat Island and Exuma.

The Bahamas was under some form of British rule during the period 1629 to 1973 when it became an independent country. During the colonial period, agriculture in the British Empire was developed along scientific lines and supported by Agricultural Colleges. Production of raw materials in the colonies fed industry and manufacturing in Britain. In the 19<sup>th</sup> century there were exports of citrus, tomatoes, pineapples and sisal. However, these exports were not sustained deep into the 20<sup>th</sup> century.

During the mid 20<sup>th</sup> century, The Bahamas experienced the advent of highly capitalized offshore companies producing agricultural commodities for the export market. Cucumbers, tomatoes, cantaloupe, hot peppers, strawberries, papaya, citrus, sugar and beef were exported mainly to the USA from Andros, Abaco and Eleuthera. These exports are not now a part of the agricultural scene for various reasons including pest and disease infestation and changing market conditions. Also important in the decline in production and exports is the fact that that period coincided with the depletion of the work force through the advent of the “Contract” programme which opened opportunities for Bahamian labour to work in the agricultural sector of the USA as well as the focus on and growth of the Bahamian tourism sector.

## **4.2 COOPERATIVE DEVELOPMENT IN THE BAHAMAS**

A tradition of co-operation has existed in The Bahamas since the Bahama Islands were populated by Arawak Indians who built their homes and secured food through group effort. The earliest attempts to organize formal co-operatives appear to have been through the auspices of the local Roman Catholic Church during the 1940's when a co-operative was organized based on credit union principles. The first consumer co-operative was developed by Rudolph Burgzorg in 1964 after he had read 'Co-operative Democracy' by James Warbasse.

It was during the late 1960's that the Ministry of Finance contemplated the establishment of a Department of Co-operative Development and undertook trips to several Family Islands to investigate the feasibility of setting up co-operatives. This resulted in ten (10) agricultural and eight (8) fishing co-operatives being established. However, there was no significant development of co-operatives until 1974 when the Co-operative Societies Act and Regulation were formally enacted by Parliament.

In 1975, the Department of Co-operatives Development was established within what was then the Ministry of Agriculture. It has direct responsibility for the enforcement of the Co-operative Societies Act, with respect to registration, supervision and inspection of the various societies. Additionally, the Department provides technical assistance in the form of training courses for members and management committees, assistance with record keeping and the general promotion of co-operatives.

While co-operatives can be operated for almost any type of economic activity, in The Bahamas they have been distinguished by two main categories namely: financial co-operatives and producer/supplier co-operatives. Financial co-operatives are credit unions whose business activities are savings and loans. Credit unions over the years have continued to experience phenomenal growth and have emerged as the leading sector, controlling millions of dollars owned by Bahamians. The producer/supplier co-operatives are any other type of co-operative. They include the agricultural societies, fishing societies, consumer co-operatives and multipurpose co-operatives.

Agricultural co-operatives were organized primarily for the purpose of providing farm supplies, equipment and markets for local farmers. They were initially operated as commission agents of the Government Farm Supply store. In 1979, the commission was withdrawn and many agricultural co-operatives became inactive as a result of the discontinued financial and managerial support. These co-operatives were eventually replaced with packing houses (collection and marketing centers) operated through the DOA. They were to be found on the islands of Andros, Exuma, Eleuthera, New Providence, Cat Island and Long Island.

Fishing co-operatives provide services similar to those rendered by agricultural co-operatives. They seek to expand output without displacing the small-scale fishermen and provide marketing and storage facilities along with supplies and credit facilities. The eight fishing co-operatives established during the 1960's never became viable due to inadequate managerial and financial support.

There was one marketing co-operative started by the straw vendors in 1982 as an effort to organize the handicraft sector involving producers in the Family Islands. Over the years this sector had been hindered by many constraints. They include a lack of adequate capitalization to provide expected services and limited education and training in the operation and management of co-operative businesses.

Presently there are nine registered producer/supplier co-operatives in The Bahamas and they continue to be hampered by the foregoing limitations. As a result, to ensure that some level of economic activity is maintained the DOC had been encouraging them to become multipurpose societies offering a range of consumer services.

#### **4.3 AVAILABILITY OF CREDIT TO OPERATORS IN THE SECTOR**

The main elements of the credit delivery system that are available to the agriculture and fisheries sector are the Commercial Banks, the Bahamas Development Bank (BDB) and what may be described as the informal lenders such as input suppliers and others whose facilities are mainly short term. Although the latter may be important, it is difficult to quantify their contribution. The MAMR also provides some credit to farmers.

Figure 2 depicts the distribution of credit to selected sectors by all formal sources for the period 1999 and 2004-2008. The distribution is highly skewed. On the high end of the scale is personal credit which accounts for about 60% of amounts outstanding (included in the category “other”) and at the low end are Agriculture and Fisheries which account for less than one percent of amounts outstanding, with Fisheries never getting beyond 0.3 percent. Other sectors such as Tourism, Construction, Government etc account for between 5 percent and 10 percent of amounts outstanding at the end of the respective periods.

**Figure 2. Selected Sectoral Distribution of Bank Credit 1999 and 2004 - 2008 (B\$'000)**

Year	Agriculture	% of Total	Fisheries	% of Total	Tourism	% of Total	Other	% of Total	TOTAL
1999	11,776	0.35	5,697	0.17	214,951	6.37	3,143,664	93.11	3,376,088
2004	9,134	0.19	12,332	0.26	189,039	4.01	4,506,508	95.54	4,717,013
2005	10,295	0.19	14,664	0.27	258,657	4.84	5,059,039	94.70	5,342,655
2006	11,289	0.19	13,259	0.22	253,677	4.18	5,793,111	95.41	6,071,336
2007	11,244	0.17	10,735	0.16	244,820	3.74	6,286,243	95.93	6,553,042
2008	14,984	0.21	9,889	0.14	212,475	3.04	6,759,990	96.61	6,997,338

Source: Central Bank of The Bahamas

The BDB accounts for only about 1 percent of total credits outstanding but its focus is on development activities in the Productive Sectors. (See Figure 3).

**Figure 3. Bahamas Development Bank: Sectoral Distribution of Credit 1999 and 2004 - 2008 (B\$'000)**

Year	Agriculture	%	Fisheries	%	Tourism	%	Other Sectors	%	TOTAL
1999	1,655	4.69	7,998	22.65	5,234	14.83	20,417	57.83	35,304
2004	1,581	3.08	8,226	16.02	10,294	20.05	31,236	60.85	51,337
2005	1,761	3.30	8,156	15.29	9,719	18.22	33,705	63.19	53,341

2006	1,869	3.41	7,104	12.95	9,728	17.74	36,145	65.90	54,846
2007	1,960	3.48	7,207	12.78	10,172	18.03	37,063	65.71	56,402
2008	1,875	3.40	6,955	12.63	10,326	18.75	35,930	65.22	55,086

Source: Bahamas Development Bank

Here we observe a more even distribution of credit with Fisheries getting about 20% and Agriculture about 5% of credits outstanding. It is important to observe that credit outstanding to the Fisheries sector declined in percentage terms in each of the years shown; credit to the agricultural sector fluctuated between 4.69 and 3.08 percent in the period covered; while credit outstanding to the tourism sector fluctuated between 20.05 and 14.83 percent during the period.

The MAMR administers a Stores on Credit programme and a Loan Guarantee programme. The Stores on Credit provides registered farmers with up to \$15,000 in credit from the Fish and Farm Store, the National Swine Breeding Center and the Feed Mill. During the four year period 2002 to 2006, 264 loans were approved totaling \$260,841. The Loan Guarantee programme has two components, one for small businesses in The Bahamas and the other for tourism development in the Family Islands. Both components provide a government guarantee for loans made to qualifying enterprises by approved banks and insurance companies. During the period 2002 to May 2007, 103 loans were guaranteed to a value of \$3.2M, since then, the number of guarantees given, if any, have been limited. During the period 2002 to April 2007, no loans were guaranteed for tourism development. Credit for investment in the sector remains an area of concern.

#### 4.4 PRODUCTION, EXPORTS AND IMPORTS OF AGRICULTURAL PRODUCTS

The performance of the agricultural and fisheries sector over the four years (2005-2008) shows a constant decline in output for the major sub sectors of fisheries and crops, while the other sub sectors of poultry, red meats and ornamentals showed a slight upward trend. The value of output of crops declined to \$41.7M in 2008, from \$46.2m in 2005. See Figure 4.

Figure 4. Value of Agricultural Output 2005 - 2007 (\$B)

Item	2005	2006	2007	2008
Landings/fish	89,436,055	91,134,563	80,167,483	60,095,719
Exports/fish	97,620,202	96,477,301	91,174,892	77,525,063
Crops	46,215,600	44,960,930	42,006,420	41,734,620
Poultry	16,031,280	16,002,830	18,765,780	18,009,630

Red Meats	928,450	918,620	1,008,710	1,017,340
Ornamentals	8,000,000	8,000,000	9,711,460	9,345,000
Other	432,160	356,430	520,870	987,800

Source: Department of Agriculture

The major portion of the sector's domestic export is marine products. See Figure 5. The overall marine products export value in 2007 was \$83.2M, a drop of \$10.9M from 2006. Figure 6 shows domestic exports of selected agricultural commodities and indicates a fall in the value of exports of \$5M between 2003 and 2007.

Figure 5. Composition of Domestic Exports: 1999 and 2003 – 2007 (B\$'000)

Period	Crawfish	Fish and Other Crustacean	Fruits and Vegetables	Aragonite	Rum	Crude Salt	Chemicals	Others	TOTAL
1999	71,586	3,677	10,273	389	30,957	13,579	11,219	50,664	194,160
2003	106,381	1,773	2,000	478	22,024	13,636	49	117,582	264,115
2004	86,107	1,285	1,369	80	31,344	12,457	0	107,585	240,227
2005	74,498	3,531	926	52	16,843	14,805	0	160,193	270,849
2006	89,906	4,242	1,233	38,115	9,393	12,044	15,019	172,759	343,551
2007	81,371	1,865	1,198	35,577	20,282	6,600	84,562	147,289	379,090

Source: Department of Statistics Summary Report of External Trade Statistics and unpublished

Figure 6. Domestic Exports of Selected Agricultural Commodities (2003 - 2007)

Commodity	2003		2004		2005		2006		2007	
	Quantity (s. tons)	Value (B\$)	Quantity (s. tons)	Value (B\$)	Quantity (s. tons)	Value (B\$)	Quantity (s. tons)	Value (B\$)	Quantity (s. tons)	Value (B\$)
Avocado	340.22	382,970	190.40	194,400	0	0	0	0	0	0
Cigar	0.17	15,000	0.22	45,000	0.40	11,250	0.15	48,750	0.17	56,250
Grapefruit	18,910.80	10,031,252	17,344.77	6,393,139	17,235	13,788,000	15,616.80	12,493,440	11,925.00	9,540,000
Lemon	3,202.67	3,144,771	0	0	0	0	0	0	0	0

Mango	0.03	20	1,178.10	848,232	0	0	0	0	0	0
Mahogany	0	0	0	0	0	0	6.00	6,000	0	0
Orange	2,707.34	1,019,232	1,986.30	794,520	0	0	0	0	0	0
Pumpkin	21.60	8,640	0	0	0	0	0	0	0	0
Thyme	0	0	0	0	0	0	0	2	0.01	2
Tomato	0	0	0	0	5.39	6,187	3.40	2,584	0	0
<b>TOTAL</b>	<b>25,182.83</b>	<b>14,601,885</b>	<b>20,699.79</b>	<b>8,275,291</b>	<b>17,240.79</b>	<b>13,805,437</b>	<b>15,626.35</b>	<b>12,550,776</b>	<b>11,925.18</b>	<b>9,596,252</b>

With regard to imports, Figure 7 indicates that the food import bill was over \$400M in 2007 rising annually from \$262M in 1999. Figure 8 shows import values of selected crops in fresh and processed forms and indicates an increase of about \$2.6M. Table 3.8 shows the imports of selected fresh produce and the acreages required to replace those imports.

Figure 7. Imports by Commodity Group 1999 and 2003 - 2007 (B\$'000)

Yr.	Food & Live Animals	Beverage and Tobacco	Crude Mat., Inedibles, Except Fuels	Minerals, Fuels, Lubricants & Related Materials	Animals & Vegetables Oils & Fats	Chemicals	Manufactured Goods Classified Chiefly Materials	Machinery & Trans. Equip.	Misc. Manufactured Articles	Commodities & Trans. Not Classified According to Kind	Total
'99	261,824	49,366	48,098	172,478	3,734	153,166	313,207	500,730	221,967	26,677	1,75
'03	284,897	54,702	42,487	257,263	4,224	175,759	268,524	429,312	246,467	110,523	1,87
'04	309,706	48,227	52,505	286,374	4,862	178,563	299,028	421,802	287,756	87,691	1,97
'05	329,503	66,460	68,055	507,844	5,615	219,691	392,782	566,975	313,269	96,970	2,56
'06	373,569	63,864	79,799	605,382	6,140	268,956	480,135	663,545	320,075	119,257	2,98
'07	401,483	69,406	82,676	615,782	6,953	279,269	485,534	689,980	344,280	128,444	3,10

Figure 8. Value of Imports of Selected Crops :Fresh and Processed (B\$)

Crop	2006 Import Value Fresh	2006 Value of by Products	2007 Import Value Fresh	2007 Value of by Products
Onion	2,303,714	19,148	2,852,197	18,973
Irish Potato	3,107,672	6,193,011	3,409,631	6,980,573
Lettuce	3,476,819	0	3,999,082	0



Crop	2006 Import Value Fresh	2006 Value of by Products	2007 Import Value Fresh	2007 Value of by Products
Tomato	2,962,731	1,341,295	2,365,957	1,423,354
Carrot	999,492	44,614	1,166,837	45,078
Cabbage	678,385	0	841,811	0
Sweet Pepper	1,664,900	0	1,574,848	0
Hot Pepper	100,280	0	87,040	0
Pigeon Peas	33,456	69,825	183	238,027
Celery	317,287	0	375,408	544,676
Lemon	480,099	571,342	314,856	141,395
Cucumber	299,391	133,208	321,189	3,629,505
Orange	2,070,123	2,,899,133	1,915,531	3,569
Plantain	1,833,267	1,689	1,782,262	670,460
Grapefruit	389,751	685,474	378,260	0
Goat Pepper	154,378	0	82,546	13,432
Sweet Potato	541,419	6,339	427,836	0
Garlic	268,514	0	240,510	436,799
Lime P&K	1,746,719	344,217	2,022,311	0
Watermelon	1,109,836	0	485,943	0
Corn	1,651,794	0	1,885,379	0
Papaya/Pawpaw	155,269	0	171,233	2,022
Banana	2,439,283	2,794	2,509,408	0
Cantaloupe	1,043,949	0	1,145,558	1,449
Mango	289,460	4,131	316,638	293,446
Broccoli	777,809	271,044	895,992	808
Cassava	253,050	381	275,398	0
Okra	52,159	77,954	57,288	84,582
<b>Total by Category</b>	<b>31,201,006</b>	<b>12,665,199</b>	<b>31,901,132</b>	<b>14,528,148</b>
<b>Grand Total</b>		<b>43,866,205</b>		<b>46,429,280</b>

Source: Department of Statistics

Figure 9. Imports of Selected Fresh Produce and Domestic Acreage Equivalent

Crop	Quantity	Value	Acreage Equivalent	Average Yield per	Yield per Acre
	(lbs.)	(\$)	(No.)	Acre	(range)
				(lbs.)	(lbs.)
Lettuce	4,817,784	3,999,082	802.96	6000	3000-9000
Tomato	2,772,193	2,365,957	138.61	20000	12500-30000
Cabbage	2,257,232	841,811	188.10	12000	5000-38000
Sweet Pepper	1,892,456	1,574,848	252.32	7500	4000-17000
Broccoli	1,035,988	895,992	207.19	5000	1200-8000
Onion	5,262,948	2,852,197	751.85	7000	4000-10000
Sweet Corn	2,834,077	1,885,379	872.02	3250	2500-4000
Cantaloupe	2,009,416	1,145,558	251.17	8000	2000-14000

Orange	2,343,623	1,915,531	146.47	16000	5000-21000
Banana	6,868,649	2,509,408	381.59	18000	9000-30000

Source: Department of Agriculture

## 5 FUNCTIONS OF KEY INSTITUTIONS OPERATING IN THE SECTOR

### 5.1 MINISTRY OF AGRICULTURE AND MARINE RESOURCES

The legal framework for the MAMR is through the Agriculture and Fisheries Act. It provides for the supervision and development of agriculture and fisheries in The Bahamas. There are several other pieces of legislation that lend support to the work of the MAMR, these are itemized in Chapter six. The MAMR consists of the Ministry, the DOA, the DOC and, more recently, the BAIC has been brought into the fold of the MAMR. Also important is the Department of Marine Resources. Forestry is now under the Ministry of the Environment. The consolidated MAMR has responsibilities for agricultural marketing, horticulture, quality control of food and beverages, Potters Cay Doc (an outlet for vending agricultural products and fish), public markets, Down Home Fish Fry (a group of restaurants selling traditional foods), slaughter houses, agricultural lands, craft markets, cooperatives, credit unions, development of handicraft, agro-industry and manufacturing and small business development. Commensurate with this consolidation is the intensification of activities in support of national agriculture and rural life.

The mission of the MAMR is “to enhance the ability of the farming and fishing sectors to fuel economic development in New Providence and the Family Island communities so as to improve their quality of life by channeling human, financial and technical resources into areas where competitive advantage exist, while providing the enabling regulatory environment for the protection of our natural resource base for all their commercial activities to flourish”.

**The Ministry** consists of the administration section, the accounts section, the land unit, the Potter’s Cay Administration Complex, the Fish and Farm store, also located on Potter’s Cay and the Security Section, located in the Department of Marine Resources (DMR). In 2002, the Human Resources sections of the DOA and the Ministry were amalgamated. The Ministry does not have staff stationed in the Family Islands. The organizational chart of the MAMR is at Appendix 4.1.

The Ministry is supported by two Boards, the Veterinary Board and the Food Standard Board which are required to be formed by statute. There are three committees, the Agricultural Advisory Committee and the Fisheries Advisory Committee are appointed by Cabinet to advise the Minister. The Chairman of the Board of the BAIC is appointed by the Governor General, but the BAIC reports to the Minister responsible for the MAMR.

**The Department of Agriculture** has as its mission the provision of excellence in service and regulatory functions to increase and sustain the contributions of the agricultural sector to the economic growth and development of The Bahamas through the optimal use of land and other resources.

The DOA is comprised of nine sections. These are Administration, Veterinary Services, Abattoir, Animal Control, Agricultural Health, Produce Exchange and Packing Houses, Gladstone Road Agricultural Center (GRAC), Plant Propagation Unit and Extension.

- **The Administration** section is responsible for approving duty free concessions, import permits and the registration of farmers.
- **The Veterinary Services section** is responsible for sanitary issues, animal health, veterinary public health, animal health extension, food safety, issues relating to emerging animal diseases particularly in the area of Zoonosis and disease surveillance.
- **The Abattoir**, located in New Providence, is the only legal slaughter facility in the country. It was constructed in the 1940's and is now in need of upgrading. The DOA proposes the erection of three additional facilities, however, this will require an amendment to the Public Market and Slaughterhouses act.
- **The Animal control section** is located at the Botanical Gardens and there are plans to establish units on Grand Bahama, Eleuthera, Abaco and Exuma.
- **The Agricultural Health unit** is being seen as important especially in the era of free trade. The section must be in a position to be current on the status of agricultural health in the countries that trade with The Bahamas in the new dispensation.
- **The Produce Exchange and Packing Houses** consist of the Produce Exchange, a wholesaling facility on New Providence with cool storage capacity of 90 tons. The marketing network is completed by seven Packing Houses on four of the Family Islands. The Packing Houses grade and ship produce to the Produce Exchange and are on the Islands of Eleuthera (3 in the North, Central and South), Andros, Cat Island, Abaco, Grand Bahama, and Long Island. The packing house at Exuma was recently closed. The system is in need of extensive renovation.
- **The GRAC** consists of the National Swine Breeding Center, the Small Ruminant Unit, the Large Ruminant Unit and the Feed Mill, as well as the Plant Propagation Unit.

- **The Swine Breeding Unit** supplies improved breeding stock and fatteners to livestock farmers. The Small Ruminant Unit focuses on sheep and goats with attention to improved pastures, pasture management, veterinary care and improved breeding material. The Large Ruminant Unit is working with the Charlois beef cattle stock from Eleuthera. The Feed Mill is of 20 Ton/day capacity and produces mainly pig feed for sale to local pig rearers. The facility produced over 800 tons of feed in 2006.
- **The Plant Propagation Unit** has a 20,000 annual budded/grafted plants capacity and supplies planting material to farmers.
- **The Botanical Gardens** was once a part of the DOA, but now falls under the Ministry of the Environment. It is the primary site for ornamental horticulture. It houses the Conservation Unit which works closely with the Bahamas National Trust and other local, regional and international bodies on conservation issues. It coordinates and manages the databases on local research on Bahamian fauna, flora and ecosystems.
- **The Extension section** is located in New Providence and on the Islands of Andros, Abaco and Grand Bahama. The New Providence staff provides support to the Family Islands as required. There is a proposal to introduce an internet based system to improve the services offered.
- **The Food Safety and Technology Laboratory** is under the DMR and results from a merger of the Fisheries Laboratory and the Food Technology Unit. The latter was previously under the DOA and located at the GRAC. The Food Technology Unit was established in 1984 and was intended to support the development of the local food processing industry and at the same time provide a market for surplus produce at the Produce Exchange. The range of products developed by the Food Processing Unit includes jams, food preserves and hams.
- Also to be noted are current projects such as the **Embryo Transplant Programme**.

**The Department of Cooperatives** encourages the formation of Co-operative Societies in The Bahamas as a means of improving the economic, social and cultural condition of persons with limited resources and opportunities. There is also a Cooperatives Advisory Committee. The overall role and mission of the DOC are to contribute to national development by cost-effectively providing within the scope of available resources a full and sufficient co-operative development service consistent with the needs of the country and in accordance with prevailing Government policies by:

- a. Providing Co-operative Development and maintenance of services in New Providence and the Family Islands;
- b. Providing scheduled and on-going co-operative services to the Family Islands;

- c. Administrating the applicable regulatory policies of the Department pertaining to Co-operatives in The Commonwealth; and
- d. Continually assessing and responding to the related needs of the people and communities being served.

The ultimate goal is to bring about an independent and self-sustaining Co-operative Movement, hence the sense of pride, self-help, confidence and greater empowerment of Bahamians.

There are twenty registered credit unions and co-operatives. Membership is over 24,000, assets exceed \$60 million and share capital is over \$40 million. Much of this is attributed to member savings in Credit Unions. Over \$200 million in loans have been disbursed within the last two decades. A total of approximately 100 persons are employed full time by co-operatives. Indirect employment is estimated to be significantly higher.

The specific objectives of the DOC are:

- a. Linkage of the Co-operative Sector to the Tourism sector through production and marketing of local produce and handicraft;
- b. Promotion and Development of agricultural, fishing and industrial co-operatives;
- c. Structuring of the National Apex Body so that it brings all co-operatives under an umbrella operation; and
- d. Expansion and upgrading of staff, together with an increased budget to meet the diverse challenges of the Co-operative Movement.

## **5.2 BAHAMAS AGRICULTURAL AND INDUSTRIAL CORPORATION**

The BAIC was established by an act of Parliament in 1981 and supersedes the Bahamas Development Corporation and the Bahamas Agricultural Corporation, whose real and personal property have been vested in it. Its scope is broad and covers agriculture, fisheries, forestry, agri-business and soil and water conservation. Its functions are to:

- a. Stimulate, encourage and facilitate the development of agriculture in The Bahamas;

- b. Process the produce of agriculture in The Bahamas;
- c. Market the produce of agriculture within or outside The Bahamas;
- d. Carry out, operate and participate in any agricultural project as the Minister may approve;
- e. Assist in the operation and development of commerce and industry within The Bahamas; and
- f. Expand and create opportunities for Bahamians to participate in the economic development of The Bahamas.

The BAIC has the power to:

- a. Engage in businesses which appear to be needed for the performance of its functions;
- b. Assist other persons to carry on any business that appears to be needed for the performance of its functions;
- c. Carry out any activities incidental to any business which appear to be necessary for the promotion of that business;
- d. Acquire, manage and dispose of land and other property;
- e. With the approval of the Minister, form subsidiary companies to assist in the performance of its functions and take part in the formation and operation of other companies; and
- f. Engage in other activities designed to promote the agricultural, commercial and industrial development of The Bahamas or as the Minister may direct.

The work programme of the BAIC for the period 2009 to 2010 reflects the scope of its functions. Its main initiatives are in agri-business and handicraft development. These initiatives are supported by a Business Services Division, a Business Advisory Services Unit, a Project Development Unit and a Research Unit.

The agri-business initiatives tend to be implemented where the BAIC has, or is seeking access to lands. It has 561 acres in North Andros and is seeking another 800 acres in the area of Morgan Farms. In Abaco it has its largest tract of lands, over 10,000 acres which is already cleared. In Eleuthera it is pursuing the acquisition of lands to establish an Agro Industrial park in the Hatchet Bay area.

Agri-business initiatives under way in the two year period include small, medium and large farms producing vegetable, ornamental and tree crops as well as livestock enterprises, land preparation services, fruit tree nurseries and green house technology.

The handicraft initiatives of the BAIC cover more of the Family Islands than the agri-business initiatives. This is because they are less dependent on occupation of the land. Areas covered include straw, conch shell, coconut, sisal, batik tie dying and wood turning. Handcraft associations have been established in Abaco, Andros, Eleuthera, Exuma, Long Island, Cat Island, Grand Bahama, San Salvador, Rum Cay and New Providence.

The BAIC is also involved in linkages with the Tourism and Education sectors, strengthening farmer organizations, establishment of agro Industrial parks, training, trade shows and marketing.

### **5.3 BAHAMAS COOPERATIVE LEAGUE LIMITED**

The Bahamas Cooperative League Limited (BCLL) was established in May 1980 as a non-profit and non-Governmental Apex Body for Financial (Credit Unions) and Producer/Supplier Co-operatives in The Bahamas. It was then called The Bahamas Cooperative Credit Unions League. In 1994 its name was changed to The Bahamas Co-operative League Limited.

A ten-person Board of Directors, responsible for setting policy, serves the BCLL. The Members of the Board are drawn from the League's membership. The credit unions have seven representatives on the Board and agricultural cooperatives, multi-purpose cooperatives and fisheries cooperatives are each represented by one person. The Board has a President and two Vice Presidents, one responsible for Credit Unions and the other for Producers/Supplier Cooperatives. A three person supervisory committee, whose function is to review operational procedures to ensure that the requirements of regulatory agencies consistent with their statutory functions are being met, supports the Board. The General Manager and a five person staff carry out the day to day operations of the League.

The League provides Training, Financial Services and Project Development for its twenty (20) members and represents Bahamian Co-operatives Nationally, Regionally and Internationally. It receives dues from its members and obtains fees for services provided to their members. Insurance services are provided by the League's wholly owned Bahamas Co-operatives League Insurance Brokerage Limited.

### **5.4 FARMERS' ORGANIZATIONS**

The Bahamas Agricultural Producers Association (BAPA) is an umbrella organization for Bahamian farmers, agribusiness producers and their organizations. Other agricultural organizations are members of BAPA. It was conceived in 2001 and established in April, 2005. Its mission is to secure cooperation between organizations and individuals of agricultural and agribusiness producers in meeting the



consumption requirements of the people of The Bahamas and the world and to improve the economic status of all who live by and on the land. Its roles and functions are to:

- a. Coordinate the efforts of agribusinesses throughout The Bahamas for the purpose of promoting a common interest through collective action and be an effective advocate of agribusiness interest before governments of The Bahamas and the region;
- b. Distribute agribusiness information;
- c. Increase the consumption of Bahamian agricultural products;
- d. Promote and advance the social and economic conditions of those engaged in agricultural pursuits and to render such services to them as conditions may justify;
- e. Assist in the formulation and promotion of national and regional agricultural policies to meet changing national and international economic conditions and to collaborate and cooperate with organized groups to further this objective;
- f. Forge and foster linkages with other relevant sectors such as transportation, banking and tourism;
- g. Assist in creating a favourable investment climate in agriculture;
- h. Conduct networking connections for producers which are educational, beneficial and enjoyable;
- i. Improve technical and commercial support to the agribusiness sector, that will enhance international competitiveness in agro-processing; and
- j. Encourage the highest quality standards for Bahamian produced agricultural food, fisheries, agro industrial and beverage products.

## **6 POLICIES RELEVANT TO THE SECTOR**

The Bahamian economy is heavily dependent on the Tourism and Financial services sectors for economic growth and development. Its policies are therefore oriented towards the promotion of these sectors. Yet, its natural resource base is dominated by large tracts of lands suited to agriculture and a rich marine resource. These physical resources are utilized by a relatively small human population, but one that is well educated and highly trainable. Proper utilization of the land and marine resources is a logical

approach if The Bahamas is to reduce its reliance on a narrow sectoral base and promote the diversification of its economy.

One of the major policies in place is the development of the Family Islands. Within the provisions of Part b of the Fourth Schedule to the Tariff Act, imports of machinery for land clearing, farming or construction is free of import or excise taxes, thus supporting the development of the Family Islands. One of the immediate impacts of this policy is an increase in the number of farmers and entrepreneurs in the Family Islands to participate in revitalizing the sector.

The government's agriculture land policy is designed to foster the long-term development and conservation of the national agricultural resource base as well as to protect the country's future capacity to produce. The government is committed to facilitating domestic investment in agricultural activities as well as foreign investment in the sector to facilitate the transfer of technology and expand exports. The land policy enunciates specific land use issues as well as related incentives to promote development in the sector as follows:

- a. The Minister of Agriculture has discretionary rights to lease agricultural lands to Bahamians;
- b. Leases can be issued for periods of twenty-one and forty years;
- c. The need for a National Land use Commission to serve in an advisory capacity comprising representatives from several governmental agencies has been recognized;
- d. The government will continue to provide technical assistance for land clearing and preparation, as well as irrigation wells as necessary. Payment schemes designed to accommodate Bahamian farmers are in place;
- e. An Agricultural Loan Guarantee Fund would be available for Bahamian or Joint Venture agricultural projects. Farmers will be able to use their leased land as collateral for the loans;
- f. Subsidies in the form of Duty exemptions are provided on a wide range of production, building and processing materials;
- g. The implementation of training programs for persons in agricultural production as well as targeting high school and college students is being undertaken. Additionally, extension officers are to be stationed on the major Family Islands (to include a crop specialist, livestock specialist and a veterinary surgeon);

- h. Production strategies are in place to improve domestic food security and facilitate import substitution and linkages with other sectors of the economy;
- i. Marketing initiatives to facilitate crop forecasting, an established quota system for the Packing Houses and Produce Exchange for small farmers are in place. Larger farmers will be required to make direct sales to wholesalers;
- j. There are incentives to protect farmers during peak seasons and off seasons through import controls;
- k. The transportation of product and livestock and farm supplies on behalf of the government will not be subject to freight charges. Government will provide specifications to the BDB for vessels designed to transport agricultural products;
- l. The expansion of livestock production and the establishment of a modern meat processing plant is contemplated. If a private entrepreneur developed a facility he/she would be assisted through the Loan Guarantee Fund; and
- m. The establishment of short and long term crop insurance. This coverage would be a requirement for land grants and Loan Guarantee funding for projects.

Land tenure reform must be vigorously pursued for the purpose of increasing output among co-operative members through maximum utilization of land resources. Moreover, augmenting the tenure security of these farmers would in turn offer a powerful incentive for increased production, general farm improvements and the enhanced and effective use of the land.

Development of the sector through co-operatives is encouraged because of the small population on the islands and limited support, infrastructure and services. This encouragement is not intended to be to the detriment of individual operators in the sector. The goal of the MAMR and the BCLL should be to institute policies that will, in effect, enhance the development of efficient markets in both agriculture and fishing. In other words, these agencies must examine existing policies and consider formulation of new policies and strategies to strengthen the agriculture and fishery sector's ability to deal with external factors and enhance global market competitiveness.

The policy statement on Co-operatives enunciated by The DOC outlines the government's support for co-operatives. They are viewed as "a fundamentally important means in assisting to bring about the economic, social and cultural advancement for the people.... the co-operative movement can provide the means by which more Bahamians may participate in and benefit more fully from the economic development of the nation." Specifically the government is committed to:

- a. The promotion of the Co-operative concept throughout the nation;
- b. The promotion of co-operative principles and practices in the Senior schools for sale of school supplies, savings and where possible marketing of produce from school gardens etc;
- c. The promotion of education and training programs for groups wishing to form Co-operatives;
- d. Encouraging Co-operatives to form national and regional organizations to strengthen their positioning in the marketplace and in negotiations with government; and
- e. Requesting technical assistance from national and international agencies as the needs of the movement may demand.

The incentives indicated for the agricultural sector would generally be applied to co-operatives. However, co-operatives can also benefit from an exemption from the payment of stamp duties, which does not apply to other agricultural producers.

At present policies promoting rural/agricultural development lack effectiveness and produce little, if any, beneficial impact on the sector due largely to a lack of implementation of existing policies. It has to be stated as well, that the islands where the main producer/supplier co-operatives are located are sparsely populated. This is the result of the limited economic activity resulting from ineffective policies that do not favor the development of the most abundant resources and the pull effect on the population on those islands towards New Providence, where the employment opportunities are greater as a result of the more effective policies favoring Tourism and Financial services. It is evident that policies and incentives exist but there is a need for their wider implementation and dissemination.

## **7 LEGISLATION RELEVANT TO THE SECTOR**

The following pieces of legislation represent the legal framework within which the process of developing the sector is carried out:

- a. **The Public Markets and Slaughterhouses Act** provides for the establishment and operation of slaughterhouses and public markets;
- b. **The Agriculture and Fisheries Act** provides for the supervision and development of agriculture and fisheries in The Bahamas and the protection of plants by ministerial declaration of protected areas;

- c. **The Agricultural Manufactories Act** relates to the encouragement of agricultural manufactories;
- d. **The Fisheries Resources Act** establishes the Exclusive Fisheries Zone. It reflects concern for the conservation and management of the marine environment and its resources. It recognizes traditional fishing rights and provides for the declaration of protected marine areas and regulation of the fishing industry. An amendment in 1993 prohibited long line fishing except with the written permission of the Governor General;
- e. **The Veterinary Surgeons Act** provides for the registration of persons qualified to practice veterinary surgery and for the regulation of the practice of veterinary surgery in The Bahamas;
- f. **The Animal Contagious Disease Act** provides for the prevention and control of contagious and infectious diseases in animals throughout The Bahamas. It allows the Minister to cause the slaughter of diseased animals and to prohibit the importation of animals and animal products as a preventative measure for the possible introduction of disease;
- g. **The Wild Animals Protection Act** prevents the taking, capture or export of any wild animal without the permission of the Minister of the MAMR, but is administered by the Ministry of Environment ;
- h. **The Wild Birds Protection Act**, also administered by the Ministry of Environment, provides for the protection of wild birds, prescribes bird hunting seasons and sets the bag limit for the White Crowned pigeon. It lists several protected species. The Minister is required under the act to appoint game wardens to assist with the enforcement of the Act and to establish reserves for the protection of wild birds;
- i. **The Plant Protection Act** is concerned with controlling diseases related to the importation of infected plants;
- j. **The Food Act** regulates the manufacture of food to provide for quality control, testing and certification for food processing and preservation;
- k. **The Continental Shelf Act** provides for the protection exploration and exploitation of the continental shelf. It gives the Bahamas Government sovereignty over the continental shelf;
- l. **The Ministry of Agriculture (Incorporation) Act** 1993 confers upon the Minister responsible for Agriculture a corporate status with the power to hold and dispose of agricultural land;

- m. **The Guarantee of Loans (Small Business) Act** 1998 and **Guarantee of Loans (Tourism Development) Act**, 1998 provide for the guarantee by the Government of The Bahamas, of loans by approved banks and insurance companies or other approved lenders for small business development throughout The Bahamas and for touristic development in the Family Islands respectively;
- n. **The Wild Life Protection and Trade Act**, 2004 Regulates trade in protected animals and plants. It requires the appointment of a scientific authority to advise Management Authority on the proposed exports and imports of species listed in the Appendices of the Convention on the International Trade in Endangered Species of Wild Flora and Fauna. The Minister is required to appoint a National Advisory Committee of individuals from the public and private sectors involved in the management and enforcement of wildlife protection;
- o. **The Marine Mammals Protection Act** protects marine mammals belonging to the family Delphinidae and any other marine mammal designated by the Minister within the exclusive economic zone of The Bahamas. It regulates facilities involved with marine mammals and requires the appointment of Marine Mammal Inspectors;
- p. **The Animal Protection and Control Act** would repeal the Dog License Act and require animal owners to keep animals confined to their property; require dogs to wear identification tags; require the inspection and certification of premises and businesses used for commercial activity involving dogs and support the humane treatment of all animals;
- q. **The Rotterdam Convention** seeks to regulate the transport and import of pesticides and chemicals that have been banned or restricted by requiring that exporting countries inform the importing country of the pending import through a process called Prior Informed Consent. The Cabinet has agreed that The Bahamas would sign the convention; and
- r. **The Convention on the International Trade in Endangered Species (CITES)** As at June 2005, The Bahamas had not ratified the Gaberone Amendment which would allow accession by regional economic organizations of the right to vote equal to the number of member states.

## **8 POTENTIAL FOR LINKAGES**

### **8.1 Agro Tourism**

The Bahamas has focused on the tourism industry as a means of generating foreign exchange. The literature has identified the following economic and socio-cultural benefits and costs that are applicable to the Bahamian context.

A resort-oriented tourist industry can create an enclave economy, which insulates itself from the national economy. With the exception of an occasional tour of local sites, the guests' needs are largely met within the confines of the resort grounds or cruise ship hull. Despite the abundance of fruits, vegetables and root crops produced seasonally in The Bahamas, the bulk of the food served at the islands' resorts are imported to serve the perceived tastes of the tourists.

Yet, there is interest among the hotels and resorts to purchase more local produce, but there are problems associated with the quality, quantity and consistency of supply of local produce. This creates frustration among producers as well as hoteliers. The tourism and agricultural sectors can be strengthened by integrating their activities so that each reinforces the other and at the same time conserving the fragile environment. The seeds of an alliance between the two sectors were sown in the year 2002 at a workshop involving personnel from both sectors including fresh produce and craft producers from the Family Islands. This initiative came from the Tourism sector and was well attended. Follow up action should be taken to ensure that the potential for beneficial linkages is not lost. The future of The Bahamas may lie in a strongly diversified economy with an increased emphasis on the creation of value-added products.

Increased opportunities for visitors to explore Bahamian heritage will foster support for community pride and the country's cultural self-concept. Community participation in the benefits of tourism is critically important not only to generate community economic development but also to ensure support for tourism at a level and type which communities' desire. In the agro-ecotourism area, local community involvement is usually a strong component of the product and markets have responded well to this approach. Agro-ecotourism provides an opportunity both to diversify the agricultural and tourism sectors in an environmentally sustainable manner and to make them mutually beneficial.

## **8.2 HEALTH, NUTRITION AND EDUCATION**

It is important that links be forged between the agricultural and health sectors. The methods and cultural practices used in producing food have implications for public health. These methods can affect the quality of soils, air and water and contribute to biodiversity loss and climate change. They can also result in hazards for workers, communities and consumers due to contaminants in foods. It is also important to note that producing the right kinds of foods can help reduce or control the incidence of certain diseases. A case in point is the incidence of diabetes. While carbohydrates are an important part of our diet, the consumption of simple as opposed to complex carbohydrates can add to problems in controlling this disease. Putting the right policies in place can reduce the problems of control. Educating the population can be a means of providing critical support.

The MAMR has taken the lead in improving food security as well as nutrition by integrating “garden based learning” in the curriculum of primary schools. The Ministry of Education is fully on board with this activity as well as the Ministry of Health. The objectives of the project are to:

- a. Involve stakeholders including school administrators, teachers, students, parents, health workers, extension agents and community leaders in a participatory strategic planning process to outline a shared vision of what a school garden should comprise and how it will be implemented through a plan of action;
- b. Integrate garden based learning into the school curriculum through the inclusion of food security and nutrition education for the primary grades;
- c. Develop and test a handbook on garden based learning for teachers to facilitate the integration of food security and food and nutrition education into the current curriculum; and
- d. Promote the production and consumption of a wide variety of fruits and vegetables at school, at home and in the community.

In furthering of these objectives, workshops have been conducted in various communities; resources have been provided whereby participants have been provided with a starter kit including planting material, irrigation tubing, fertilizers and a basic gardening booklet; and workshop implementers were provided with the necessary equipment to facilitate the process. Intensification of these relationships could lead to improved performance in the sector to the benefit of the society as a whole.

## **9 ISSUES ARISING FROM AN EXAMINATION OF STRATEGIC SUB-SECTORS**

### **9.1 General Issues**

The major issues to be considered and threats facing the agricultural/fisheries/rural sector arise as a result of the following factors, which have roots in both the external and domestic domain:

**Commodity Insurance** is of high priority. Farmers and fishermen often encounter a variety of unforeseen natural and economic difficulties that cause negative effects on performance and output. These include hurricanes that can destroy a farmer’s business and/or damage infrastructure and



productive resources. Such circumstances impede production and distribution and may contribute to market failures, thereby negatively affecting the economic base of the enterprise. Hurricane relief is costly and some form of insurance and a relief fund are needed. Affordable insurance should be viewed as one solution to the financial risk farmers and fishermen incur during natural disasters and economic downturns. Commodity insurance would likely provide practical protection in these situations. One solution can be to make comprehensive commodity insurance coverage that offers affordable premiums available (e.g. joint insurance claims with similar risks). There is also the possibility of having strategic alliances with insurances that are already operational outside The Bahamas.

**Environmental concerns** include pressure on the terrestrial ecosystems of The Bahamas. These are fragile and easily disrupted by disturbances. Conservation and environmental protection therefore become increasingly important as agriculture expands. There is a need to safeguard Bahamian agriculture from pests and diseases by effective phyto sanitary measures, while at the same time satisfying importing countries that Bahamian produce is safe for consumption. Threats of pests and diseases include the citrus canker, the pink mealybug and the threat of black sigatoka (an extremely serious disease of bananas and plantains). New leases of agricultural lands now contain clauses relating to conservation and the use of pesticides. Pesticide legislation is pending.

**Competitiveness** is considered to include a number of factors. Those that are external in origin include increased competitiveness from imports of conventional foods as WTO related requirements come into force and increased competition from bio-technology advances in many areas of food production. Factors are also domestic in origin and include direct production issues such as land preparation and labour, as well as marketing and input supply.

Land preparation costs are high because it is mechanized and the scale of operations is in most cases not sufficiently large to achieve economies of scale and drive the unit price down. As a related issue, the cost of labor is high because labour for the agricultural sector competes with other sectors and is not readily available. Labour productivity in the agricultural sector is also low.

Marketing appears to be a major problem affecting performance in the sector. It generally integrates the processes of canning, processing, freezing, packaging, and storage. Most farmers are unable to produce enough volume to enjoy direct business with wholesalers and retailers. The advantages of effective marketing ensures that farmers will meet the necessary standards for the successful distribution of their products. An absence of creative marketing strategies makes getting products to consumers a difficult undertaking. Grading standards, storage facilities and a strong infrastructure for delivering products to market have become monumental challenges. A related issue is inadequate information on competitive pricing and sales opportunities both domestically and internationally.

Associated issues range from high input costs, low producer prices due to failure to meet grading standards, limited processing capacity which must be addressed to add value to the primary product and the transport costs of bulk raw materials. In addition, a good number of farmers live in areas with a weak infrastructure which, as an example, includes poor roads that inhibit timely delivery of products to market and inputs to the production units.

Resolving the problem of lack of competitiveness in the sector may not lie in simply providing services such as a machinery pool service, because as the production units are spread over several Islands, the problems of inter Island transportation will add cost to the service. However a combination of provision of services and rational selection of enterprises may work, but the enterprises selected will have to be high valued in order to carry the additional costs. The institutional arrangements will also have to be in place to identify any fall in value and to be prepared to switch to other enterprises to sustain the production units.

## **9.2 VEGETABLES, ROOT CROPS AND HERBS SUB-SECTOR**

Root and food crops typically have an “inferior good” status. Markets which have experienced a general increase in income levels are easily saturated, particularly if production does not keep pace with the strong dynamic of consumer preference for consumer friendly or “ready-to-eat” foods.

Yet, some food crops have potential in extra-regional markets where they are considered as being exotic or have a nostalgic value for residents with cultural roots in the tropics. These commodities can be studied along their entire chain with a view to commercializing selected areas of their operations. If inroads can be made in the extra regional markets and improvements in quality and presentation to stimulate domestic demand, then a critical level of sales may be achieved that is consistent with a feasible operation.

The EU market, particularly France, the UK and the Netherlands are important markets for sweet potatoes. The variety most demanded is red skin, white flesh. The UK market is estimated at 80 tons weekly, whilst the French and Dutch markets are smaller. The Caribbean does supply some sweet potatoes to those markets during the low supply period of South Africa and Egypt. Prices are dependent on supplies and quality. The best prices are paid between August and December.

For some vegetable and most livestock products, the importance of imports in fulfilling domestic demand is apparent from trade statistics. There is capacity to produce a range of vegetables such as cauliflower, lettuce and broccoli, especially during the winter months. Yet there is continued increase in vegetable imports, fresh, chilled and canned, both for final consumption and as raw material for agro-processing. The adoption of greenhouse technology, particularly in tomato and lettuce production and the possibilities for expansion to other high valued vegetable commodities, such as broccoli and cauliflower, augers well for enhancing productive capacity.

The DOA has a programme for improved seed availability and improved crop management. Interventions include variety trials to expand the harvest period, provision of greenhouses to farmers on credit to allow early planting of seedlings, construction of modern post harvest facilities in North Andros and the installation of automated grading, weighing and packaging machines for onions.

The DOA plans to substitute locally grown cassava for imported cassava. A washing and waxing facility was erected in North Andros to assist farmers in extending the shelf life of locally grown cassava. The facility will be duplicated in other areas of the country.

For Hot Peppers, a modern seed laboratory has been established at the GRAC to provide farmers with certified seeds of goat and hot peppers. The next phase in the programme is improvement in grading and packaging to improve the quality and presentation of the products on the local market and promote the processing of second grades by small groups.

**Issues and challenges:** The islands of the northern Bahamas are the primary centers of production for a wide range of perishable vegetable crops, while the southeastern islands are more suited to the production of the hardier, non-perishable staple crops. Although agriculture contributes less than 2% to the GDP of The Bahamas, its importance to the socioeconomic well being of the country cannot be ignored. Some of the most significant challenges that impede growth of the agricultural sector include lack of proper crop management, poor record keeping, lack of equipment and improved technology, lack of finance, little knowledge of the market and insufficient investment in infrastructural development. Major constraints to agricultural productivity are similar for Abaco and Andros, two of the islands which were the primary focus for the Rapid Assessment exercise.

Vegetable crops grown by Abaco and Andros farmers are generally for the fresh market. The crops are marketed locally on the island, through the packing house system and through arrangements made with buyers in Nassau, in which case the produce is shipped directly to them. Although an unaccountable amount of crop losses occur due to pest and diseases prior to harvest, much of the post-harvest losses of crops occur during transportation to New Providence. In Abaco one farm visited had cold storage facilities installed to keep produce fresh until marketed, while another farmer is venturing into the processing of fruits into jams for added value.

Of the roots and tubers, sweet potato is the most significant, followed by cassava. There has been an increase in the amount of root crops produced, in an effort to satisfy increasing local demand for those commodities. In both Abaco and Andros significant acreages of sweet potato have been planted using improved varieties.

A significant number of younger farmers have obtained grants for land leases in Andros and are entering the profession. This will have an important impact on reducing the average age of farmers in this area.

Farmers of North Andros at any given time cultivate an average of ten (10) acres of a given vegetable crop. Farmers use drip irrigation technologies. Chemicals are used for weed control, though some manual cultivation is still done. Additional labour is hired during certain periods for planting, cultivating and harvesting. Some have invested in greenhouses for nursery production of seedlings, which is becoming more prevalent among farmers. The production of seedlings for other farmers is another activity that generates additional income.

In both Abaco and Andros, the resident extension officers are called upon for technical advice and information. Use of the Internet for purchasing seeds and searching for information is becoming prevalent, particularly among younger farmers. Technical information is also obtained from the University of Florida and other institutions in Florida, where some farmers have established contacts. The Mennonite community supports agriculture in North Andros through the sale of improved seeds, chemicals and other agricultural supplies and the rental of tractor equipment. The agricultural Cooperative in North Andros also sells agricultural supplies to the farming community. Some feel they obtain better prices from the agricultural cooperative than from other sources.

Due to financial constraints, many farmers are unable to make use of the modern technology available and this leads to low production efficiency. The financing of agricultural projects is nearly impossible, as bank loans are difficult to obtain and the interest rates are usually considered to be high. Farmers tend to save to provide input for the following cropping season. Some are engaged in other activities to supplement their farming income. Payment from the packing houses for produce submitted takes too long and constrains the farmer's ability to finance further production. This also occurs on the local market in New Providence where farmers make private arrangements with vendors and retail food stores for the sale of their crops.

The DOA's Stores on Credit programme is reportedly slow in its delivery of credited items, as it takes too long for supplies from the Fish and Farm Supply Store to be cleared by Customs, which hinders prompt delivery to the islands. In Abaco, farmers obtain most of their input supplies directly from the USA.

The costs associated with land clearing and preparation have meant that those new farmers entering the sector are being impeded in their attempts to get into agricultural production. Prevailing labour costs of about \$150.00 per week is considered expensive. The smaller farmers may use two or three labourers on a regular basis, hiring five to six during peak periods of activity.

Efforts must be made to develop national programmes and projects to improve the effectiveness and efficiency of the agricultural sector. There is a need for capacity development in order to carry out a viable research agenda. Priority areas for research include variety improvement for high yield, early maturity, heat and drought tolerance, disease and pest resistance, quality, long shelf life and suitability for processing. Research linkages can be accomplished through farmer associations and coordination at the national, regional and international levels.

### **9.3 TREE CROP, ORNAMENTALS AND HORTICULTURE SUB-SECTOR**

A feature of the domestic food production sub-sector is that domestic markets for food commodities continue to be very informal. In most cases, the current system of small scale unimproved production of many fruit and food commodities can satisfy the domestic market demand without the development of

commercial production systems or formal market structures, but only during the harvest period. Despite the relatively small number of commercial acreage of non-citrus fruits, the domestic market for fresh fruit is seasonally glutted with supplies of mango, avocado and other local fruits. The DOA is concentrating on increasing the acreage of pineapples, mangoes, coconuts, citrus and bananas.

For pineapples, tissue culture is being used for their propagation. A Long Island variety and the MD2, a Dole variety, are being used. Planting material were distributed mainly in Eleuthera and Long Island. However, Hurricanes Frances and Jeanne have affected the progress achieved. In the case of mangoes seven varieties were distributed in 2002 to farmers affected by the hurricanes of that year. An amount of 3,000 plants were distributed after the hurricanes of 2004. In the case of coconuts, Lethal Yellowing adversely affected the industry. Three disease resistant varieties were imported, 15,000 nuts in 2001 and another 15,000 nuts in each of the years 2004 and 2005. The citrus industry was dealt a severe blow by successive hurricanes and the Citrus Canker disease which affected Abaco in 2004. For bananas, more than 10,000 plants of improved varieties were distributed to farmers. A production manual was produced and extension officers trained in the management of Black Sigatoka. Ripening rooms have been constructed and are operational on Andros, Abaco and Long Island.

**Issues and challenges:** There are challenges to minimize disease infestation within the tree crop production systems. These systems incorporate vegetables, other food crops and livestock. There must be acceptable integrated mechanisms. Recovery from disasters such as fires, floods, high winds and hurricanes have been slow. Rising cost of agro-inputs, utilities and labour have led to unstable prices within the markets. Record keeping does not account for the value of production. There are inappropriate production and harvesting techniques. There is a challenge to engage and access labour for the industry and to stop praedial larceny. There is need to control dogs when tree crop producers engage in livestock operations. There are limited research capabilities to identify and control crop diseases. There are deficiencies within the marketing system which affect consumer demand and supply. Training in agribusiness and other areas as well as information is lacking for the sub-sector. Yields are affected by poor husbandry, soil nutrition inadequacies and water quality. There is a need for greater visibility of local fruits among the consumers. Legislation review is essential to support new and existing initiatives. The sector can benefit from improved agricultural engineering practices. Credit portfolios should synchronize with all cropping activities. The occupation is viewed as a hobby and part time activity among many producers and this affects the growth of the industry. There is a challenge to incorporate the small 'slash and burn' producer within the system.

#### **9.4 LIVESTOCK SUB-SECTOR**

Over the past two decades the livestock sub sector in The Bahamas has contracted significantly due to various factors such as: adverse weather conditions, lack of credit for the sector, a weak policy and institutional framework, land issues, weak legislation, inadequate food safety systems, lack of standards and a lack of appropriate and modern infrastructure. At the same time there has been a rising demand for livestock products by the population and this demand has been met by imports

mainly from the USA. Increases in per capita consumption in the poultry industry, a trend which is expected to continue, is being fueled by the expansion of fast-food chains. Growth in the domestic livestock sub-sector depends on improvements in genetic stock and reduction in production costs, particularly as they relate to imported feeds. Improved product quality and low cost of locally produced meat products will enhance livestock farmers' ability to compete with similar imported products in the absence of government subsidies and import restrictions.

**Policy:** A comprehensive policy for the livestock sector has not been elaborated with the result that development of the sector has been fragmented and without direction resulting in a decline in the sector's contribution to agricultural growth. Consultation with other Ministries, government departments and private sector stakeholders has been limited.

**Legislation and regulations:** The legislation and regulations relating to the agriculture sector in general and livestock, animal health and food safety in particular, are antiquated and do not reflect modern thought or incorporate the recommended standards of the International Standards Setting Bodies such as CODEX and the OIE. No mechanisms for establishing standards are in place. In general it can be stated that legislation pertaining to the sector are weak, inadequate and rarely enforced (Animal Contagious and Disease Act, Public Market and Slaughter House Act, Veterinary Surgeon's Act, Food Act).

**Stray dogs:** Over the years, attacks on small ruminants by unrestrained dogs have decimated some flocks causing financial losses and discouraging farmers who feel powerless to protect their animals in the face of weak legislation and lack of enforcement. Many farmers have quit livestock production as a result of such attacks.

**Livestock feeds and nutrition:** Although the poultry producers can import feed from the USA, the average livestock producer depends mainly on the government-owned feed mill which often has problems relating to capacity, consistency of supply, delivery and quality of the feed produced. At the same time, the quality and availability of pasture lands have decreased significantly due to many factors and maximum yield from indigenous pasture and forages are not being obtained due to the lack of applied research and technology for that purpose. The relatively high cost of land clearing and preparation severely restricts the establishment, maintenance and increase in pasture acreage for feeds and hence the number of animals that farmers can raise. In some areas water is not readily available while in other areas the quality of the available water is unsuitable for animals.

**Food Safety:** There is no modern comprehensive national food safety system for animals and animal products, while at the same time there is fragmentation of resources and legislation relating to food safety. Currently, there is one slaughter house which is situated in New Providence. This slaughter house is used only for swine and ruminants. The inspection of meat is limited, sporadic and non-existent in some areas. This results in an inability of producers to access the high-valued and fast growing fast-food and tourism markets. No food safety laboratory exists.

**Extension Services:** The extension service is inadequate due to the fact that there are too few extension officers and, additionally, the service has limited access to new information and technology.

**Veterinary services:** The veterinary services require improved infrastructure, institutional strengthening and support as well as reorganization to meet the challenges of the 21st century. These include the risk of emerging and re-emerging diseases and higher international food safety standards. There is no national veterinary diagnostic laboratory to provide support for veterinary extension and animal disease surveillance and monitoring. Livestock farmers have inadequate access to animal health services. The Bahamas is not a member of the OIE which sets the standards and regulations for trade in animals and animal products as well as for the functioning of a modern veterinary service. Not being a member, The Bahamas cannot benefit from the technical assistance and capacity building activities of the OIE.

**Input Supplies/Equipment:** Inputs and equipment for the sector are not readily accessible or available and in many instances are not affordable to the average livestock farmer.

**Breeding Stock:** The availability of improved genetic breeding stock to the farmer is variable, costly and not always accessible hence constraining the farmers' ability to improve the quality and productivity of their herds/flocks. Farmers need to improve their record keeping to aid in improving efficiency and to maximize the use of the genetic material available to them.

## **9.5 AGRO PROCESSING/VALUE ADDED SUB-SECTOR**

The development of an inherently dynamic agro-industrial sub-sector will add support to the transformation and sustainability of agriculture in all its dimensions. Insufficient attention has been accorded to agri-food processing and agro-industrial development as compared to other countries in the Hemisphere. In contrast, the growth in the fruit and vegetable processing industry in Central America in particular, has resulted in a major market for the food processing industry in that region. The countries in the Latin American region are adding more value to their fresh produce exports through vertical integration, with growers developing ties with exporters, wholesalers and retailers to link different segments of the markets.

The processing sub-sector can be defined by two distinct categories:

- The cottage industry segment, which exists in many of the Family Islands as well as in New Providence, and
- The more commercial segment, which is to be found mainly in New Providence.

**The cottage segment** has a low level of output and is either individually or family owned. Even when it is individually owned, other members of the family assist in the operation. In some cases, the husband and wife may be engaged in separate businesses. The product is used in the household as well as sold on the domestic (Island) market. These producers tend not to be affiliated to any groups or to have any special

education or training. They at times employ workers on a part time basis. They mainly use the local water supply in their processing operations and do not keep records. Raw material is sourced from their own farms supplemented by purchases of the surplus of production from other farms on the island. Other materials used are purchased from the local stores. Their equipment tends to be manual and hardly any testing of product is done.

**Issues and Challenges:** In terms of support, they complain of weak extension services from both agronomic and processing aspects. However they have limited access to both services, either through the extension officer, the packing house manager or by direct telephone contact. A few operators get scientific information from the internet. Marketing in terms of transport, labeling, grading, packaging and storage is inadequate and general market information is unavailable. As an example, glass jars and containers including caps and safety bands prove too costly for cottage operations to purchase in the bulk volumes that international suppliers deal with. Access to credit may be unavailable, but many operators are reluctant to borrow and prefer to grow their business gradually using their own resources.

**The more commercial segment** of the agro-processing sub-sector has a higher level of output and, even when it is family owned, is likely to be a company. The product is sold on the domestic (National) market except for special Bahamian products such as Conch Chowder which may be sold on the international market. These producers tend not to be affiliated to any groups but employ workers on a full time basis. They mainly use the local water supply in their processing operations, but improve the water quality by introducing technology such as Reverse Osmosis. They do not keep records except in cases where the product is sold internationally. Raw material is for the most part imported and there is limited linkage between the processor and the local raw material producer although there is some purchase of the surplus of production from domestic producers, but in any event, the availability of local raw material is seasonal and not of varieties specifically suited for processing. Other material used in processing such as food grade additives and cleaning material are also imported. Their equipment tend to be semi automated with little testing of product being done except in regard to exported products.

**Issues and Challenges:** The high cost of energy, electricity and insurance contribute to make this segment uncompetitive. Processing research and product development as well as skilled Food Technologists in The Bahamas are limited.

In terms of support, they tend to rely on services from strategic alliances with their suppliers for processing aspects. Operators get scientific information from the internet. Marketing in terms of labeling, grading and packaging is in many cases out sourced. Credit is available except in cases of start up operations where the company does not have a track record and the risk is presumed to be high.

The Bahamas has some history in the transformation of primary agricultural products into processed foods. However, the linkage with primary agricultural production at the local level remains weak, as much of the raw material is imported. In some instances, the entire processing chain, including the application of the local company's label, is performed overseas by foreign firms, for re-export and sale in The Bahamas. If this situation is to be reversed, the domestic production base has to be expanded and in



some cases through the use of production systems that are specifically geared to the agro-industrial sub-sector.

Consumer demand for ready-to-eat products will increase as incomes rise. This preference requires that most, if not all primary agricultural products, whether traded externally or consumed domestically, must undergo some form of product transformation. Processed foods is an important market segment for generating greater value-added and employment opportunities for the agricultural sector. The industrialization of the agri-food sector could play a major role in the process of revitalizing Bahamian agriculture, provided that adequate resources are dedicated towards infrastructure and cutting edge technology for production efficiency.

One key to productivity lies in efforts to minimize or substantially reduce surpluses. This strategy can be achieved by instituting the following: 1) conducting a comprehensive review of processing facilities to assess strengths and deficiencies, 2) upgrading processing facilities and expanding capacity for housing the various processing sites at one location and 3) Designing and constructing multipurpose processing facilities. Whatever strategy is selected, it has to be borne in mind that there will be increased costs to achieve added value and the desired outcome is to have a positive cost/benefit ratio.

## **9.6 LAND AND WATER RESOURCES**

Land and water are two of the main natural resources which need to be properly managed to ensure that agricultural development strategies are sustainable. Adequate policies, as well as enforcement and support mechanisms, need to be in place to ensure sustainable land and integrated water resource management for food security and food safety.

There are four types of tenure arrangements in The Bahamas. They are freehold, commonage, generation and crown lands. In the case of freehold properties, ownership is with the individual or group. Commonage and generation lands are handed down to groups of persons and ownership is not as clear cut as is the case with freehold lands. Crown lands are owned by the government and can be leased or transferred to individuals or groups. There is a category of crown lands, Agricultural Crown Lands, that the MAMR controls and distributes to farmers under the Ministry of Agriculture (Incorporation) act 1993. The act conferred upon the Minister corporate status with power to acquire, hold, lease and dispose of agricultural crown lands. Most leases are for a period of 21 years. Leases for longer than 25 years are subject to approval from the Governor General. The Minister does not have the authority to sell agricultural crown lands.

In 1993, the Ministry responsible for agriculture was allocated 13,869 acres of lands in Andros, 11,737 acres in Abaco and 10,542 acres in Grand Bahama for leasing to farmers. In 1994, 2,000 acres were allocated in New Providence for leasing to farmers.

A Land Administrative Unit reports to the Permanent Secretary (PS) of the MAMR and administers the land distribution policy. Bahamian farmers and prospective farmers make application to the LAU for

lands. The LAU acts independently with respect to land distribution in New Providence and refers applications for lands in Grand Bahama and the Family Islands to the DOA for a recommendation. The LAU makes the initial approval and transmits its recommendation to the Minister through the PS for final approval.

Land tenure, land use planning and land management have been identified as critical issues to be addressed. The commonage and generational systems and the leasing system for crown lands limit the use of lands as collateral when accessing financing for investment in the agricultural sector. For land use planning, there is a need for greater awareness of the main components of the policy as well as for enforcement of the policy. A comprehensive land capability study needs to be conducted to facilitate land zoning and agricultural planning. For land management, the high cost of land clearing and surveying and the high use of inorganic fertilizers and pesticides threaten the groundwater systems. There is therefore a need for capacity building in sustainable land management practices.

The climate of The Bahamas is sub-tropical, with mean temperatures ranging from about 21degrees C in December to February to about 28 degrees C in July and August. The Gulf Stream helps keep The Bahamas free of the cold fronts that regularly move southwards over the continental USA, sometimes into southern Florida, where occasional freezing temperatures damage crops.

Annual rainfall decreases from north to south. Grand Bahama has an average annual rainfall of 1469 mm. Mayaguana, about 500 km to the south and east of Grand Bahama, has an average annual rainfall of about 864 mm. The dry season generally extends from November to April, with December to March particularly dry. In the more southerly islands, July may be drier than May, June and August to October, resulting in an almost bimodal rainfall distribution. In these islands the probability of more than 75 mm of rain per month between May and October is only between 0.2 and 0.7%. Parts of these islands are distinctly arid with xerophytic vegetation and little agricultural potential.

Geologically, The Bahamas consists of a low lying undulating limestone platform derived from coral. The highest point is Mount Alvernia in Cat Island at 206 feet above sea level. The Northern Islands of Abaco, Andros, Grand Bahama and New Providence are known as Pine Islands with *Pinus Caribea* as the dominant species. Most of the pine lands are crown lands. The forests protect the soil and help filter rain water to replenish the fresh water lenses or aquifers. The lenses sit on top of salt water and the fresh water lenses rise and fall with the tide. The extensive fresh water aquifers, often at a depth of only a few feet, mean that water for irrigation is generally readily available.

The more southerly islands are known as coppice islands. They were originally covered with hardwood forests and shrub lands, but exploitation over centuries have reduced the areas to dense stands of narrow stemmed trees. There are pockets of soil in the limestone, which are used for "pothole farming". The aquifers are generally less extensive than in the pine lands.

The soils under pine tend to be stony, free-draining and alkaline. They are low in both the major and minor nutrients. The better soils can be made productive with adequate levels of inputs. Abaco is

estimated to have 4,400 ha of class 2 and 3,900 ha of class 3 lands, Grand Bahama 7,700 ha of class 2 and 6,700 ha of class 3 lands and Andros 154 ha of class 1, 10,240 ha of class 2 and 10,300 ha of class 3 lands.

In the larger of the islands to the south, Eleuthera has 1,140 ha of class 1 and 1,600 ha of class 3 lands; Cat Island 300 ha of class 1, 160 ha of class 2 and 230 ha of class 3 lands; Exuma has 230 ha of class 1 lands; Acklins and Crooked Island have 530 ha of class 1, 250 ha of class 3 and 1,840 ha of class 4 lands; and Mayaguana has 1,380 ha of class 1 and 5,100 ha of class 4 lands. In the eight larger islands of The Bahamas 5.5% of the lands are class 1, 34% are class 2, 50.5 % are class 3 and 10.0% are class 4.

In terms of the supply of water, again there is some distinction between conditions in the north compared to the south. Many of the fresh water lenses in Andros, Grand Bahama and Abaco are extensive in both area and depth and are used for irrigation and potable purposes. Much of the potable water used in New Providence is shipped in from North Andros. In the southern islands there are also large fresh water lenses which could be used for irrigation. However the extraction rates in some cases may be too low to allow irrigation of large areas, which places a limit on agricultural development based on irrigation. In addition, there is competition for water between domestic users, the tourism sector and agriculture.

In terms of the water supply in selected islands, Abaco is estimated to have 47,000 ha of lenses capable of yielding 1.2m cubic meters (cm) of water; Acklins has 6,400 ha yielding 63,600 cm; Andros has 236,200 ha yielding 6.1m cm; Cat Island has 6,000 ha yielding 130,900 cm; Crooked Island has 2,400 ha yielding 19,500 cm; Eleuthera has 6,700 ha yielding 146,800 cm; Exuma has 2,700 ha yielding 1.6m cm; Grand Bahama has 59,200 ha yielding 1.5m cm; Long Island has 3,800 ha yielding 26,200 cm; Mayaguana has 950 ha yielding 5,800 cm; and New Providence has 17,500 ha capable of yielding 120,400 cm of water.

Water quality is a major concern. Presently the water supply is threatened by inappropriate agricultural practices both within and adjacent to the well fields; poor or nonexistent sewage handling and treatment; and other unsustainable practices. High levels of sodium chloride have also been detected and have been attributed to over extraction of water, especially during periods of drought. These problems of water quality, if left unattended could have severe implications not only for the population, but also for visitors.

## **10 SUMMARY OF STRATEGIC ACTIONS**

### **10.1 Recommendations by Sub-Sectors**

**The vegetable, root crop and herbs sub sector:** The goal has been identified as the increase in production and productivity of selected commodities for import substitution. The five year plan for the sub sector is outlined in Figure 11.

Figure 10. Five Year Strategic Plan for the Crop Sub-sector

Organizational indicators by programme activity	Yearly Activities and Budgetary Allocations: CROP SUB SECTOR				
	Year 1	Year 2	Year 3	Year 4	Year 5
1. Agricultural programmes to provide training in Good Agricultural Practices (GAP).	Promote awareness campaign for GAP; Train farmers in GAP. (3 Trainers, 7 Islands); Develop and implement crop safety plan; and Use extension methodologies to reach farming communities.	Promote awareness campaign for GAP; Train farmers in GAP. (3 Trainers, 7 Islands); Develop and implement crop safety plan; and Use extension methodologies to reach farming communities.	Promote awareness campaign for GAP; Train farmers in GAP. (3 Trainers, 7 Islands); Develop and implement crop safety plan; and Use extension methodologies to reach farming communities.	Promote awareness campaign for GAP; Train farmers in GAP. (3 Trainers, 7 Islands); Develop and implement crop safety plan; and Use extension methodologies to reach farming communities.	Promote awareness campaign for GAP; Train farmers in GAP. (3 Trainers, 7 Islands); Develop and implement crop safety plan; and Use extension methodologies to reach farming communities.
<b>Budgetary Allocation (\$)</b>	<b>13,000</b>	<b>13,000</b>	<b>13,000</b>	<b>13,000</b>	<b>13,000</b>
2. Establishment of farm supply sub-outlets in the Family Islands.	Assess needs of each island of agricultural importance and Increase access to credit for agricultural supplies.	Build capacity of staff to operate agricultural supply store; and Assess Packing Houses to determine whether modifications could be made to floor space to accommodate supply store	Construct pilot farm supply facility at targeted island – e.g. Cat Island (700sq. ft storage shed).	Construct farm supply facilities at 6 additional locations in Abaco, Andros, Eleuthera, Exuma, Grand Bahama and Long Island (700sq. ft storage shed).	Maintain and operate facilities; Monitoring and Evaluation.
<b>Budgetary Allocation (\$)</b>	<b>NA</b>	<b>NA</b>	<b>\$28,000.00</b>	<b>\$168,000.00</b>	<b>NA</b>
3. A comprehensive production and marketing plan for the major farming islands.	Promote the benefits of locally grown fresh produce and educate consumers to support the local agricultural economy.	Identify local and international markets for produce.	Develop a planned programme for the scheduling of crop production.	Negotiate purchase agreements with potential customers; Guarantee a reasonable price for agricultural produce.	Set up a market information and dissemination system, to include launching of a website.

Organizational indicators by programme activity	Yearly Activities and Budgetary Allocations: CROP SUB SECTOR				
	Year 1	Year 2	Year 3	Year 4	Year 5
<b>Budgetary Allocation (\$)</b>	<b>100,000</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>
4. Improvement in post-harvest handling of crops.	Promote GAP to reduce post-harvest losses	Upgrade packing houses	Training of packing house staff on sorting and grading  (3 trainers, 7 islands)	Provide incentives for mail boats to invest in cool storage facilities	Institute standards for packaging and handling of agricultural produce
<b>Budgetary Allocation (\$)</b>	<b>40,000</b>	<b>NA</b>	<b>12,000</b>	<b>NA</b>	<b>NA</b>
5. Improvement in the accumulation of knowledge and the transference of technology.	Train extension staff	Conduct on-going research activities  Conduct on-farm trials	Develop infrastructure and provide support for research activities	Publication of research results (extension bulletins)	Development of mass media activities (extension leaflets, posters, TV ads, radio broadcasts, video)
<b>Budgetary Allocation (\$)</b>	<b>10,700</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>
6. Institutional strengthening.	Staff review to determine optimal use of skills and present gaps in skills	Hire extension officers to improve service to farmers (Amounts represent combined entry level annual salary for 7 asst. agric. officers)	Focus on infrastructure and support services		
<b>Budgetary Allocation (\$)</b>	<b>NA</b>	<b>160,000</b>	<b>160,000</b>	<b>160,000</b>	<b>160,000</b>
<b>Total Budget (\$)</b>	<b>163,700</b>	<b>173,000</b>	<b>213,000</b>	<b>341,000</b>	<b>173,000</b>

*Note: NA = Not applicable. As functions can be conducted within the scope of MAMR's annual budget or as part of responsibilities of the relevant senior Public Service officers.*

**Tree Crops:** Given that tree crop development has not adequately contributed to the growth of the agricultural economy and to food security, the goal of this sub sector is to develop, expand and improve the existing tree crop production systems. The five year plan for this sub sector is outlined in Figure 12.

**Ornamentals:** With respect to ornamentals, given that main stream agricultural development has not recognized the potential of the ornamental sub sector, the goal of that sub sector is the engagement

and intensification of ornamental systems in The Bahamas. The five year plan for ornamentals is outlined in Figure 13.

Figure 11. Five Year Strategic Plan for Tree Crop Sector

Organizational indicators by programme activity.	Yearly Actives and Budgetary Allocations: TREE CROP SECTOR				
	Year 1	Year 2	Year 3	Year 4	Year 5
1. Establish Demonstration plots to illustrate appropriate technologies suitable for cost effective tree crop production techniques in Pine and Coppice Islands.	Demonstrate Cost effective citrus and banana production systems using GRAC and one selected small, medium and large grower.	Provide training in Tree crop husbandry, marketing, post harvest handling and external market influences to lead farmers and Extension Officers in selected locations.	Introduce new farmers and other potential producers to Tree Crop husbandry with the help of newly trained Extension workers.	Establish a loan scheme to be financed by donor funding to engage new male and female producers in Tree crop production.	Evaluate new tree crop production initiatives within the MAMR.
<b>Budgetary Allocation (\$)</b>	<b>20,000</b>	<b>12,000</b>	<b>12,000</b>	<b>1,000,000</b>	<b>40,000</b>
2 Establish experimental investigations in tree crop diseases and production systems in order to provide appropriate technologies.	Allocate resources at GRAC to investigate prevalent Tree crop diseases and production problems which plague the cropping systems in The Bahamas.	Employ tree crop agronomist expertise in order to lead an expanded investigative capacity at GRAC.  Provide budget for equipment and support staff.	Conduct training in new Research & Extension techniques for Outreach and Extension in Tree crop production to include where possible the Farmer Field School and Discovery –based learning.	Initiate investigations at MAMR to expand tree crop investments in commercially important fruits such as sugar apple, local plums, coconuts, golden apple and other types of table citrus and bananas.	Evaluate progress of new Extension Research approaches within the MAMR.
<b>Budgetary Allocation (\$)</b>	<b>12,000</b>	<b>45,000</b>	<b>63,000</b>	<b>61,000</b>	<b>48,000</b>

Organizational indicators by programme activity.	Yearly Actives and Budgetary Allocations: TREE CROP SECTOR				
	Year 1	Year 2	Year 3	Year 4	Year 5
<b>3</b> Improve the Tree crop research capabilities of GRAC and establish satellite research operations at BARC.	Improve research capabilities at BARC, North Andros in collaboration with GRAC, Nassau.	Train staff and lead farmers at BARC in appropriate technologies for tree crop production, post harvest skills and plant propagation.	Introduce new farmers, other potential producers and stakeholders to new technologies for tree crop production, post harvest skills and plant propagation with the help of newly trained staff.	Develop a small apprentice scheme with graduates and other tertiary educated personnel with the objective of expanding the technical resource capabilities within the MAMR.	Expand the capacity of new apprentice schemes and evaluate its progress thus far.
<b>Budgetary Allocation (\$)</b>	<b>200,000</b>	<b>12,000</b>	<b>12,000</b>	<b>25,000</b>	<b>18,000</b>
<b>4.</b> Establish a tree crop plant nursery at BARC in order to multiply selected planting material for cultivation by producers.	Expand the capability of BARC to provide nursery seedlings to all producers and investors in The Bahamas.	Consolidate the linkages between BARC, the MAMR, Packing houses and other relevant bodies which serve the tree crop sector.	Consolidate linkages among Packing Houses and between Packing houses and other agencies with the use of ICTs.	Evaluate capacity of the new ICT networks within the MAMR.	Employ new personnel to consolidate the communication networks within the system; and  Conduct training among relevant staff members based on needs identified within the previous year's workshop.
<b>Budgetary Allocation (\$)</b>	<b>20,000</b>	<b>12,000</b>	<b>8,000</b>	<b>3,000</b>	<b>50,000</b>
<b>5.</b> Increase the capability of the Packing Houses to provide improved input supplies for tree crop production in collaboration with GRAC.	Provide one new staff member with adequate expertise to expand the operations of the Packing House system.	Train staff at Packing Houses for an expanded role in linking producers, consumers, hoteliers and other relevant personnel.	Expand the input supply offerings for 3 selected Packing houses within The Bahamas.	Conduct 3 major workshops in order to determine the expanded role of Packing houses throughout The Bahamas.	Test new recommendations from workshops held in the previous year.
<b>Budgetary Allocation (\$)</b>	<b>36,000</b>	<b>41,000</b>	<b>45,000</b>	<b>51,000</b>	<b>41,000</b>
<b>Total Budget (\$)</b>	<b>288,000</b>	<b>122,000</b>	<b>140,000</b>	<b>1,140,000</b>	<b>197,000</b>

Figure 12. Five Year Strategic Plan for Ornamental Sub Sector

Organizational indicators by programme activity.	Yearly Actives and Budgetary Allocation: ORNAMENTAL SUB SECTOR				
	Year 1	Year 2	Year 3	Year 4	Year 5
1. Establishing an ornamental research and development programme within GRAC. Initial research priority must investigate possible invasive species pathways for importations from Florida and mites which affect the Ficus species.	Allocate resources to GRAC to implement research objectives regarding invasive species within the Ornamental industry and the prevalence of mites.	Create a post of Ornamental Horticulturist in the MAMR to lead initiatives for continued research and development of the ornamental sector; and Initiate Extension responsibilities among the cadre of plant inspection officers or other suitable officers within the MAMR.	Provide permanent laboratories at GRAC which could provide support to maintain acceptable standards of husbandry and local production of horticultural material.	Develop linkages between the ornamental horticulture industry and the MAMR to engage the ornamental sector in meaningfully contributing to improved ornamental product for the Hotel industry and Food Security initiatives.	Evaluate new initiatives which attempt to link the ornamental and tree crop sectors within the Bahamas.
<b>Budgetary Allocation (\$)</b>	<b>20,000</b>	<b>40,000</b>	<b>60,000</b>	<b>40,000</b>	<b>40,000</b>



Organizational indicators by programme activity.	Yearly Actives and Budgetary Allocation: ORNAMENTAL SUB SECTOR				
	Year 1	Year 2	Year 3	Year 4	Year 5
2.Improved legislation and regulatory protocols within the industry.	Review current legislation regarding the ornamental horticulture sub-sector.	Draft/Revise new legislation within the horticulture ornamental industry for appropriate regulation of occupational activities.	Monitor new regulations for the Ornamental industry.	Interactions between the Ornamental practitioners, the COB and MAMR to discuss further initiatives for the industry.	Evaluate new legislative and regulatory protocols for the industry.
<b>Budgetary Allocation (\$)</b>	<b>5,000</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>
<b>Total Budget (\$)</b>	<b>25,000</b>	<b>40,000</b>	<b>60,000</b>	<b>40,000</b>	<b>40,000</b>

**Livestock:** Given the lack of access to markets, information and technology and a weak institutional support mechanism, the goal of the livestock sub sector is to establish a system of integrated livestock production, allowing for access to markets and based on the principles of sustainable development so as to improve livelihoods, food security and animal health and welfare. The five year plan for the livestock sub sector is outlined in Figure 14.

Figure 13. Five Year Strategic Plan for Livestock Sub Sector

Organizational indicators by programme activity	Yearly Activities and Budgetary Allocation: LIVESTOCK SUB SECTOR				
	Year 1	Year 2	Year 3	Year 4	Year 5
<b>1. The institutional framework will be established to enable the Ministry to effectively carry out its mandate related to livestock production, animal health &amp; food safety.</b>	Establish joint inter-sectoral Agri Health & Food Safety Committee;  Elaborate policy to review and revamp the functioning, structure & operations of the Veterinary Services;  Officially join the OIE and participate in its meetings;  Train staff and have continuing	Elaborate policy to review and revamp the functioning, structure & operations of the Veterinary Services.  Annual OIE Membership Fees.  Staff training.	Annual OIE Membership Fees.  Staff training.	Annual OIE Membership Fees.  Staff training.	Annual OIE Membership Fees.  Staff training.

	education programmes for extension and veterinary staff; and Establish a poultry unit.				
<b>Budgetary Allocation (\$)</b>	<b>50,000</b>	<b>65,000</b>	<b>65,000</b>	<b>55,000</b>	<b>55,000</b>

<b>Organizational indicators by Programme activity</b>	<b>Figure 14 (Cont'd) Yearly Activities and Budgetary Allocation: LIVESTOCK SUB SECTOR</b>				
	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>
<b>2.</b> Improvement of the institutional capacity to regulate and manage the slaughter of animals and the production of safe and hygienic meat products for consumers.	Elaborate plans for two slaughter houses on the two main livestock producing islands;  Set meat and poultry standards.	Construct and equip two slaughter houses.	Manage and maintain slaughter houses.	Manage and maintain slaughter houses.	Manage and maintain slaughter houses.
<b>Budgetary Allocation (\$)</b>	<b>100,000</b>	<b>500,000</b>	<b>90,000</b>	<b>90,000</b>	<b>90,000</b>
<b>3.</b> Stringent efforts taken to protect livestock from predation by uncontrolled dogs.	Enactment of draft Animal Protection and Control Acts & Regulations;  Public education activities related to	Implement a programme to assist farmers with perimeter fencing to secure housing	Evaluate the programme for a secure environment for livestock in year three.	Continued support for the programme	Continued support for the programme

Organizational indicators by Programme activity	Figure 14 (Cont'd) Yearly Activities and Budgetary Allocation: LIVESTOCK SUB SECTOR				
	Year 1	Year 2	Year 3	Year 4	Year 5
	the Act.	for protection of livestock.			
<b>Budgetary Allocation (\$)</b>	<b>200,000</b>	<b>600,000</b>	<b>175,000</b>	<b>175,000</b>	<b>175,000</b>
4. Strengthening and support of the meat marketing systems currently in place while building consumer confidence in locally produced meats.	Promote locally produced meat products through public education, labeling and identify markets for those products;  Set up a meat market information and dissemination system; and  Support the establishment of livestock farmers associations and groups.	Support the establishment of livestock farmers' associations and groups; and  Maintain a meat market information and dissemination system.	Support the establishing of livestock farmers' associations and groups; and  Maintain a meat market information and dissemination system.	Support the establishing of livestock farmers' associations and groups; and  Maintain a meat market information and dissemination system.	Maintain a meat market information and dissemination system.
<b>Budgetary Allocation (\$)</b>	<b>25,000</b>	<b>16,000</b>	<b>10,000</b>	<b>10,000</b>	<b>20,000</b>
5. Improvement to veterinary infrastructure to include construction of a diagnostic laboratory to support animal disease surveillance, animal health and welfare and food safety.	Draw plans for veterinary diagnostic laboratory.	Construct and equip a Veterinary diagnostic laboratory.	Employ two additional animal Health Assistants and five (5) support staff including laboratory technicians.	Maintenance of laboratory and staffing	Maintenance of laboratory and staffing
<b>Budgetary Allocation (\$)</b>	<b>80,000</b>	<b>1, 250,000</b>	<b>250,000</b>	<b>260,000</b>	<b>260,000</b>
6. Financial and other support to the government owned feed mill to enable it to increase its capacity and production as well as the range of feeds it produces so that livestock farmers can	Draw plans for Feed Mill expansion;  Initiate feed and alternate feed research.	Initiate Feed Mill expansion;  Continue feed and alternate feed research.	Complete Feed Mill expansion;  Continue feed and alternate feed research.	Continue feed and alternate feed research.	Continue feed and alternate feed research.

Organizational indicators by Programme activity	Figure 14 (Cont'd) Yearly Activities and Budgetary Allocation: LIVESTOCK SUB SECTOR				
	Year 1	Year 2	Year 3	Year 4	Year 5
improve the productivity and efficiency of their farms.					
<b>Budgetary Allocation (\$)</b>	<b>85,000</b>	<b>85,000</b>	<b>1,500,000</b>	<b>10,000</b>	<b>10,000</b>
<b>7</b> Review and amend all relevant livestock development and animal health related legislations.	Review and draft relevant legislation related to livestock production, animal health and food safety.	Enact & gazette New legislation;  Develop an education programme to implement the new legislation; and  Establish public education programmes related to the new legislation.	Maintain public education programmes related to the new legislation.	Maintain public education programmes related to the new legislation.	Review programmes.
<b>Budgetary Allocation (\$)</b>	<b>200,000</b>	<b>80,000</b>	<b>80,000</b>	<b>80,000</b>	<b>20,000</b>
<b>Total Budget (\$)</b>	<b>740,000</b>	<b>2,596,000</b>	<b>2,170,000</b>	<b>\$680,000</b>	<b>630,000</b>

**Agro Processing:** Given the weak marketing arrangements for fresh produce, the seasonal gluts of certain commodities and the population being skewed towards New Providence, the goal of the agro-processing sub sector is to support the cottage type processing industries in the sparsely populated Family Islands and encourage and strengthen the links between the commercial agro processors and the farming communities to minimize the periods and levels of gluts. Figure 15 outlines the plan for the agro-processing sub sector.

Figure 14. Five Year Strategic Plan for Agro-Processing Sub Sector

ORGANIZATIONAL INDICATORS BY PROGRAM ACTIVITY	Yearly Activities and Budgetary Allocation				
	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
1. Strengthen and upgrade the Food Technology Unit.	Hire Two assistant Food Technologist and two Laboratory technicians; and Attend International Food Technology Institute expo	Conduct study tour of the Jamaica Food Technology Institute (2 officers).	Purchase additional food processing equipment to automate processing lines  And expand food	Purchase any additional equipment identified for various research projects; and  Draft legislation	Establish The Bahamas Food Technology Institute.

ORGANIZATIONAL INDICATORS BY PROGRAM ACTIVITY	Yearly Activities and Budgetary Allocation				
	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
	(annually) and international food processing training courses		technology unit infrastructure.	for the establishment of a Bahamas Food Technology Institute.	
<b>BUDGETARY ALLOCATIONS (\$)</b>	<b>90,000</b>	<b>90,000</b>	<b>380,000</b>	<b>140,000</b>	<b>80,000</b>
2. Strengthening cottage industry through training.	Conduct food processing workshops in 3 family islands and New Providence; Conduct workshops in good manufacturing practices, HACCP and quality control; and Undertake product development. Research for processors.	Conduct workshop on the processing of specific food products eg jams; and Make extension visits to solve specific problems for processors.	Continue to provide training and extension services to the sector as required	Continue to provide training and extension services to the sector as required.	Continue to provide training and extension services to the sector as required.
<b>BUDGETARY ALLOCATION (\$)</b>	<b>25,000</b>	<b>10,000</b>	<b>10,000</b>	<b>10,000</b>	<b>10,000</b>
3. Train Cottage industry and small scale processors in marketing and proper labeling of products.	Hire consultant to conduct marketing workshops in islands.	Hold a national food processing round table to discuss industry.	Hire a consultant to identify international markets for Bahamian products.		
<b>BUDGETARY ALLOCATION (\$)</b>	<b>30,000</b>	<b>60,000</b>	<b>30,000</b>	<b>NA</b>	<b>NA</b>
<b>TOTAL BUDGET (\$)</b>	<b>145,000</b>	<b>160,000</b>	<b>420,000</b>	<b>150,000</b>	<b>90,000</b>

**Land and Water resources:** Given the critical role that land and water play in the development of the agricultural sector and the need for policies and support mechanisms to ensure sustainable

development, the goal of the MAMR is to promote the sustainable use of land and fresh water resources in agriculture. The five year plan is outlined in Figure 16.

Figure 15. Five Year Strategic Plan for Land and Water Resources

ORGANIZATIONAL INDICATORS BY PROGRAM ACTIVITY	Yearly Activities and Budgetary Allocation: LAND AND WATER RESOURCES				
	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
1. Development of a land evaluation system and land zone map for agricultural lands.	With the assistance of Development Agencies develop and test the framework of the Land Evaluation System (LES);  Purchase computer software and hardware; and  Employ a clerical assistant to manage the LES.	Prepare a land zone map using GIS; and  Employ a GIS consultant to  Train in use of the LES.	Maintenance of the LES	Maintenance of the LES	Maintenance of the LES
<b>Budgetary Allocation (\$)</b>	<b>50,000</b>	<b>50,000</b>	<b>30,000</b>	<b>30,000</b>	<b>30,000</b>
2 Increase in the number of farmers obtaining leases for agricultural lands.	Recruitment of a surveyor and an assistant in the MAMR	Annual salary of surveyor and assistant	Annual salary of surveyor and assistant	Annual salary of surveyor and assistant	Annual salary of surveyor and assistant
<b>Budgetary Allocation (\$)</b>	<b>50,000</b>	<b>50,000</b>	<b>50,000</b>	<b>50,000</b>	<b>50,000</b>
3 Development of a water policy for the agricultural sector.	Review the water sector and identify key issues to be addressed by the water policy.	Develop the water policy; Review the legislation in the water sector; and  Draft revised legislation.	Water policy and legislation accepted in Parliament and gazetted.		
<b>Budgetary Allocation (\$)</b>	<b>50,000</b>	<b>20,000</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>

ORGANIZATIONAL INDICATORS BY PROGRAM ACTIVITY	Yearly Activities and Budgetary Allocation: LAND AND WATER RESOURCES				
	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
4 Promotion of water use efficiency and water conservation in agriculture.	Develop training materials on efficient water use technologies (e.g. drip irrigation, rainwater harvesting); and  Develop training programmes in Drip Irrigation and Rainwater harvesting.	Conduct annual training workshops.	Conduct annual training workshops.	Conduct annual training workshops.	Conduct annual training workshops.
<b>Budgetary allocation (\$)</b>	<b>10,000</b>	<b>5,000</b>	<b>5,000</b>	<b>5,000</b>	<b>5,000</b>
<b>TOTAL BUDGET (\$)</b>	<b>160,000</b>	<b>125,000</b>	<b>85,000</b>	<b>85,000</b>	<b>85,000</b>

## 10.2 Cross Cutting Recommendations

The Agricultural Sector is complex and diverse, in the sense that other sectors have a bearing on its performance such as the education and health sectors. Also, there are functional areas that are critical to the agricultural sector that are located within other ministries and agencies. Examples of these are water and forestry. It is therefore important that the MAMR promotes a culture of strong interrelationships within and between Departments and Units as well as seek formal relationships with other relevant ministries and agencies.

The following other recommendations which cut across the various sub sectors are advanced. These recommendations should be put in place within the first two years of plan implementation:

- a. The issue of credit to the sector is a cause for concern. Problems range from inadequate financing for producers, to the need for minimizing the risks that credit providers face. This suggests the need for a review of the credit system that will bring the interests of both sides closer together without adversely affecting either. A cost of \$50,000 is allocated to this endeavour. It should be implemented in year one;
- b. Land tenure arrangements, including Zoning, should be examined with a view to increasing the output of farmers through the optimal utilization of the land resource

and preserving the use of agricultural lands for agricultural use over time. Moreover, enhancing tenure security could provide incentives for increased investments, productivity, general farm improvements and a more effective use of the land resource. As such, it is related to the issue of the level of credit and investments in the sector. It is noted that some initiatives have been already taken in this regard. Nevertheless, a cost of \$50,000 is allocated to this endeavour. It should be undertaken in year one;

- c. Commodity Insurance is of high priority. Farmers and fishermen encounter a variety of unforeseen natural, financial and economic difficulties that lead to negative effects on performance and output. These include hurricanes that can destroy a farmer's business and/or damage infrastructure and productive assets. Hurricane relief is costly and an evaluation of alternative forms of insurance or other funding arrangements is needed. It is noted that a considerable amount of effort has been invested on this item. A cost of \$20,000 is allocated to this endeavour. It should be undertaken in year two;
- d. A review of the marketing system is of high priority. Its structure, scope and ownership need to be examined with a view to improving service delivery and performance. In the short term, there is a need to refurbish the produce exchange and packing houses to provide support to the farming community. Short term expenditures are covered in the sub sector allocations (see recommendations for the crop sub sector). For a review of the system, a sum of \$50,000 is allocated. This should be undertaken in year two;
- e. It is generally accepted that given the archipelagic nature of The Bahamas and the inability of the extension service to adequately cover the area, the empowerment of the farming community to achieve competitiveness becomes a challenge. It is therefore recommended that an appropriate Information Communication Technology (ICT) system be designed and installed to facilitate interface among farmers, researchers, extension agents, exporters, importers, wholesalers and other stakeholders to keep abreast of knowledge and opportunities and facilitate growth in the sector. The system would include a GIS facility. A sum of \$50,000 is allocated for a study in year one; \$70,000 for installation of the system in year two; and \$20,000 for training of staff annually over the plan period; and
- f. The Organizational Chart of the MAMR indicates a position of Under Secretary with responsibility for Project Coordination, Planning and Evaluation and Communication and Public Relations. This is a critical area of the MAMR and needs to be strengthened by putting personnel in place and adding a monitoring function. It is expected that this facility will have among its functions, quarterly reports on plan implementation and adjusting the plan on an annual basis as events dictate. An annual allocation of \$200,000 over the plan period is recommended for this facility.

### **10.3 Summary of Plan Elements and Budgetary Allocations**



Figure 17 presents a summary of additional budgetary allocations required for plan implementation.

**Figure 16. Summary of Indicative Budgetary Allocations (\$)**

ORGANIZATIONAL INDICATORS, BY SUB-SECTOR	Yearly Indicative Budgetary Allocations by Sub-Sectors				
	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
Cross Cutting Elements	370,000	360,000	220,000	220,000	220,000
Vegetable and Root Crops	163,700	173,000	213,000	341,000	173,000
Tree Crops	288,000	122,000	140,000	1,140,000	197,000
Ornamental	25,000	40,000	60,000	40,000	40,000
Livestock	740,000	2,596,000	2,170,000	680,000	630,000
Agro-Processing	145,000	160,000	420,000	150,000	90,000
Land and Water	160,000	125,000	85,000	85,000	85,000
<b>Grand Total</b>	<b>1,891,700</b>	<b>3,886,000</b>	<b>3,528,000</b>	<b>2,876,000</b>	<b>1,655,000</b>

## **11 ANNEX – TERMS OF REFERENCES FOR CONSULTANTS**

### **TERMS OF REFERENCE**

#### **Consultant – Agronomy/Extension**

##### **Background and Strategy**

The Government of The Bahamas has requested assistance to undertake a rapid assessment of its agriculture sector, with a view to developing a Sector Strategic Plan. Under the TCP Facility, the FAO will support this objective by implementing the following strategy.

Secondary data collection and analysis will be conducted to provide a package of background information for 5 technical teams, who will then conduct a one week field assessment in the areas of Land and Water Management, Fisheries, Forestry, livestock, and agronomy and research. After, field Assessment teams will conduct consultations, reviews and evaluations on matters related to their relevant areas of assessment, towards the preparation of a final report and Strategic Plan.

##### **Contribution of the Consultation**

Working under the direction of the FAO Representative and in consultation with the Ministry of Agriculture and Marine Resources (MOAMR), the Agronomy/Extension Consultant is required to contribute to the undertaking of the rapid assessment exercise. Specifically, the consultant is required to:

1. Provide leadership to the Agronomy/Extension field assessment team, as well as to provide support to the other teams where applicable.
2. Using the relevant secondary data provided by the Baseline Researcher, plan and execute the field assessment exercise for the agronomy/extension team, with particular reference to policy, marketing, and other critical issues.
3. Lead the field team to evaluate the capacity, status and other critical issues in the agriculture sector, as it relates to agronomy and extension.
4. Prepare a draft report of the findings including recommendations for developmental activities to be included in the 5 year Strategic Plan. Contents of the report will also be presented at a stakeholders meeting.

**Duration:** 13 days.

## **TERMS OF REFERENCE**

### **Consultant – Baseline Research**

#### **Background and Strategy**

The government of The Bahamas has requested assistance to undertake a rapid assessment of its agriculture sector, with a view to developing a Sector Strategic Plan. Under the TCP Facility, the FAO will support this objective by implementing the following strategy.

Secondary data collection and analysis will be conducted to provide a package of background information for 5 technical teams, who will then conduct a one week field assessment in the areas of Land and Water Management, Fisheries, Forestry, Livestock, and agronomy and research. After, field Assessment teams will conduct consultations, reviews and evaluations on matters related to their relevant areas of assessment, towards the preparation of a final report and Strategic Plan.

#### **Contribution of the Consultation**

Working under the direction of the FAO Representative and in consultation with the Ministry of Agriculture and Marine Resources (MOAMR), the Consultant is required to contribute to the undertaking of the rapid assessment exercise. Specifically, the consultant is required to:

1. Using existing secondary data sources for agriculture, fisheries and forestry policy, marketing, extension and other critical issues, gather background information, particularly from the family islands in preparation for the arrival and work of the multidisciplinary team. This will guide the work of the field assessment teams
2. participate as a team member in assessment teams where applicable
3. coordinate the logistical arrangements for data collection and consultations for the field assessment teams
4. Collate the field reports of the assessment teams to produce an integrated final draft report which will include a proposed 5 year Strategic Plan
5. With the assistance of the MOAMR, organize a stakeholder workshop to present the draft Strategic Plan
6. present the Strategic Plan to the stakeholders
7. incorporate stakeholder feedback into the final report
8. complete and submit final report for presentation to Ministry of Agriculture and Marine Resources

***Duration:*** 30 days

## Rapid Assessment of the Fisheries and Aquaculture Sector

### Main Objective:

To develop a five-year strategic plan that would guide the development of the Fisheries and Aquaculture sector, including recreational fisheries. The strategic plan will be guided by the FAO Code of Conduct for Responsible Fisheries (CCRF).

### Expected output:

Prepare a five-year strategic plan for the improvement, development and management of the sector through a rapid assessment and desk study using both primary and secondary sources of information. The plan should identify and prioritise strategic interventions for the improvement, management and development of the sector and address policy options to facilitate such strategic interventions.

### National Consultant

The consultant shall have a good understanding of fisheries management and aquaculture, a demonstrated analytical capacity, well developed technical writing skills, and be capable of working independently and under pressure to meet deadlines. The consultant must have a degree in fisheries science and should possess a good knowledge of the sector in The Bahamas including production, marketing and general legal and institutional aspects.

**Duration:** 1 month (20 working days)

**Terms of Reference:** Under the general supervision of the FAO Representative in Jamaica, the technical supervision of the SLC-Fishery Officer, the consultant, working in close collaboration with the Director of Fisheries and the technical team to be established by the Director, shall:

- lead the technical team, to be established by the Fisheries Division, for the specific purpose of preparing a five-year strategic plan for the Fisheries and Aquaculture sector;
- conduct a desk study of recent work done (projects, reports, national workshops, studies, etc.) on fisheries and aquaculture (analyses of the sector); review and evaluate existing fisheries sectoral plans or strategies to determine what recommendations/decisions were implemented and their success and what were not implemented and the constraints (in a matrix);
- consult with key public and private sector stakeholders on matters related to the fisheries and aquaculture sector; specifically the priorities, programmes, policies, challenges and opportunities;
- provide an assessment of current infrastructure, institutional and technological capacities to improve the sector;
- conduct appropriate field visits to be organised by the Fisheries Division for the purpose of obtaining information in support of the main objective;
- based on existing information of the regulatory frameworks for fisheries and using other