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## **The Fruit Industry in the Caribbean Production, Processing, Marketing & Future Prospects.**

### **INTRODUCTION**

The strength and success of a country's or region's agriculture depends on its ability to satisfy domestic, regional and international market demand for selected fresh, semi-processed or finished agricultural commodities on a consistent and timely basis and at competitive prices. The Caribbean region has traditionally been a net importer of processed foods and an exporter of raw agricultural produce - primarily raw sugar, rice, cocoa, coffee and bananas - the majority of which generally undergo further transformation in extra-regional markets. The traditional commodities earn valuable foreign exchange, occupy the majority of productive agricultural lands and provide employment for significant portions of the rural communities and other actors in the commodity chain. These commodities have received and continue to receive extensive support from governments. They have strong industry associations, guaranteed markets and a generally well-developed transport network system for exporting to Europe and North American markets. The emerging non-traditional agro-industries in the Caribbean region, including that for non-traditional fruits, have not received the same level of support and consequently have not been able to realize their full potential. They lack coordination and an enabling environment and are often described as under-developed, under-capitalized .

The Caribbean region extends to the east, between North and South America and includes the island states, washed by the Caribbean Sea and the land-locked countries of Guyana, Suriname and French Guiana in South America and Belize in Central America. In addition to being separated by land and water, there are cultural, ethnic, political and language differences. For the purpose of this article discussions focus on CARICOM member states; Antigua & Barbuda, the Bahamas, Barbados, Dominica, Dominican Republic, Grenada, Guyana, Haiti, Jamaica, St. Kitts & Nevis, St. Lucia, St. Vincent & the Grenadines, Trinidad & Tobago and Suriname. IICA Caribbean Regional Centre primarily treats with these countries.

In the late eighties, the threat of loss of preferential markets for major agricultural commodities, mainly banana and sugar, and low world market prices for other commodities such as, coffee and cocoa, caused several Caribbean countries to focus on the non-traditional agricultural sub-sector as an additional source of foreign exchange and employment. Several initiatives were embarked upon under the agricultural diversification programmes, which were pursued. Special units were established e.g. Jamaica Exporters' Association (JEA) and Jamaica Marketing and Promotions Organization (JAMPRO) in Jamaica, the Organization of Eastern Caribbean States / Agricultural Diversification Coordinating Unit (OECS/ADCU), for the OECS and the Caribbean Food Corporation / Caribbean Agricultural Trading Company (CFC/CATCO) within CARICOM. These received funding from international organizations, to oversee and facilitate the export thrust for increasing trade in selected crops; fresh tropical fruits (excluding bananas), root crops, vegetables and flowers into foreign markets. Success to date, of the regional agricultural diversification programmes has been mixed and is more easily recognized on a country or individual enterprise basis.

### Una mirada al Caribe / The Caribbean at a glance



Diversification into non-traditional tropical fruit production, processing and marketing posed serious challenges for entrepreneurs and the supporting agencies; mainly financial, research, development and extension, given the dominance of the mono-crop culture and the inherent infrastructure to support same. No identifiable group of stakeholders had been adequately prepared or retooled to make the transition from a mono-crop system to a multi-cropping system or to successfully produce, process or market non-traditional tropical fruits on a largescale. The predominant view existed that the Region's ecological conditions and its historical ties with Europe and North America provided it with a comparative advantage with respect to the commercialization of non-traditional tropical fruits.

The result is that non-traditional fruits for both the domestic and export fresh fruit market; and for processing have been harvested and continue to be harvested from backyard gardens, the "wild" and a few small to medium-sized orchards. This scenario has had and continues to have serious negative implications for the sustainable development of the Caribbean fruit industry as market demand and compliance with regional and international market requirements for fresh and processed fruit cannot be satisfied on an adequate or consistent basis. Consequently, large-scale fruit processors sustain operations by importing frozen or aseptic fruit pulps, purees and concentrates from extra-regional sources e.g. India, Brazil and Thailand. The main reason is the availability of semi-processed fruit of a consistent quality at competitive prices. The canned and frozen ackee produced in Jamaica is one of the main fruit based products, which can boast of being truly Caribbean.

In several instances, the thrust into large-scale fruit production, processing and export marketing has been limited by pest and disease problems, which have reduced the availability of fresh fruit. This can be exemplified by several cases; decline in papaya exports from Jamaica because of the onset of the Papaya Ring Spot Virus, and restriction of the burgeoning regional trade in fresh fruit among Caribbean member countries in the mid 1990s, due to the Pink Hibiscus Mealybug.

Fresh and processed fruit products are traded in domestic, regional and extra-regional markets. However, for numerous reasons, the collective performance of the non-traditional fruit industry in export markets has not yielded significant foreign exchange earnings, which can match the existing performance of traditional commodities. The limited successes recorded to date have been achieved through the adoption of innovative strategies and modern agronomic, processing and packaging technologies. The strong performance of selected fruit enterprises is primarily due to the entrepreneurial skills and competitive spirit

of individual operators. The availability of trade data to demonstrate export performance is limited. A recent survey of fruit processing enterprises in the Caribbean revealed that the annual sales approximated US\$ 100 million. (Francis, 1999). Similarly export data for fresh fruits (excluding bananas) for selected (8) Caribbean countries approximated US\$ 30 million annually. FAO statistics for 1990 - 1998 revealed that the total fruit (including bananas) and vegetable exports for all Caribbean countries (including Belize) approximated US\$ 325 million annually.

## Overview of the Fruit Industry

The fruit industry encompasses production, processing and marketing activities (bananas excluded).

### Production

A wide range of fruits is grown mainly in backyard gardens, mixed fruit orchards and on a limited scale as single fruit orchards. (Francis, Huerto de varias frutas / Mixed Fruit Orchard 1995). An updated estimate of the acreage under tropical fruit production in the Caribbean has not been fully determined. Small farm holdings predominate with the majority (> 80%) of farmers occupying less than two hectares (ha) of land and many farming less than half ha. Commercial orchards (>5 ha) exist mainly for mango, papaya, avocado, citrus, coconut and to a lesser extent for pineapple, passion fruit, ackee and West Indian cherry. Coconut, citrus, avocado and mango orchards are more predominant while the establishment of exotic fruit orchards is more recent, less than ten to fifteen years. In addition to growing a variety of fruits, there has been little attempt by producers to select the most suitable cultivars / varieties based on crop performance or with the greatest market potential. This allows them the opportunity to spread the risks. The challenges facing tropical fruit producers in the Caribbean can best be demonstrated by examining mango, pineapple and papaya production.

The major mango exporting countries are Dominican Republic, Haiti and Jamaica. The other countries export small quantities of mango fruit. However, the recent spread of the mango seed weevil among selected mango exporting countries in the OECS has had a significant negative impact on their exports to the United States market. Fruit flies also restrict exports to the lucrative US market. Although opportunities exist for OECS countries to re-direct export to Canada and other markets, the lack of available air cargo space to transport the fresh fruit directly to these destinations has restricted their ability to capitalize on the market opportunities. Logistical constraints are a major challenge hindering the fresh fruit export trade in the Caribbean.

The major pineapple producing and exporting countries are the Dominican Republic and Guyana. The withdrawal of Dole from the Dominican Republic and the restriction on exports from Guyana due to the Pink Hibiscus mealybug resulted in a decline in pineapple exports within the region and from the Caribbean to other third countries. Nevertheless, new players e.g. Trinidad and Tobago and Dominica have entered the market, but production constraints and inadequate planning limit these industry players from being competitive and sustaining market share. The technologies employed vary from country to country and several varieties are grown e.g. Trinidad and Tobago produces "Mausica and Tableland hybrids", Dominica produces the Montserrat and selected Taiwanese varieties and Guyana produces mainly the Montserrat. Exports are primarily to Barbados and other selected Caribbean destinations. It is worthy to note that the Caribbean pineapple producers now face competition within the region from extraregional suppliers.

Farmers, middlemen and exporters have recognized that pineapple is a lucrative crop and have embarked on production and marketing without adequate technical advice and support. Producers in some countries e.g. Trinidad have been expanding production on clay soils that are not the most ideal for pineapple cultivation while at the same time many regional producers are not applying the best agronomic practices. Several inter-crop different varieties and in other instances farmers are not sure of the varieties being cultivated. Within

the first six months of 2001, there has been a renewed focus with the support of IICA in collaboration with CIRAD and national governments in selected countries, on improving pineapple production and marketing systems for achieving economic and environmental sustainability. The approach, which is being implemented seeks to redress the situation and involves the training of all stakeholders in pineapple agronomy and management. There is also a focus on upgrading skills in agricultural field research management to ensure that the quality of research conducted at the field level can support an improvement at the farm and in the market place.

The papaya industry in Jamaica also provides a good case for studying the issues, challenges and opportunities facing the fruit sub-sector in the Caribbean. The industry expanded from 44 ha in 1990 to 423 ha in 1994 and this was supported by an aggressive marketing strategy, which gave Jamaica a competitive edge in international markets for its popular "solo" variety. Sophisticated pack houses were built and appropriate technologies employed. The rapid onset and spread of the Papaya Ring Spot Virus in 1994 impacted negatively on the industry leading to the destruction of many large farms. Other natural disasters e.g floods and the unstable economic situation - mainly the devaluation of the Jamaican dollar which resulted in an increased cost of inputs and a concomitant increase in the cost of production, have further impacted on Jamaica's ability to maintain its market share. In 2000, Jamaica recorded total export sales of US \$3,373,952 down from US \$6,627,522 in 1998. The Jamaica Exporters' Association (JEA) has embarked on a programme to encourage farmers to increase production for Jamaica to regain its market share, however, the response has not been encouraging. It is noteworthy that Jamaica is still listed among the major exporters of papaya to the US market, ranking fourth with respect to volume after countries such as Mexico, Belize and Brazil and third with respect to value after Mexico and Belize.

The constraints impacting on the production of fruits in the Caribbean can therefore be summarized as follows:

- Variability in cultivars and mixed plantings lead to inconsistent quality and quantity of any one variety.
- Predominance of small farmer and mixed orchard operations which impact on quality and quantity and contribute to an inability to meet market demand.
- Pest and disease problems
- High cost of production - labour and inputs
- Limited technical knowledge and/or adoption of optimum agronomic practices
- Limited Research and Development to support re-engineering of fruit production systems
- Logistical constraints - inability to move produce to designated markets due to inadequate air and sea linkages
- Lack of financial support and an enabling environment

## Processing

Fruit processing continues to be seen as having the greatest potential for sustaining growth of the fruit industry in the Caribbean. A wide range of products is presently manufactured; jams and jellies, wines, fruit drinks, candied fruits, sauces (fruit based including hot pepper), snacks (dried fruit and fried snacks), ice creams and yogurt. Processing fruit drinks, juices, purees and concentrates, mainly citrus, earns substantial foreign exchange in intra-regional and extra-regional trade. Approximately 80% of the enterprises are cottage, small and medium scale units and these are owned and operated primarily by women. The larger processing plants have the more advanced systems but the weak fruit production base, limits growth. The citrus processing sector in Jamaica and Trinidad and Tobago has been negatively affected due to a decline in production because of Citrus Tristeza Virus (CTV). Successful models of fruit processing enterprises can be found in almost all the countries. (Francis, 1999).

The processing of coconut into oil and related products has been affected by the growth in the processing of soya beans for oil and animal feed throughout the region and the reportedly ill effect (now disproven) on health. Domestic consumers have also developed a preference for soya and corn oils. There have been attempts to diversify into other coconut-based products; bottled coconut water (Dominica, Jamaica and Trinidad and Tobago), frozen and canned coconut creams (Dominican Republic and St. Vincent) and flavoured margarine products (Barbados). These recent initiatives to expand product options and the attempts to revive the use of coconut oil for cooking and, have been stymied by the unavailability of coconuts for processing, uncompetitive prices and unavailability of markets. Plantations have been abandoned or negatively affected by natural disasters (hurricanes and pest and disease problems).

Coffee and cocoa processing industries are found in Dominican Republic, Haiti, Jamaica, and Trinidad and Tobago. Coffee products from Dominican Republic, Haiti and Jamaica are attractively packaged (sacs, cans and foil) and particularly, that from Jamaica, command high prices in international markets. Although a range of canned cocoa products and chocolate confectionery is produced in the region, high quality cocoa beans in semi-processed form are exported for further processing in international markets. The Dominican Republic has led the way in diversifying into organic production and marketing of cocoa and coffee and has carved a niche for itself in the going organic trade. In 2000, this country reported export sales of US\$ 5.2 million and US\$0.63 million in organic cocoa and coffee respectively.

With respect to the processing of non-traditional fruits, the Dominican Republic dominates because of the availability of locally grown raw material and the advanced technologies used by several enterprises. In Jamaica and Trinidad and Tobago, the industry is dynamic but in the case of Trinidad and Tobago, cottage to small-scale industries, dominate and produce mainly for the local market. The low cost of energy gives Trinidad and Tobago a definite advantage by making this country's products price competitive. The larger enterprises rely on imported raw materials, however, some have developed mechanisms for sourcing raw materials directly from farmers through contractual arrangements or innovative methods. Suriname's non-traditional fruit-processing sector, was once significant, but has declined because of the unfavourable economic situation and the opening up of its markets to a range of imported products, including those from CARICOM. Surinamese fruit processors are finding it difficult to compete because of severe financial constraints and an inability to access markets primarily due to inadequate air and sea linkages especially to other Caribbean markets. Guyanese fruit processors also experience similar constraints and several pineapple canning plants have closed because of raw material constraints, inability to source metal cans at competitive prices and the high cost and inconsistent supply of utilities.

It is noteworthy that in most of the countries all the other main inputs used by processors including packaging and food additives are imported and these are subject to the relevant duties and taxes, further impacting on their ability to be price competitive. In those countries where packaging is locally produced, processors are generally not satisfied with the quality or variety available.

The potential of the non-traditional fruit-processing sector remains relatively untapped although several enterprises have been able to compete successfully in regional and international markets. The reasons for their success could be summarized as follows:

- Unique product - attractive packaging, high quality
- Innovativeness - sourcing raw material, product, marketing)
- Versatility - non-reliance on a single product
- Competitive price and positioning
- Accessibility to the consumer
- Well promoted - product branding
- Accepted on the domestic market
- Improved technical capability
- Strong determination and drive of owner/manager

The cottage, small and medium-scale enterprises also have some unique advantages. These are:

- Flexibility in operations and product versatility - a combination of manual and mechanical systems
- Small raw material requirements.
- Limited space requirements.
- Small investments over time and low risks.
- Low overhead costs.
- Concentration on niche markets e.g. high value low volume - product uniqueness
- Benefit from/access to external funding to improve technical capability

Caribbean fruit processors need nurturing and support. Some of the key areas that they have identified for intervention are:

- Research and development to improve product and process capability which should be made available to all interested entrepreneurs. Most of the processors have been able to solve technical problems but are not desirous of sharing the information with other enterprises.
- Increased access to information on local, regional and international market demand and trends.
- Access to technological information on equipment for processing and packaging and technology packages for the preparation of a range of products.
- Standards development and ratification for the major product categories.
- Development of laboratory support services to support product development, evaluation and certification
- Training to upgrade skills and knowledge of existing processors and related staff
- Financial assistance to facilitate plant upgrade

## Marketing

Marketing is an important aspect of any successful industry. However, it is an area requiring more focussed effort in the Caribbean. Although there are several marketing agencies, which have the mandate to provide a service in support of the expansion of trade in fresh and processed agricultural produce, efforts have not yielded significant results. One of the major constraints is lack of adequate financing and the other is an inability to match product with existing and projected demand. At the individual level of the farm or processing plant, coordinated marketing strategies have not been developed or implemented and many enterprises still depend on selling products as opposed to creating and satisfying demand. However, attempts are being made to change this approach and several fruit-processing enterprises have begun to introduce marketing departments, which are adequately staffed. None the less, marketing still poses a challenge for the cottage, small and medium-scale enterprises that do not possess the financial or human resources to develop and implement successful marketing strategies.

## Future Prospects

Chang (2001) reported that world production of tropical fruits has increased by 3% in 2000 to 60.4 million tonnes and that growth is linked to expanded acreage. There is international consensus that the global market for fresh and processed tropical fruits will continue to grow mainly due to increased consumer demand for wider variety and healthier foods. However, consumers are also expecting that the foods are safe for consumption and produced under ethical and environmental standards. These and other issues pose significant challenges for Caribbean producers and processors in their efforts to expand their share of domestic, regional and international markets. These challenges include the issues surrounding the natural resource base, finance and investment, conformance to international trade requirements and ensuring an enabling environment, which are driven by the appropriate government policy measures.

## Natural Resource Base

The land resource base in the Caribbean is limited. Gumbs (1998) reported that the total land area of the Caribbean is approximately 25 million hectares (ha) and only a small portion, 871,000 ha, can be considered arable land. The Caribbean is characterized by a high percentage of sloping lands with Dominica, St. Vincent and Grenada recording over 50% of very steep slopes (> 20 degrees) and Antigua and Trinidad recording over 20 % gently to strong sloping lands. Gumbs further opined that little work has been done to match suitable lands with corresponding suitable climate. In addition to having to overcome the difficulty of planting on sloping lands, the soils are challenging and many countries have reported that the best agricultural lands are being used non-productive activity, which generally yield higher returns to investors.

Most farmers do not own the land. Some farmers lease the land and in some countries e.g. Guyana, the optimum number of years that a lease can be applied is twenty-five (25) years, therefore they are reluctant to invest in tree crop production. These issues have serious implications for achieving economically and environmentally sustainable production of tropical fruits and further restrict diversification efforts due to the inability to attract investment capital.

Caribbean fruit farmers primarily practice rain-fed agriculture. Additionally, the water resource base in most countries is shrinking as approximately less than 10% of farms is irrigated. It is anticipated that farmers would be required to pay for water in the future and this has cost implications in terms of price competitiveness. On the other hand, climatic changes, which the Caribbean is experiencing and which are expected to continue and the resultant impact on fruit production are not being adequately monitored.

## Finance & Investment

No special provisions have been made for financing the development of the fruit industry in the Caribbean. However, significant financial support has been provided for agricultural diversification projects in the OECS but more specifically for the Windward Islands, Jamaica and Dominican Republic which are major banana producing countries. James (1998) reported that the OECS had accessed over thirty-four million United States (US) dollars in support of agricultural diversification.

Several institutions have financed the agricultural diversification programmes in the Caribbean. These include the Caribbean Development Bank (CDB) - the premier regional financial institution, the International Fund for Agricultural Development (IFAD), the World Bank, the Inter-American Development Bank (IDB) and the European Investment Bank. Funds are primarily provided for public sector credit. On the other hand, international agencies, such as, the Inter- American Institute for Cooperation on Agriculture (IICA), Food and Agricultural Organization (FAO); technical missions such as, the United States Agency for International Development, the French Mission for Technical Cooperation, Taiwanese and other foreign Missions, have mainly provided grants and technical training and support.

At the national level, the Development Banks and / or Development Foundations, private commercial banks and other financing institutions provide credit at interest rates ranging between 10.5% to 49 % (Jamaica) depending on the macro-economic situation in the country, the anticipated risks and the size of the enterprises. The grace period varies between 2 - 4 years depending on the fruits cultivated and some loans, especially those from the development banks are re-payable on the reducing balance.

Securing adequate financing for fruit development has been limited by several factors. Interested investors are deterred by the long gestation period, which is required for tree crops to bear fruit and the correspondingly short bearing time (three months) and the lack of data of the financial and technical evaluation of multi-cropping options. The inability to access freehold land limits the producers from obtaining the required collateral. On the other

hand, fruit processors face similar challenges in attracting financing, as bankers do not have an appreciation of the fruit-processing sector and their special requirements. The finance and banking sector also lacks confidence in the ability of producers and processors to manage successful enterprises.

## International Trade Requirements

It is becoming increasingly difficult to trade in fresh and processed fruits unless countries adopt and implement systems which conform to the Sanitary and Phyto-sanitary Measures under the World Trade Organization Agreement (WTO) on Agriculture. Some countries are also requesting that producers adopt Good Agricultural Practices (GAP) which are either driven by public sector institutions e.g the United States Food and Drugs Administration (USFDA) and private sector organizations as is the case of EUREPGAP which is driven by the major retail outlets in the European Union. Processors on the other hand are expected to conform to the requirements for implementing the Hazard Analysis and Critical Control Point (HACCP) System if exporting to the US, Canada and Europe. The cost for meeting these requirements is excessive and without the support of international organizations, such as, the Centre for Enterprise Development (CDE) and the Canadian Regional Human Resource Development Programme for Economic Competitiveness (CPEC), Caribbean producers and processors would find it difficult to conform. National governments are also required to put in place the prerequisite legislation and upgrade the infrastructure. Many countries have not been able to provide the resources for responding to these issues.

Implementation of these international standards also require an empowered scientific community. However, the limited knowledge and experience, the inadequate information on pesticide usage at the farm level and the ecology of pests and diseases and the lack of a thorough evaluation of production systems to determine the potential hazards, hinder the adoption of measures for conforming with the standards. Individual operators in several countries have been able to overcome some of the limitations and achieve certification. For example, some fruit processing plants in Dominican Republic, Jamaica and Trinidad and Tobago have been HACCP certified. However, all Caribbean countries need to address the knowledge, scientific and technical and financial resource gaps which inhibit their ability to meet these international requirements.

## Government Policies

Government representatives generally perceive the fruit industry as weak. This perception is due mainly to the lack of data as little attempt has been made to quantify the industry in terms of the numbers of players and/or total value of the collective contribution to national economies. There is some reluctance on the part of operators to support the data collection effort which is required for sound decision making. This is primarily due to the fact that they believe that they would be subject to taxation should they participate in such an exercise. Yet, it is agreed that the sector contributes to providing employment and can make a greater contribution to Gross Domestic Product (GDP). In the case of fruit enterprises, the micro/cottage and small-scale industries are not recognized and statistics for the other categories; medium and large-scale are captured and lumped under the general category of food manufacturing. Small fruit farmers are also generally omitted from the data collection.

Governments need to determine the contribution of the fruit sub-sector to the national economies, clearly define the role and policies with respect to the industry and make provisions - financial, physical and human, to support its growth and development. An enabling environment with the additional fiscal and other incentives are pre-requisites for taking the sector forward. Some issues which governments, in collaboration with key stakeholders need to address and /or support to facilitate the growth and expansion in the fruit industry are:

- Stabilizing the macro-economic framework to provide an environment that supports investments and avoids appreciation of the foreign exchange rates



- Providing direct support measures which are consistent with the WTO Agreement
- Establishing a database of all producers and fruit-processing enterprises which include inputs, products, number of employees, financial data etc
- Developing and implementing strategies to address the high cost of utilities and custom duties which impact on the cost of production and hence the ability of enterprises to be price competitive
- Facilitating an improvement in the air and sea linkages to overcome the logistical constraints and support a reduction in the cost of freight
- Updating food legislation such that they are harmonized with or exceed international standards
- Strengthening the regulatory arm of the Ministries of Health and Agriculture to conform to the new trade requirements governing agricultural health and food safety
- Improving public infrastructure including enhancing extension, research and development and laboratory services and pest and disease and pesticide management capability.

All of the above must be done with the close collaboration and support of all stakeholders involved in the fruit commodity chain.

## Conclusion

There is international consensus that the global trade in tropical fruits will continue to expand. The Caribbean has shown that it numbers among the international players in the tropical fruit industry. However, expansion in market share necessitates the adoption of innovative strategies for overcoming the constraints and meeting the challenges, which face the fruit sub-sector. All industry players from both the public and private sectors must be involved.

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