

# Investment Guide for the Sweet Potato Sector in the CARIFORUM Region for Financial Institutions

Basil G.F. Springer, PhD, GCM





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The Technical Centre for Agricultural and Rural Cooperation (CTA) is a joint international institution of the African, Caribbean and Pacific (ACP) Group of States and the European Union (EU). Its mission is to advance food security, resilience and inclusive economic growth in Africa, the Caribbean and the Pacific through innovations in sustainable agriculture.

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# List of acronyms

ACP	African, Caribbean and Pacific (Group of States)
APP	Agricultural Policy Programme
ASPMI	American Sweet Potato Marketing Institute
CaFAN	Caribbean Farmers Network
CARDI	Caribbean Agricultural Research and Development Institute
CARICOM	Caribbean Community
CARIFORUM	Caribbean Forum of the African, Caribbean and Pacific Group of States
CBERA	Caribbean Basin Economic Recovery Act
CBI	Caribbean Basin Initiative
CBTPA	Caribbean Basin Trade Partnership Act
CIF	Cost, Insurance and Freight
COP	Cost of production
CTA	Technical Centre for Agricultural and Rural Cooperation
DOM	Dominica
DR	Dominican Republic
EC\$	Eastern Caribbean Dollars
EPA	Economic Partnership Agreements
EU	European Union
FAO	Food and Agriculture Organization
FAST	Finance Alliance for Sustainable Trade
FDI	Foreign Direct Investors/Foreign Direct Investment
FI	Financial Institution(s)
GDP	Gross Domestic Product
ICT	Information and Communications Technology
IDB	Inter-American Development Bank
IICA	Inter-American Institute for Cooperation on Agriculture
IICA APP	Inter-American Institute for Cooperation on Agriculture, Agricultural Policy Programme
Intra-ACP APP	Intra-ACP Agricultural Policy Programme
JSIF	Jamaica Social Investment Fund
MICAF	Ministry of Industry, Commerce, Agriculture & Fisheries, Jamaica
MSME	Micro, Small and Medium Enterprise
OECD	Organisation for Economic Cooperation and Development
OFSP	Orange-Fleshed Sweet Potato
PMU	Project Management Unit
REDI	Rural Economic Development Initiative
SME	Small and Medium-sized Enterprise
UK	United Kingdom
USA	United States of America
US\$	United States Dollar
VCC	Value Chain Coordinator
YBT	Youth Business Trust

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# Acknowledgements

This study was conducted with financial support from the Intra-ACP Agricultural Policy Programme (APP). The Intra-ACP APP was a €20 million, 4-year (2013–2016), technical cooperation framework focusing on the Caribbean and the Pacific. It was funded under the 10th European Development Fund (EDF). It focused on addressing the common problems faced in the two regions by promoting the development of smallholder agriculture through its closer integration into local, national, regional and, where appropriate, global markets.



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# Foreword

This guide aims at introducing financial institutions to the world of sweet potato farming in the CARIFORUM region by showing the potential for investment that exists in the fields of the Caribbean, and at promoting responsible investment that can help the region access export markets.

In general, small and medium-sized agricultural enterprises are found in rural areas, isolated from export markets and financing opportunities that are tailored to meet their needs. Another issue is that farmers often lack good information about export markets that allow them to meet the quality and production cycles that buyers demand.

A fundamental part of this guide are the cycles of production and investment, which allow potential investors to understand the financial and operational requirements associated with sweet potato production, and when a farmer would start to earn the income required to repay a loan.

Understanding this information is fundamental for a potential investor to be able to develop financial products and services adapted to this specific sector and geographical region.

This guide also presents the range of risks associated with investment in the Caribbean sweet potato sector and basic recommendations for how they could be addressed. The challenge is that the majority of farmers are disaggregated and isolated, which implies the need for new financial models that consider the strengthening of farmer organisations. It is important to realise that the sweet potato sector offers investment opportunities for the short, medium and long term.

The importance of these investments cannot be overstated. An investment can decide the future of a farm and the family it supports, as well as modelling good practices for the broader community in which it is situated. It can ensure that land is used in a way that is economically, environmentally and socially responsible.

Finally, as an annex to the guide, we include contact information for a number of financial institutions that represent the financial ecosystem in the Caribbean and that could be interested in collaborating strategically to add value to the document, and to supporting a more vibrant agricultural marketplace.

We hope you find it a compelling resource to assist in your decision-making.

**Noemi Perez**  
President and CEO, FAST

**Michael Hailu**  
Director, CTA

# Preface

The Finance Alliance for Sustainable Trade (FAST) has partnered with the Technical Centre for Agricultural and Rural Cooperation (CTA) to develop an investment guide for the sweet potato sector in the Caribbean Forum (CARIFORUM) region for financial institutions (FIs), with financial support from the Intra-ACP Agricultural Policy Programme (APP). It is the first effort to inform FIs on how to invest in the sweet potato sector and how this particular sector represents a promising business opportunity in the CARIFORUM region.

CARIFORUM comprises Antigua and Barbuda, the Bahamas, Barbados, Belize, Cuba, Dominica, Dominican Republic, Grenada, Guyana, Haiti, Jamaica, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Suriname and Trinidad and Tobago.

The rate of growth of traditional CARIFORUM economies has declined, and countries within the region are looking to diversify their economies from tourism, sugar, rum, bananas and oil and gasoline.

Diversification opportunities lie in developing the existing sectors including mineral extraction, tourism, high-tech manufacturing, financial services and agribusiness. In addition, there are opportunities for diversification in other industries including: cultural, science and technology, wine, rum, sea-island cotton, West Indies cricket and renewable energy. Encouraging international businesses to set up their world headquarters in the region is another opportunity for diversification. The direct and indirect linkages between these growing sectors and the sweet potato sector are of paramount importance. For instance, the tourism sector opens an interesting market opportunity for this agriculture product.

Major assets of the countries in the CARIFORUM region are their climate, arable land and people. The history of the region reveals that it was the exploitation of these assets, albeit, with slave labour, that resulted in the establishment of the sugar industry in the mid-seventeenth century. Cotton and tobacco were also cultivated as export crops under similar systems.

In the 1950s, there was a decline in these traditional export industries. This heralded the advent of banana production. Now that sugar, cotton, tobacco and bananas, for different reasons, are 'sunset' agricultural industries, CARIFORUM countries are looking for 'sunrise' agricultural industries to utilise the vacated arable lands, most of which are now lying fallow and in bush. Sweet potato production is an opportunity to put some of this idle land back into production.

There is a history of production of fresh and processed sweet potato in the region for local, regional and, to some extent, extra-regional consumption. The fact that currently this sweet potato production is done by small farmers, in contrast to the large sugar cane plantations of the past, presents an additional challenge.

A farmer survey, commissioned in 2015 by IICA APP-Project Management Unit (PMU) in CARIFORUM countries, provides a wide range of important sweet potato data for Jamaica and Saint Vincent and the Grenadines (Stewart, 2015). Although the Dominican Republic is also a leading producer and exporter of sweet potato in the region, the commodities selected for the Dominican Republic in the survey were small ruminants and tomato.

In this guide, some of these statistical data have been used in support of sweet potato business growth and trade, and for profiling the two main countries where investment has a significant potential, Jamaica and Saint Vincent and the Grenadines. This guide also highlights the Dominican Republic as a leading producer and exporting country. In a region of small states such as this, it is expected that local FIs will be innovative and respond to specific needs, such as weak farmer aggregation and isolation

It is important to build on this and establish a dynamic agricultural statistical information system that provides production information for marketing intelligence and marketing information for production intelligence, which will facilitate the investment decision-making process for agribusiness development in the region.

Global sweet potato markets are thriving, demanding high market prices, with potentially lucrative returns to stakeholders if high efficiency is obtained along the value chain. The European market for sweet potato is relatively small but growing considerably, suggesting an interesting market opportunity for CARIFORUM sweet potato agribusinesses.

If the sweet potato output from local idle land were maximised through access to adequate resources and technology, it would provide a significant boost to the economies of the region. The market footprints of countries in the region are so small in relation to the potential to supply, that a strategy must be pursued to target the significantly larger fresh and processed sweet potato export market.

Also, the sweet potato output from Jamaica and Saint Vincent and the Grenadines in the newly focused export thrust to market the Beauregard variety<sup>1</sup> (~27,000 tons [24,494 tonnes]) is still merely a fraction of the growing demand in the UK, at ~135,000 tons (122,470 tonnes) in 2015. Therein lies a trading opportunity with commensurate benefits to the value chain stakeholders and investors, as well as macroeconomic benefits to the countries in the region.

Even though the sweet potato export market pull is strong, Jamaica and Saint Vincent and the Grenadines are still in the throes of putting a smooth, sustainable, global value chain system in place. Challenges include coordination of the value chain stakeholders, improvement of productivity and access to technology.

There are many business risks which inhibit the growth of sweet potato production in the region, but most of these can be alleviated if the primary constraint, the lack of timely access to appropriate finance, is addressed (Springer, 2015).

There are many different types of FIs which have interests in the region. They include traditional retail FIs, which are now liquid because the traditional investment opportunities yield a very low rate of return in today's economic environment. This threatens the FI's viability. These FIs are looking for non-traditional investment with higher rates of return. For more details on the cost of sweet potato production, see Annex III.

There may also be development FIs that could finance capacity building requirements and improvement of farmer competitiveness, and can wait longer for their return on investment. There are also social lenders with a primary interest in social and environmental outcomes, who may be interested in an above or return of capital.

The existing loan instrument offered by traditional FIs does not meet the needs of the sweet potato value chain because of the requirements of hard collateral and a steady monthly cash in-flow to meet amortised monthly loan repayments.

The creation of an economic cluster, either in the form of a farmer aggregator, processor, or value chain coordinator (VCC) can represent the farmers' interests in terms of markets and financial returns, monitor and facilitate the management of the business systems for the stakeholders and enhance the chances of business success.

The sweet potato cash in-flow period is about four to six months. The retail FIs, coupled with sources of developmental finance, social lending and risk mitigation measures, have the opportunity to finance advanced sweet potato initiatives in the region through profitable and risk-mitigating financial instruments and schemes.

A private and public partnership meeting should be convened at the national level, based on the hypothesis that the role of the private sector is to do business, and the role of the public sector is to create an enabling environment through regulation (making laws) and public service (using taxpayers' money or arranging development financing) to facilitate economic growth. A trust (owned by the people) should be established to govern the export project, under the laws of the country, led by a private sector entity with the government's blessing.

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<sup>1</sup>The Beauregard is a variety of the orange-flesh sweet potato, and the two terms are not to be used interchangeably.

# Executive summary

The finance gap for agricultural micro, small and medium-sized enterprises (MSMEs) is significant. Worldwide, it is estimated that this gap is \$450 billion for small agricultural producers (DGDA, 2012). The traditional loan model is not appropriate for smallholder agricultural producers. Herein lies an opportunity for innovative financial institutions (FIs) to accept this development challenge by finding ways of mitigating risk and taking advantage of the growing investment potential.

This investment guide introduces the uniqueness and appeal of the Caribbean region to FIs who are looking to diversify their investment portfolio. Regional investors need to take note of sweet potato investment opportunities so as to enhance their return on investment through diversification. This leads to the focus of investing in an opportunity with a compelling sweet potato sector value proposition.

Blended public and private sector finance is a possible solution for financing the most competitive sweet potato farmers in the CARIFORUM, to contribute to leveraging their business development, production resilience and more robust value chain coordination.

Depending on the climatic conditions, sweet potato farmers in the CARIFORUM region can produce two (in some cases up to three) crops per year. This gives a potential annual output of 25–37.5 million pounds (lb) or 11,160–16,741 tons (11,340–17,010 tonnes). FIs have a clear opening to collaborate with value chain stakeholders and provide the financial inputs required for this investment opportunity.

Added value for farmers comes from a variety of products and ingredients made from sweet potato root, including flour, dried chips, juice, bread, noodles, candy and pectin. New products include liquors and anthocyanin pigments from purple varieties for use in food colouring and in the cosmetics industry. Linkages with the cosmetic industry are indeed a potential and may provide another investment opportunity for FIs.

In the CARIFORUM, the Dominican Republic, Jamaica and Saint Vincent and the Grenadines present interesting investment opportunities based on their production and export values. In these countries, the technical production aspects have been carefully addressed, but more attention needs to focus on the management of value chains and business systems as the industry expands. In addition, one of the major impediments of exporting fresh sweet potato is the lack of timely and appropriate sources of finance.

The success of any export initiative of sweet potato will depend on the positive response to investment (financial security) from FIs and the efficient management of the other business systems: corporate governance (laying a sound foundation for operating rules through a trust), marketing (product promotion to generate revenue), operations (resilience, adoption of technology, and growth) and people development (sustainability).

# Introduction

The primary focus of this guide is the financing of sweet potato production and trade, driven by the increasing fresh market demand in the United Kingdom (UK), the Caribbean's traditional trading partner.

In addition, there are existing local and regional fresh and processed markets to be exploited. There is also market potential in other regions, such as mainland Europe and the USA.

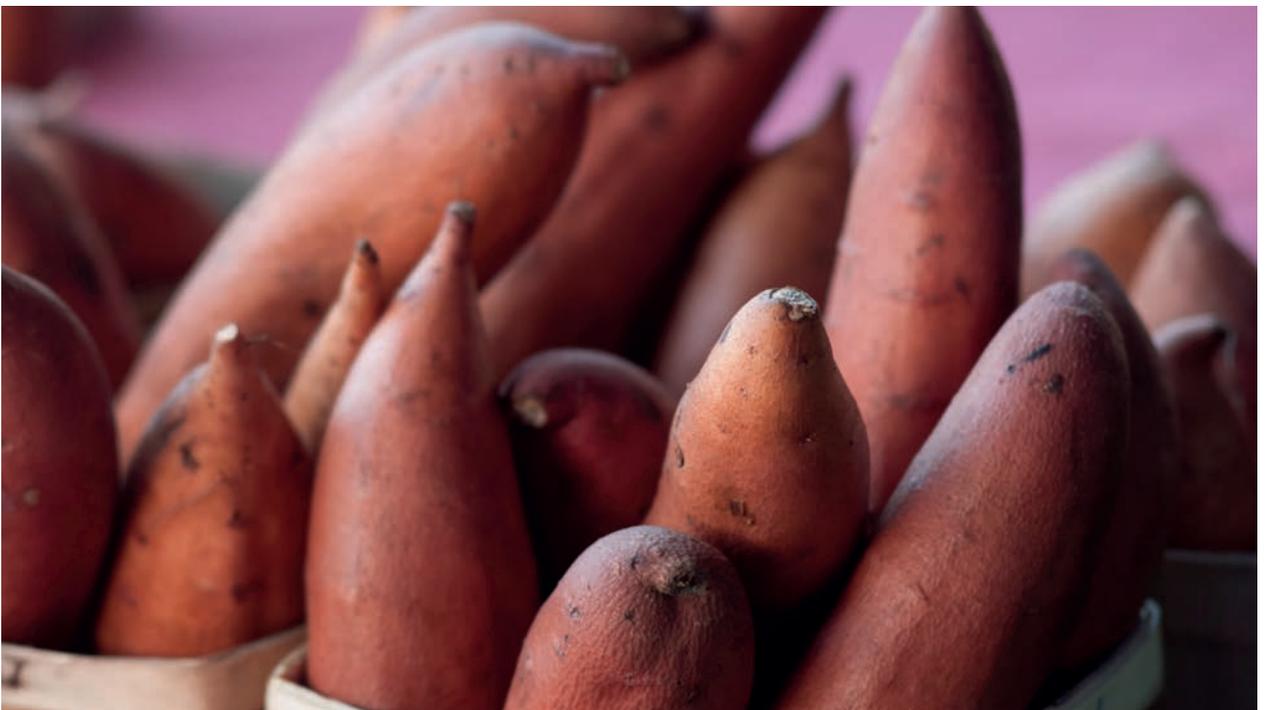
In the **first chapter**, financial institutions (FIs) are given a macroeconomic overview of the region, culminating in the following sweet potato sector value proposition:

*“To aim to be a high-quality producer of primarily orange-fleshed sweet potato (OFSP) to local, regional and overseas buyer(s) at a competitive price, with on-time delivery, and continuity of supply.”*

There has been a history of trade in fresh and processed sweet potato in response to the export market pull and potential for import substitution, but not in the context of a formal export-readiness certification process. Interest has been demonstrated in Jamaica and Saint Vincent and the Grenadines in expanding the Beauregard variety sweet potato production. In the **second chapter**, guidelines for export-readiness certification are presented, and the experiences of selected countries are shared.

In the **third chapter**, available statistics are used to give some indication as to the magnitude of the supply and growth potential for exports. These statistics are dynamic, however, and will have to be updated before any investment decision.

**Below:** © USDA/Lance Cheung



In the **fourth chapter**, it is recognised that the expansion of the existing seasonal sweet potato export markets in the UK provide an opportunity for growth in the trade. These primary export markets are much bigger than the potential supply capacity of countries in the region, even at maximum production growth thrust. These export markets are economically lucrative. Nevertheless, other smaller, complementary markets (import substitution, local, tourist, regional and processing) should not be ignored from a food security, regional economic development and social and environmental impact perspective.

In the **fifth chapter**, the focus is on a carefully delineated process flow in the value chain, from acceptance of the order from the buyer, through selecting farmers, production planning, inputs procurement, production, harvesting and post-harvest handling, and processing, to the delivery of the fresh or processed product to the buyer (through an economic cluster, such as a farmer aggregator, processor or value chain coordinator [VCC]) and receiving the payment to dispose of the financial proceeds equitably to the team of stakeholders. The purpose of the process flow is to provide a basis from which to estimate all costs involved and the corresponding investment needs.

In the context of the **sixth chapter** the following observation is particularly relevant:

*“...working capital, including payment terms and conditions – especially the credit system used by commercial buyers – limits the availability of financing to reinvest in the business. The standard established commercial financial institutions are not willing to take the risk associated with SMEs and their business. To address these issues, special financial arrangements need to be established.” (Stewart, 2015)*

In this final chapter, the sweet potato investment cycle, including the points at which the investment advances are required to successfully grow and deliver the crop to the buyer, is described.

The suggested responsibilities of proposed value chain stakeholders to be involved in sweetpotato trading, facilitated by an economic cluster, such as a farmer aggregator, processor or VCC, is presented in **Annex I**.

In the region, sweet potato producers are a diverse set of disaggregated small farmers who have to be coordinated. They are the primary entrepreneurs, but often do not get a fair share of net profits. The proposed economic cluster (farmer aggregator, processor or VCC) has been introduced as a potential solution to look after the interests of the farmers, including the efficiency of operations in the value chain system. The proposed economic cluster would have a major responsibility to look after the needs of farmers to ensure that they are not restricted to a fixed farm gate price and that they also benefit from the fluctuating net fortunes of the export market.

The investment required is also estimated. If an advanced payment from the buyer is negotiated, it will reduce the investment required from the FI.

**Annex II** highlights selected players of the CARIFORUM financial ecosystem that are currently serving the agriculture sector.

In addition, **Annex III** gives a second costing exercise.

# CARIFORUM macroeconomic overview



In this chapter, FIs are given a macroeconomic overview of the region, culminating in the following sweet potato sector value proposition:

*“To aim to be a high-quality producer of primarily orange-fleshed sweet potato (OFSP) to local, regional and overseas buyer(s) at a competitive price, with on-time delivery, and continuity of supply.”*

## General information on the CARIFORUM region

### Caribbean geography

The Caribbean is a unique region in the world. It is a diverse, multicultural, multi-ethnic, multireligious, multiculinary, multimusic genre and multilingual region. Officially, it is made up of an archipelago of islands and selected mainland

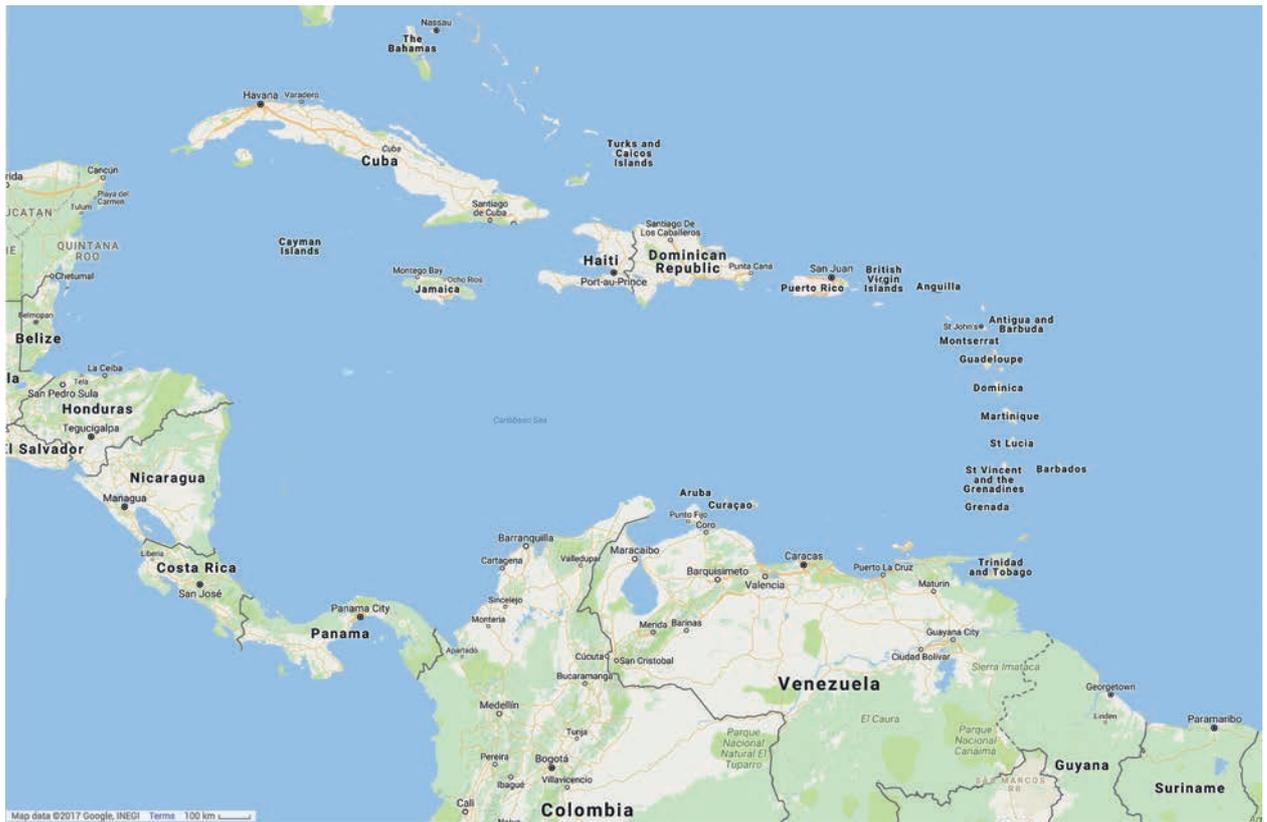
emerging territories. It is positioned strategically between North and South America, with Central America in the West and the Atlantic Ocean in the East. It resides in, and borders the Caribbean Sea. The region is in the tropical belt, and its countries are favoured with arable land and beautiful natural beaches.

**Table 1** Distribution of Caribbean administrations by language, population and location

	Location			Total Administrations	Population (millions)
	North	South	West		
<b>Language</b>					
<b>English*</b>	7	7	3	17	6.0
<b>French**</b>	5	1	0	6	11.2
<b>Dutch***</b>	3	1	3	7	0.8
<b>Spanish****</b>	3	0	0	3	22.5
<b>Total</b>	18	9	6	33	40.5

\* Including mainland territories of Belize and Guyana  
 \*\* Including mainland territory of French Guyana

\*\*\* Including the mainland territory of Suriname  
 \*\*\*\* Cuba, Dominican Republic and Puerto Rico

**Figure 1** Map of the Caribbean region

There are 33 Caribbean administrations with a total population of 40.5 million and the number of heads of government and ministers per head of population is high. The region should not be ignored as a geographical market to explore within the wider Latin American and Caribbean context.

## CARIFORUM

The Caribbean Forum of the African, Caribbean and Pacific Group of States (CARIFORUM) consists of 15 states: Antigua and Barbuda, the Bahamas, Barbados, Belize, Dominica, Dominican Republic, Grenada, Guyana, Haiti, Jamaica, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Suriname and Trinidad and Tobago.

There is a CARIFORUM Secretariat, established in the early 1990s and located in Guyana, which coordinates policy dialogue between its Participating States and the European Union (EU).

## Economy

The countries in the CARIFORUM region have a history of trade relationships primarily with North America and Europe. The major trading sectors have been tourism, sugar, rum, bananas and oil and gas. Economic growth through the tourism industry has significant potential, but trade in sugar and bananas has declined significantly after the loss of preferential trade agreements. The rum trade is holding steady, but the revenue contribution from oil and gas has slumped with the drop in world oil and gas prices.

There is an on-going attempt to diversify the product mix of the trading system with a focus on enterprise development, renewable energy and the creative industries. A special focus is being placed on non-sugar and non-banana commodities to resuscitate agricultural land lying in fallow and in bush.

## Favourable climate for investment

The investment climate is very sophisticated for established sectors and businesses in the economies of the region.

There is a wide range of financial services provided by commercial banks, government FIs, microfinance institutions, private institutions, credit unions, cooperatives, youth business trusts, and foreign direct investors (FDIs) (Springer, 2015).

Investment challenges arise in the non-established sectors and businesses, which have the potential to contribute to economic growth. The risks are considered too high because of the high failure rate of fledgling businesses. The rate of investment from traditional institutions is correspondingly stymied. Traditional FIs in the region currently invest only a very small percentage of their portfolio in the agriculture sector. Traditional commercial banks are not responding to this challenge since the conditions associated with their loan instruments are seldom met. The main sources of agricultural finance in the region and the common financial products are presented in ANNEX II.

The financial gap for the MSMEs is still large. Herein lies the opportunity for innovative FIs to meet the challenge by finding ways to mitigate the risks and take advantage of the growing investment potential.

The success rate for a business project is likely to be increased if government incentives, value chain coordination, factoring of receivables, warehouse receipts, aggressive sales teams, production resilience, market agreements, and business development services, including mentoring, are gradually put in place. In this environment, microfinance and private institutions, credit unions, cooperatives, social lenders and FDIs are likely to express greater interest in introducing innovative seed or equity investment, working capital advance instruments and term financial products to meet the needs of the sweet potato businesses.

In the CARIFORUM region, there is an attractive enabling environment for investing in the agricultural sector, but it is not uniform from country to country. For more details, see chapter 6.

The Ministries of Agriculture have considered incentives with benefits, which would result in a rebate on duties on inputs. This would make it more competitive for farmers to trade in the economically larger CARIFORUM countries: Barbados, the

Dominican Republic, Jamaica and Trinidad and Tobago. The corresponding macroeconomic benefits are foreign exchange earnings, employment, taxes and effective land use based on sustainable practices.

Antigua and Barbuda, Barbados, Jamaica, Saint Kitts and Nevis, Saint Vincent and the Grenadines and Trinidad and Tobago have identified sweet potato as a crop to be included in the national agricultural transformation programme. In these countries, it is expected that incentives will be styled for the agricultural sector.

There is the countervailing argument that incentives are in fact a contingent liability leading to large increases in the public-debt-to-GDP ratio. In a positive agricultural growth environment, this is an unlikely outcome.

### The Jamaican sweet potato export incentive package

An incentive package for sweet potato exports is offered in Jamaica (Keller, 2015). This Export Initiative Programme, led by the Ministry of Industry, Commerce, Agriculture and Fisheries (MICAF), is designed to act as a catalyst to promote Jamaica's agricultural exports on a sustained basis, based upon a 'focused product' and 'focused market' concept. With the aim to continuously increase Jamaica's share of global trade and expand employment opportunities, the Ministry has taken on many initiatives to boost exports. Certain special focus commodities have also been identified. In this regard, the Ministry is making a concerted effort to promote exports in identified sub-sectors by employing specific strategies that will be periodically reviewed, revised and enhanced.

In particular, there is a capacity building programme in propagation and post-harvest handling of OFSP varieties for export markets in the Ministry's agro-parks.

In 2013, arising from discussion with the Fresh Produce Consortium in the UK, a market opportunity valued at US\$50 million was identified for the export of sweet potato. Jamaica, as an established sweet potato producing country, exported 4,911 tons (4,455 tonnes) over the period 2010–2013, valued at US\$12.5 million to the USA, UK and Canadian markets. An average price of US\$1.14 per lb (US\$2.51/kg) was received. This initiated a full exploration into the production of the Beauregard and Covington orange-fleshed varieties of sweet potato, which are the main

varieties demanded in the UK market, as part of Jamaica's 'focused product' and 'focused market' concept.

The export market for sweet potato to the UK in 2014 was valued at US\$73 million, with an annual growth projection of 24%. Arising from the successful trials, Jamaica is now targeting the achievement of a 7% stake in the UK sweet potato markets, valued at approximately US\$12 million.

As Jamaica develops its thrust in the mainstream markets, there is a requirement for global Good Agricultural Practices certification (Vallotton, n.d.). Therefore, the Ministry has committed to the training and certification of Jamaica's agro-parks, as well as the farmers within these parks.

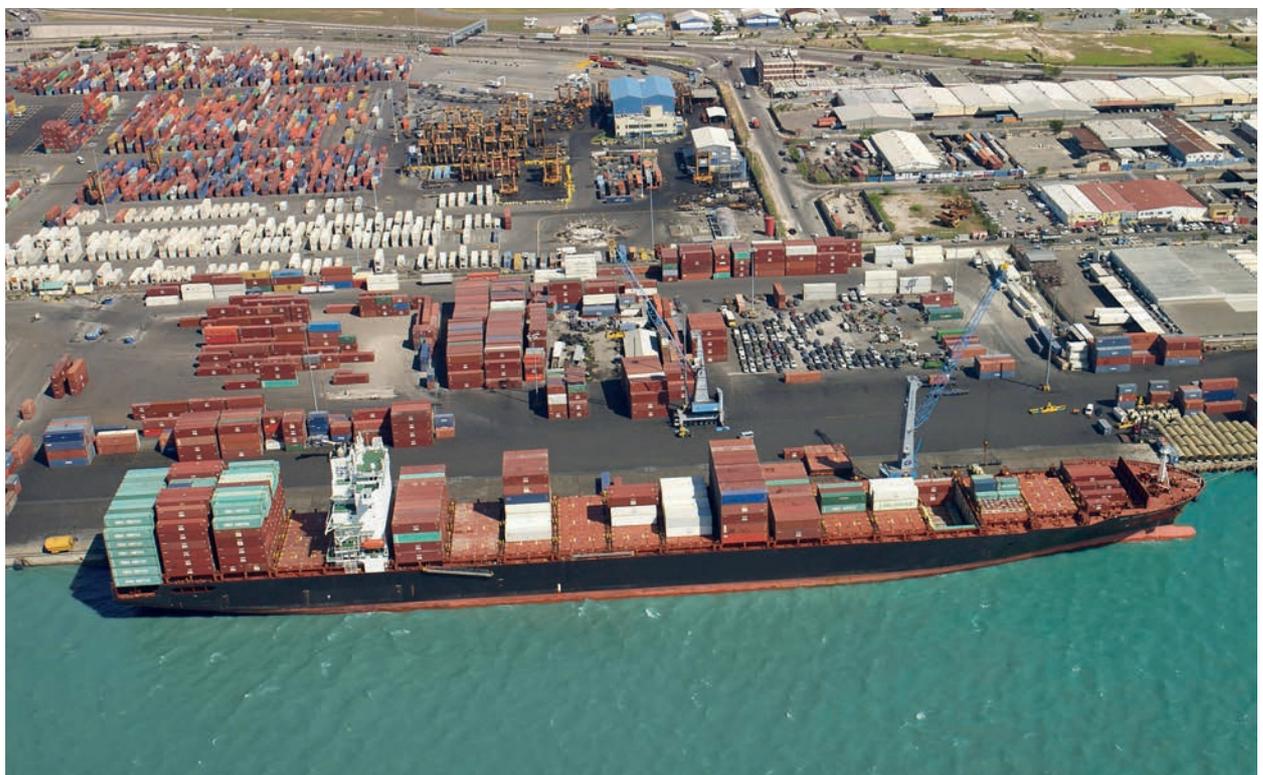
Two exporters' fora took place in the first quarter in FY 2015/16, to sensitise exporters to new and existing opportunities. The fora introduced the idea to link the demands of exporters to producers in the agro-parks through a value chain coordination mechanism. Establishing these market linkages will ensure consistent supply to the export market through structured production cycle management with a secured market for the farmers, barring unforeseen circumstances.

These export initiatives will bolster the Ministry's strategy to increase local production as they move towards achieving the 5% projected growth target for the sector.

It is expected that similar incentive packages will be crafted in the other CARIFORUM countries in an attempt to take advantage of the sweet potato export market opportunity.

Regional investors may take note of sweet potato investment opportunities so as to enhance their return on investment through portfolio diversification. Dialogue needs to be encouraged between farmers, value chain stakeholders, government and FIs. It is expected that as investors show more interest in agriculture, there will be a positive response from government in expanding incentives to trigger further growth in the economy.

**Below:** © All rights reserved



## Policies of commercial integration

CARIFORUM governments have a positive e-commerce policy. Governments and the private sector have made great strides in creating an e-commerce-friendly enabling environment.

Caribbean internet penetration is 43.7% of the population, which is marginally below the world average of 50.1%. There is access to basic smartphones, internet service and social media applications almost everywhere in the CARIFORUM region at reasonable prices.

Businesses use information and communications technologies (ICT) to improve the productivity of their operations and to enable commercial integration.

Trade and food security in the region are tied together through a variety of linkages, rooted in the importance of exports and imports to these small open economies. For example, food export-oriented economic activity is a major source of foreign exchange and employment-based income-earning opportunities. This is directly linked to both the supply and accessibility dimensions of food security. Imports are equally critical to the nutritional and stability dimensions of food security, as most of these countries are net food importers. Therefore, analysing the dynamic relationships between trade and food security is critical, especially in the wake of profound changes occurring in the multilateral, hemispheric and regional economic environment. For Caribbean countries, agricultural trade liberalisation, and trade reform in general, has significant impacts on all dimensions of food security—availability, access, utilisation and stability. The Food and Agriculture Organization (FAO) has been at the forefront in terms of articulating this policy for the region.

There are economic partnership agreements (EPA) between the EU and some of the countries in the region, aimed at promoting trade with the EU to ultimately contribute, through trade and investment, to sustainable development and poverty reduction goals (EC, 2016a).

The EU is the main destination for agricultural and transformed goods from the CARIFORUM region. The EU is CARIFORUM's second-largest trading partner, after the USA. In 2011, trade between the two regions came to over 8 billion (EC, 2016b).

The trade programmes, known collectively as the Caribbean Basin Initiative (CBI), remain vital in USA economic relations within the Caribbean. The CBI is intended to facilitate the economic development and export diversification of these economies. Initially launched in 1983 through the Caribbean Basin Economic Recovery Act (CBERA), and substantially expanded in 2000 through the USA–Caribbean Basin Trade Partnership Act (CBTPA), the CBI was further expanded in the Trade Act of 2002. The CBI provides beneficiary countries with duty-free access to the USA market for most of their goods. Fresh and processed agricultural commodities are eligible.

The CBTPA entered into force on October 1, 2000, and will continue until September 30, 2020, unless a free trade agreement, as described in the legislation, enters into force between the USA and a CBTPA beneficiary country before that date.

## Sectors with potential for investment

Though this investment guide is specifically for the sweet potato sector, it is useful to note that there are other opportunities in the agricultural field and beyond, which have been given policy priority by governments in the region. In this context, these sectors may also contribute to a dynamic investment climate.

### Agricultural

The decline of the sugarcane and banana industries have left relatively large acreages of land in fallow, which creates an excellent opportunity for agricultural diversification.

Fresh or processed livestock opportunities include eggs and poultry, pork, dairy, beef, lamb and chevon.

Fresh and processed fisheries opportunities (inshore, offshore, and deep sea) abound.

Fresh and processed crop opportunities for ornamentals e.g. fruits, herbs, spices and oil, as well as organic products, aloe vera, sea-island cotton (high quality), sugar cane, bananas, vegetables and root crops, such as sweet potatoes, are plentiful.

Other agricultural-related opportunities are forestry, craft, sericulture, vermiculture, composting, aquaculture and exotic aquarium fish.

## Enterprise development

There is a new wave of activity driven by entrepreneurs who are not relying on others to provide employment, but who are taking steps to look after their future. There is no shortage of entrepreneurs with good ideas and innovations. The challenges include the creation of an environment to enable these entrepreneurs, addressing the management of business systems, reducing the rate of failure among start-up enterprises, and the sourcing of innovative financial capital that meets the needs of these fledgling enterprises.

Sustainable economic growth can only be achieved through a national focus on developing a family of successful high-performance enterprises, one enterprise after another. Therefore, the focus must be on the success of each individual enterprise.

## Mining

There are deposits of oil, gas, gold and bauxite which have been, are being and will be exploited in Trinidad and Tobago, Jamaica, Barbados, Guyana and the Dominican Republic.

## Tourism

The region is positioned as the most desirable, year-round warm weather destination. Tourists are drawn to vacation in the region by a variety of tourism sectors and attractions, including adventure tourism, eco-tourism, community attractions, agro-tourism, relaxation destinations, festival attractions, sporting events, music tourism and culinary tourism.

## Manufacturing

There is a variety of manufacturing activity in CARIFORUM countries in industries such as construction, food and beverage, furniture, clothing, plastics, packaging and petrochemicals.

## Financial services

Many countries in the region have taken advantage of international expansion in offshore financial sector activities. This has developed this sector into a major foreign exchange earner.

## ICT

Foreign-owned companies, in particular, have undertaken a range of ICT activities in many countries in the region. These activities include establishing call centres, software development, transaction processing, health insurance claims

processing, medical transcription, database management, optical character recognition, web application development and computer-aided design.

## Renewable energy

Renewable energy opportunities abound in the Caribbean. They include opportunities in biomass, wind, waves, solar (hot water, crop drying, electricity, refrigeration) and ocean thermal. The use of these environmentally conscious technologies help to alleviate air pollution and greenhouse gas emissions and have the additional advantage that they save foreign exchange.

## Creative industries

Emphasis is growing on creative industry opportunities such as graphic design, animation, film and video making, new media, leisure software and computer games, apps, reality TV, radio and internet broadcasting, advertising, public relations, architecture, music, publishing and visual arts and crafts. The creative industries sector has a potential for wealth and job creation, through the generation and exploitation of intellectual property.

## The sweet potato sector and the value proposition

### The opportunity

In the tropics, including the CARIFORUM region, sweet potato can be grown perennially, while in temperate regions it is only grown as an annual crop. Sweet potato requires a soil pH of 5.6–6.6. High-quality tubers are best produced on fertile, well-drained, sandy loams (Titus, 2008). This creates an opportunity for select CARIFORUM countries to trade competitively with their traditional trading partners for most of the year. The sweet potato export markets have already been penetrated by regional countries. This guide can be used as a resource to help gradually expand this export market in the interest of regional development.

### Traditional varieties

Sweet potato originated in the tropical Americas and was grown extensively throughout the continent well before the arrival of the Europeans. It was then introduced to Europe, Africa, and Asia and is now one of the major root crops in emerging economies, where over 90% of the production is found (WCNUS, 2017).

### The orange-fleshed sweet potato variety

The Beauregard OFSP variety is favoured because of its high nutritional value, high yields of uniform root crops, the aesthetics of the reddish-purple potatoes, and the tasty, deep-orange flesh that keeps well in storage. It is more disease and pest resistant than other varieties, and also resists cracking (Bonnie Plants, n.d.). It is in demand in the UK and mainland Europe.

At the time of this report, the reaping of the first batch of the Beauregard potatoes is underway at the Jamaica producers' farms in the county of Middlesex. This new variety of sweet potato has been successfully introduced by the Ministry of Industry, Commerce, Agriculture and Fisheries through its Clean Seed Programme, in a bid to expand the export market for sweet potatoes (MICAFA, 2015). In Saint Vincent and the Grenadines, farmers are also growing the Beauregard variety at an average of 10,000 lb per acre (11.2 tonnes/ha), as explained in a coming section.

### The value proposition

*“To aim to be a high-quality producer of primarily orange-fleshed sweet potato (OFSP) to local, regional, and overseas buyer(s) at a competitive price, with on-time delivery, and continuity of supply.”*

In support of this value proposition, the adjective ‘high-quality’ governs ‘producer’. This proposes that not only the sweet potato product itself be of high quality, but all business systems associated with production and trade of the sweet potato must also be of high quality. These business systems include corporate governance, investment finance, marketing, production, operations and human resources development systems.

Any CARIFORUM country that can live up to this value proposition will have an opportunity to sustain the sweet potato export trade. See Chapter 6 for more detailed information. ■

Right: © USDA/Lance Cheung

Below: © Adobe Stock



# Sweet potato export-readiness



There is a history of trade in fresh and processed sweet potato in response to the export market pull and the potential for import substitution, but not in the context of a formal export-readiness process. Export-readiness implies that the major hurdles have been removed and that the sweet potato export process is progressing well on its journey to sustainability. There has been demonstrated interest in expanding sweet potato production. In this chapter, guidelines for export-readiness certification are addressed, and the experiences of selected countries are shared.

### The sweet potato export-readiness certification process

There is no agency which certifies export-readiness in the CARIFORUM region at the time this guide was published. There are no set criteria to determine whether a supplier is export-ready. However, compliance with certain standards is being met by current exporters of sweet potato. In general, these standards include adherence to: quality specifications (e.g. variety, flesh colour and size); cost reduction (impact on profitability); timeliness of delivery (meeting shipping schedules); and continuity of supply (linked closely to production planning). Failure to adhere to any one of these standards may result in the loss of a given market.

More specifically, it is recognised that the preparation of the supplier, individually or as part of a value chain coordinated process, for exports and import substitution leading to full certification, has to be addressed by systematically addressing the following:

1. The practise of good corporate governance
2. Management skills and expertise to develop and service export markets
3. Monitoring the environmental impact assessment
4. Individual investment of time, effort and resources that will be required to become a successful trader
5. Adequacy of financial strength and resources to develop the overseas market
6. Recognising that profits can also replace external financial investments as a source of funding for the enterprise
7. Previous marketing presence abroad
8. Value chain coordinated sales and marketing efforts
9. Identification of unique features and qualities of the value chain process that will enable the exploration of export market opportunities
10. Understanding of the strict import regulations which fresh produce exports must comply with regarding phytosanitary regulations

11. Following the recommended package of production practices
12. High levels of productivity to contain costs
13. Observing the maxim: 'Start small, do it right, make a profit, then expand'
14. Willingness to modify packaging to accommodate overseas market requirements
15. Training as the prospect of expansion takes place
16. Planning for surplus capacity or the flexibility to expand production quickly when export orders are increased.

## Potentially export-ready countries

The Caribbean Research and Development Institute (CARDI), under the Caribbean Community (CARICOM) Regional Transformation Programme for Agriculture, has lead responsibility for the development of the regional sweet potato industry. CARDI recognises six countries (Antigua and Barbuda, Barbados, Jamaica, Saint Kitts and Nevis, Saint Vincent and the Grenadines and Trinidad and Tobago) in the CARICOM region that have identified sweet potato as a crop to be included

in their national agricultural transformation programme (CARDI, 2011). In the wider CARIFORUM region, the Dominican Republic has a history of sweet potato exports to the USA.

The current status of these seven countries in terms of readiness for sweet potato exports is presented here.

### Antigua and Barbuda

Since 2009, CARDI has provided farmers with necessary information to schedule planting to obtain the best returns on their investment. However, wage rates are high because of the growing tourist industry. The prospect of a sweet potato export programme is in its infancy.

### Barbados

In Barbados, sweet potato is a staple food-crop for local consumption. Many centenarians claim that they owe their longevity to root crops, in general, and sweet potato, in particular.

There is no coordinated export programme but the ARMAG Farms' processed sweet potato project is interesting and significant (Box 1).

Below: © USDA/Lance Cheung



## Box 1

### ARMAG Farms

ARMAG Farms is a Barbadian company that owns and operates over 900 acres [364 ha] of arable land at Sunbury Estate and Colleton Plantation. Faced with a significant decline in revenue for traditional farming of sugar and other crops, ARMAG has pro-actively chosen to enter the food processing business.

#### Richard Armstrong [the owner of ARMAG Farms]:

“Farmers in Barbados have been very seriously challenged in recent years by both the demise of the sugar cane industry and the reduction in demand for our traditional crops, especially ground provisions. Despite the fact that people still recognise that our locally grown root crops such as sweet potatoes, yam and cassava are very high quality, and clearly a healthy option to eat, sales have gone down drastically since the 1970s. I think this is mainly due to the change of lifestyle in modern times, where more women are going out to work every day and have less time to prepare and cook meals. That is what prompted me to start processing our own crops. What we are doing is not only benefitting the typical housewife but even more so, the working family that on returning from a day at work will have the option of using

our healthy local food without having to worry about the long preparation process. After doing our market research, we decided to launch our Sunbury Harvest frozen sweet potato fries.

“Barbados sweet potato, in particular, is renowned for its special flavour, mainly as a natural result of our soils, climate and constant daylight hours. But we have also done a lot of research, trying several different varieties of sweet potato, as well as applying a variety of fertilisers and nutrients to find the best balance. As we obviously didn’t want to lose that very special taste, we invested in equipment that would allow us to lock in the natural flavours, including a steam blancher and a blast freezer, which can take the fries from cooking temperature to frozen in less than 30 minutes. The system was expensive to install, but we needed that quality.”

Locally produced frozen sweet potato fries are now displacing imported brands, and the next opportunity is to expand production to export the fries within the Caribbean and beyond. This presents a financial investment opportunity.

**Source:** Business Barbados (2015).

### Dominican Republic

The Dominican Republic has not been the primary focus of this guide, but it is useful to note that the import of fresh sweet potato in volume remained consistent in the period of 2008–2012 (Aziz, 2013) and the Dominican Republic remained the largest source of fresh sweet potatoes for this country (USDA-FAS, n.d.).

### Jamaica

The Ministry of Industry, Commerce, Agriculture and Fisheries has reported that, in 2014, 30,000 slips of the new Beauregard variety were planted at three agro-parks – New Forest/Duff House

in Saint Elizabeth/Manchester, Spring Plain in Clarendon, Yallahs in Saint Thomas, and at a farm in Charlemont, Saint Catherine. This variety is prioritised mainly for the extra-regional export market (Jamaica Observer, 2014).

The Beauregard sweet potato has copper-coloured skin, moderately deep-orange flesh and is consistent in shape. Produced primarily in the USA, it is preferred for mass cooking and baking purposes, and is the main variety traded across the world. It was specially requested by the Fresh Produce Consortium out of the UK.

The Fresh Produce Consortium (FPC),<sup>2</sup> based in the UK, is an association of over 700 businesses, including retailers, distributors, importers, wholesalers, processors, packers and food service companies. Since 2014, FPC has been discussing export of fresh sweet potatoes from Jamaica to the UK with some larger farmers who operate in the agro-parks.

This initiative is part of the Ministry's thrust to facilitate the sustained expansion of sweet potato exports. It also forms part of the export platform that is being created in collaboration with IICA and funded by the Inter-American Development Bank (IDB), under their competitiveness project.

The cost of production has been determined, but the process of change to get farmers to adapt to the new dispensation has been a challenge. The creation of a new infrastructure, establishing storage systems, the lack of timely and appropriate financing, climatic conditions and plant protection

measures have presented challenges, which have hindered the ramping up of the volume of production. However, with the prospect of making a significant profit on the cost of production, exporting to the UK is a sufficient incentive to be persistent with the expansion thrust.

### Saint Kitts and Nevis

The Ministry of Agriculture, Fisheries, Cooperatives, Lands and Housing has provided farmers with information for the effective control of the major sweet potato pest *Cylas formicarius*. The prospect of an expanded sweet potato export programme is in its infancy.

### Saint Vincent and the Grenadines

The Caribbean Farmers Network (CaFAN) is spearheading exports of sweet potato from Saint Vincent and the Grenadines to the UK. CaFAN is currently undergoing organisational and financial restructuring.

Below: © USDA/Lance Cheung



Saint Vincent and the Grenadines has had a long relationship of exporting sweet potato to Trinidad and Tobago, and there are currently six exporters who have an interest in exporting to the UK as CaFAN restructures (N. Abraham, agricultural consultant, Saint Vincent and the Grenadines, pers. comm.).

As is the case in Jamaica, the cost of production has been determined but the process of change in getting farmers to adapt to the new dispensation has been a challenge. Farmers report that they are frustrated at the length of time that it takes for them to get paid after they have delivered their produce. A possible resolution may be to implement a two-stage payment system, where the farmer is paid the cost of production when the product is delivered at the farm gate and the rest on receipt of full payment from the buyer. Another possible solution may be for the farmers to enter into a partnership with the financiers and the buyer, where the final profit after the buyer pays, is shared by agreement between the farmer and the FI.

## Trinidad and Tobago

In Trinidad and Tobago, CARDI is collaborating with one of its major stakeholders, the Trinidad and Tobago Agri-Business Association, to develop a project to validate production technologies aimed at increasing the quantity and quality of sweet potato produced. This could eventually lead to the development of an integrated production and marketing programme.

This brief overview illustrates that Jamaica, the Dominican Republic and Saint Vincent and Grenadines have the greatest production and exporting capacity in the region. The following chapters will provide further statistical evidence. ■

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<sup>2</sup><http://www.freshproduce.org.uk/>

# Sweet potato production potential



In all of the tables in this chapter, available statistics are used to give some indication as to the magnitude of the supply and growth potential for exports. These statistics are dynamic, however, and will have to be updated before any investment decision is made. While some countries examined throughout this document may not be export-ready, they are important to consider for the sake of comparison throughout the region.

### Sweet potato production methods by country

In Saint Vincent and the Grenadines, all farms operate under a traditional production system (Table 2). Saint Kitts and Nevis follow with 95% of farms operating under traditional production methods, and Antigua and Barbuda with 75%. Antigua and Barbuda also has a significant number of farms that are committed to green production methods.

Given that almost all farmers use traditional production methods, investments in higher tech methods will have to be made to enhance profitability and competitiveness.

Organically grown sweet potato fetches a much higher price in the UK market, but this is not the focus of regional producers at this time.

**Table 2** Production technology (%) (2015)

	Saint Kitts and Nevis	Antigua and Barbuda	Saint Vincent and the Grenadines
Farms under traditional production methods	95	75	100
Farms under green methods (reduced level of inorganic inputs)	5	25	0
Farms under organic methods	0	0	0

Source: Stewart (2015, p. 65).

## Yield per acre of sweet potato for selected countries

Yields vary considerably among countries as well as between farmers in each country (Table 3). The data suggests that Antigua and Barbuda is achieving yields of two to four times those of the other countries listed. Antigua and Barbuda is a coral island state, like Barbados, and the soils are sandy loams, which are high in nutrients and offer good drainage. Saint Vincent and the Grenadines has heavier soils of volcanic origin. Jamaica, a much bigger island, has a wide profile of soils.

## Sweet potato production growth for the region

“World production of sweet potato was consistent at just over 100 million tonnes during the years 2007–2011. In 2011, world production of sweet potato was 104.26 million tonnes with the top producer, China, accounting for 72% of the total production. In the Americas, the main producers were USA (1.2 million tonnes), followed by Argentina (390,000 tonnes) and Cuba (312,000 tonnes). Within CARICOM, Jamaica was the top producer in 2011 with a harvest of 42,000 tonnes” (Aziz, 2013).

Sweet potato production in the CARIFORUM region increased by 35% from 2007–2014, with the Dominican Republic and Jamaica leading by an order of magnitude (see Table 4. and Figure 2).

Recent evidence suggests that Jamaica has immediate plans to produce sweet potato on 1,250 acres (506 ha) of suitable land, at 20,000 lb per acre (22.4 tonnes/ha), for exporting to the UK and Europe (D. Deslandes, agricultural marketing consultant, Jamaica, pers. comm.). Depending on the climatic conditions, farmers can produce two crops per year. This gives a potential annual output of 25–37.5 million lb or 11,160–16,741 tons (11,340–17,010 tonnes). FIs have a clear opportunity to collaborate with value chain stakeholders and provide the financial inputs required for this investment opportunity.

The primary market for Jamaica’s sweet potato export is the UK. The next steps would be to continue with the marketing thrust in France and Holland, the European countries in which demand is increasing most rapidly, and to expand production gradually to 5,000 acres (2,023 ha), giving an annual output potential of 100–150 million lb or 44,643–66,964 tons (45,359–68,039 tonnes).

**Table 3** Yields (tons per acre) (2015)

	Saint Kitts and Nevis	Jamaica*	Antigua and Barbuda	Saint Vincent and the Grenadines**
Range of yields (min-max) per acre	0.75–5	2–9	10–12.5	4
Average yield per acre	2.325	5.5	11.25	5

**Source:** Stewart (2015, p. 66).

1 ton = 0.9072 tonne

1 acre = 0.404686 ha

\*A recent (November 2016) verbal communication with a member of the Jamaican sweet potato export team revealed that the average yield from the new Beauregard variety is 10 tons per acre (22.42 tonnes/ha).

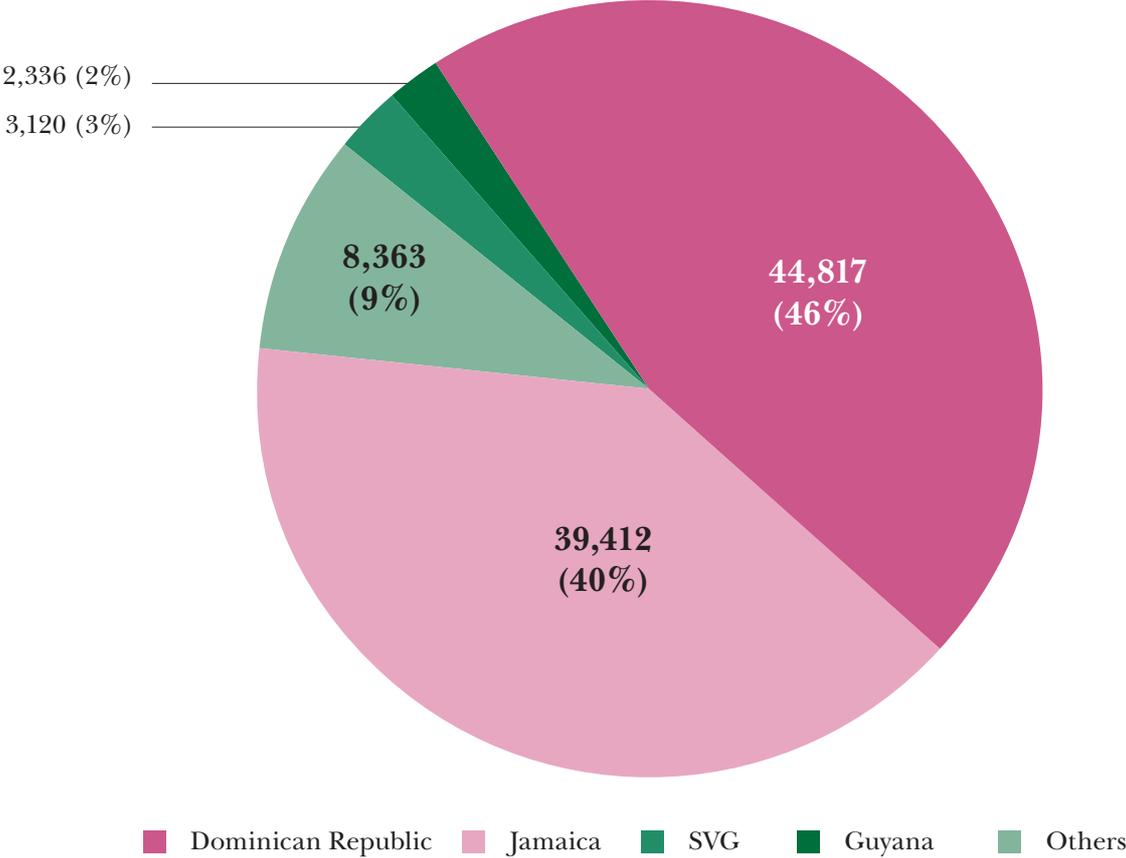
\*\*A recent (November 2016) verbal communication with a member of the Saint Vincent and the Grenadines sweet potato sector confirmed that the average yield from the new Beauregard variety is 5 tons per acre (11.21 tonnes/ha).

**Table 4** Regional production of fresh sweet potatoes by volume (tons)

	2007	2008	2009	2010	2011	2012	2013	2014
<b>Antigua and Barbuda</b>	262	280	272	269	265	260	266	272
<b>Bahamas</b>	1,166	1,249	1,332	1,416	1,499	1,583	1,666	1,749
<b>Barbados</b>	1,335	884	888	1,176	507	1,202	1,220	1,232
<b>Dominica</b>	2,025	2,056	2,086	2,114	2,141	2,200	2,200	2,219
<b>Dominican Republic</b>	36,402	38,265	47,147	53,626	46,497	44,489	49,364	44,817
<b>Grenada</b>	73	117	128	125	103	78	98	96
<b>Guyana</b>	2,369	2,193	2,151	2,153	1,163	2,637	2,144	2,337
<b>Jamaica</b>	26,055	25,797	34,229	34,512	42,091	42,165	44,224	39,412
<b>Montserrat</b>	26	26	27	27	28	28	29	29
<b>Saint Kitts and Nevis</b>	193	199	230	198	216	183	256	139
<b>Saint Lucia</b>	529	604	397	464	493	576	845	718
<b>Saint Vincent and the Grenadines</b>	1,810	2,605	3,575	2,800	2,990	3,320	3,110	3,432.5
<b>Trinidad and Tobago</b>	48	155	271	1,315	1,205	1,296	1,843	1,909
<b>Total</b>	72,293	74,430	92,733	100,195	99,198	100,017	107,265	98,361.5

**Source:** FAO Stat (2016), except Saint Vincent and the Grenadines (Saint Vincent and the Grenadines, Ministry of Agriculture, Fisheries, and Rural Transformation Statistical Unit). 1 ton = 0.907185 tonne

Figure 2 Major sweet potato producers by volume (tons).



Below: © USDA/Lance Cheung



Recent evidence also suggests that Saint Vincent and the Grenadines has immediate plans to produce sweet potato on 800 acres (323 ha) of suitable land at 10,000 lb per acre (11.2 tonnes/ha), to export to the UK (N. Abraham, agricultural consultant, Saint Vincent and the Grenadines, pers. comm.). Depending on the climatic conditions, farmers can produce two crop cycles per year. This could give a total annual output of 16 million lb or 7,143 tons (7,257 tonnes). The regular provision of sources of finance is crucial to materialise this potential.

Saint Vincent and the Grenadines has a potential to continue with the marketing thrust in the UK and to expand production gradually to an available 2,000 acres (809 ha). This would give them an annual potential output of 40 million lb or 17,857 tons (18,144 tonnes). Collectively, Jamaica and Saint

Vincent and the Grenadines present a promising opportunity for investors.

The success of any export initiative of sweet potato will depend on the positive response to investment (financial security) from FIs and the efficient management of the other business systems: corporate governance (laying a sound foundation for operating rules through a Trust), marketing (product promotion to generate revenue), operations (resilience, adoption of technology, and growth) and people development (sustainability). ■

# Markets for sweet potato



The expansion of the existing seasonal sweet potato export markets to the UK provides an opportunity for growth in the trade. These primary export markets are much bigger than the supply potential of the countries in the region, even at maximum production growth thrust. These export markets are economically lucrative. Nevertheless, other smaller, complementary markets (import substitution, local, tourist, regional and processing) should not be ignored from a food security, regional economic development and social and environmental impact perspective.

Statistics used in this chapter are from Intra-ACP APP (Stewart, 2015) unless otherwise stated.

### Import substitution in the region

Root crops, and sweet potato in particular, have been a traditional mainstay in the diet of the regional population. Substituting sweet potato imports provides an opportunity for stimulating local production, provided that the cost of production is right.

Antigua and Barbuda import significant quantities of sweet potato in terms of value and are largely

supplied by Saint Vincent and the Grenadines (Table 5).

Trinidad and Tobago's average annual imports of sweet potato over the period 2007–2011 were approximately 1,000 tons (907 tonnes). Saint Vincent and the Grenadines was the main supplier over that period (Aziz, 2013).

**Table 5** Trade statistics – Import trends of fresh sweet potato (2015)

		2009	2010	2011	2012	2013	2014
<b>Saint Kitts and Nevis</b>	US\$ (Value)	16,265	17,817	7,322	11,100	7,042	15,239
	Tons	76.0	61.7	60.1	81.3	32.4	17.2
<b>Antigua and Barbuda</b>	US\$ (Value)	323,846	111,127	39,034	93,871	107,262	Not yet available
	Tons	56.443	14.694	4.468	9.029	10.571	Not yet available

**Source:** Stewart (2015, p. 67).

1 ton = 0.907185 tonne

Imports are a drain on foreign exchange. Therefore, the use of domestically produced fresh or processed sweet potato to replace imports should be encouraged.

Regional trade with major importing countries in the CARIFORUM represent an important market opportunity for Jamaica, Saint Vincent and the Grenadines and the Dominican Republic.

## Local

Traditionally root crops, especially sweet potato, have been a major healthy source of carbohydrates for the domestic population. However, the size of the domestic populations in the region are relatively small compared with the global market. Feeding the local market is important from a food security perspective, and this must come first. Because of its small size in relation to the export market, the local market can easily be accommodated without having a significant impact on an aggressive export thrust.

## Tourist

The tourist market is important not only because the tourists have to be fed while on their leisure pursuits, but also because they can be introduced to local sweet potato recipes which could give rise to an increase in their consumption of sweet potato upon their return home.

## Regional export

Traditionally Saint Vincent and the Grenadines has shipped sweet potato into Trinidad and Tobago, and Antigua and Barbuda. Feeding the regional market is important from a food security perspective, and this must be considered. Whether this practice continues, once the export market grows, will become an issue of price and regional agreements.

## Extra-regional export (including the diaspora)

The European market for sweet potato is relatively small but growing considerably. The UK market for sweet potato is US\$50 million, and the USA market is even more robust (see Table 6). Import and consumption in the UK are rapidly expanding, increasing by over 100% over the last five years. European supermarkets are catering

to a growing demand of exotic and ethnic food. Important destinations in Europe are the UK and the Netherlands; the latter being the main hub for the rest of Europe. The USA holds a 70% market share in the supply of sweet potatoes. Opportunities exist for suppliers from developing countries with differentiated or competitive products (CBI, 2016).

**Table 6** USA imports of sweet potato from CARIFORUM countries (2011–2015; US\$ '000)

Exporters	2011	2012	2013	2014	2015
Worldwide	10,181	9,836	11,442	14,680	15,659
Dominican Republic	5,443	4,844	5,296	6,929	5,776
Antigua and Barbuda	4	0	0	0	0
Saint Vincent and the Grenadines	19	10	0	0	0

Source: ITC (2016).

**Table 7** USA imports of sweet potato from CARIFORUM countries (2011–2015; tons)

Exporters	2011	2012	2013	2014	2015
Worldwide	10,544	11,841	15,365	16,166	19,664
Dominican Republic	7,084	6,702	6,488	6,895	7,395
Antigua and Barbuda	2	0	0	0	0
Saint Vincent and the Grenadines	32	5	0	0	0

Source: ITC (2016).

1 ton = 0.907185 tonne

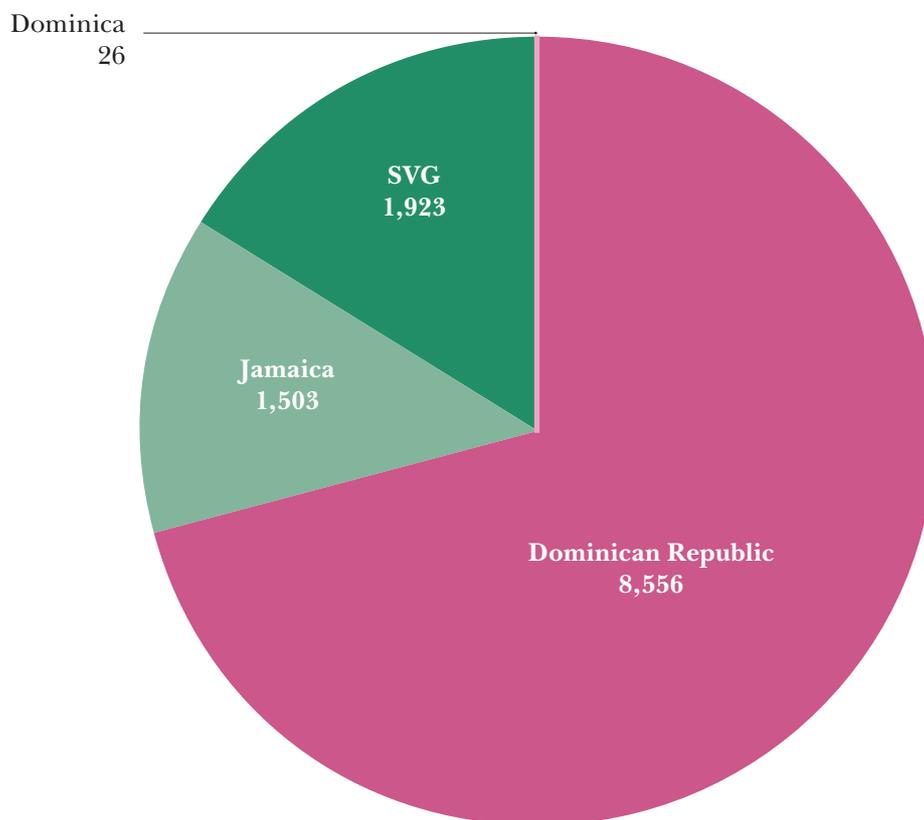
Exports of sweet potato from CARIFORUM countries have fluctuated over the period of 2009–2015 (Table 8), although these fluctuations are less severe when the Dominican Republic is removed from the calculation. The Dominican Republic, Saint Vincent and the Grenadines, and Jamaica were responsible for almost 100% of exports in 2015.

The UK and the USA dominate extra-regional imports from the Caribbean region, being the largest importers of sweet potato (fresh, chilled, and frozen) from Jamaica and the Dominican Republic, respectively. Canada, France and Sao Tome and Principe are also significant importers.

**Table 8** Quantity of sweet potato exported by volume (2011–2015; tons), 2008–2015

Exporters	2009	2010	2011	2012	2013	2014	2015
Antigua and Barbuda	0	1	0	0	0	0	1
Barbados	3	1	0	0	0	1	0
Dominica	67	24	31	20	26	N/A	N/A
Dominican Republic	11,779	8,247	10,491	11,149	8,556	9,013	8,938
Guyana	5	45	10	0	0	8	66
Jamaica	1,016	1,007	1,149	1,433	1,503	1,332	1,276
Saint Kitts and Nevis	2	3	2	N/A	N/A	N/A	N/A
Saint Lucia	N/A	N/A	N/A	N/A	N/A	2	N/A
Saint Vincent and the Grenadines	2,191	1,621	1,627	2,121	1,923	950	914
Trinidad and Tobago	1	1	N/A	N/A	N/A	N/A	N/A
<b>CARIFORUM aggregate</b>	15,064	10,950	13,310	14,723	12,008	11,306	11,195

Source: ITC (2016).  
1 ton = 0.907185 tonne

**Figure 3** CARIFORUM exports of sweet potato (tonnes) 2013**Table 9** UK Imports of sweet potato from CARIFORUM countries (2011–2015; US\$ '000)

Exporters	2011	2012	2013	2014	2015
Worldwide	38,709	42,322	50,741	73,198	102,769
Jamaica	823	1,486	1,630	1,413	2,693
Saint Lucia	2	0	0	0	6
Barbados	0	2	3	0	2
Dominican Republic	0	16	306	23	0

Source: ITC (2016).

**Table 10** UK imports of sweet potato from CARIFORUM countries (2011–2015; tons)

Exporters	2011	2012	2013	2014	2015
Worldwide	45,345	52,408	66,223	81,948	122,564
Jamaica	250	503	620	491	981
Saint Lucia	1	0	0	0	4
Barbados	0	1	1	0	1

Source: ITC (2016).  
1 ton = 0.907185 tonne

**Table 11** Leading importing countries for sweet potato coming from Jamaica, Saint Vincent and the Grenadines and the Dominican Republic by value and volume (US\$ '000 and tons)

Exporters	United Kingdom			Canada			Cayman Islands		
	2013	2014	2015	2013	2014	2015	2013	2014	2015
Jamaica									
US\$ '000	2,079	1,412	1,307	1,261	1,063	1,025	200	131	189
Tons	771	722	740	625	538	444	87	62	78

Exporters	Trinidad and Tobago			USA			British Virgin Islands		
	2013	2014	2015	2013	2014	2015	2013	2014	2015
Saint Vincent and the Grenadines									
US\$ '000	873	456	526	5	13	9	9	9	5
Tons	1,829	875	876	8	20	15	18	14	8

Exporters	USA			France			Sao Tome and Principe		
	2013	2014	2015	2013	2014	2015	2013	2014	2015
Dominican Republic									
US\$ '000	6,337	5,455	110	148	151	177	145	95	189
Tons	7,456	7,804	8,312	157	213	215	272	224	115

Source: ITC (2016).  
1 ton = 0.907185 tonne

Trade data in Tables 9–11 seem to present conflicting data. This variation can be accounted for by variation and inconsistent recording and reporting practices between the country of export and country of import.

Chapter 3 indicates evidence that suggests that there are immediate plans in Jamaica to produce sweet potato on 1,250 acres (506 ha) to yield up to 16,000 tons (14,515 tonnes), which could ultimately increase to 5,000 acres (2023 ha) yielding 67,000 tons (60,781 tonnes).

In Saint Vincent and the Grenadines, there are immediate plans to produce sweet potato on 800 acres (323 ha) to yield up to 7,000 tons (6,350 tonnes), which could ultimately increase to 2,000 acres (809 ha) yielding 17,000 tons (15,422 tonnes).

Gross profit could range from 50% to 100% in Jamaica but would be less in Saint Vincent and the Grenadines (D. Deslandes, agricultural marketing consultant, Jamaica, pers. comm.). Once the conditions for an efficient production system are met and relevant constraints observed therein lies an opportunity for trade.

The proposed economic cluster (farmer aggregator, processor or VCC) must be vigilant in ensuring that the model for the disposition of funds from the export market is such that farmers earn more than the farm gate price when conditions are favourable.

There are potential niche market export projects which provide the market pull to which Jamaica and Saint Vincent and the Grenadines may respond. One export project in Saint Vincent and the Grenadines has developed a relationship with Sol Caribbean Ltd. out of the UK. The other, in Jamaica, was specially requested by the Fresh Produce Consortium in the UK to export sweet potatoes from Jamaica to the UK.

The full launching of these plans is predicated on the assumption that there is good corporate governance, developmental finance to address infrastructural issues, blended finance appropriate for start-up operations until profitability is realised, and private investment to expedite growth; establishment of niche market contracts in the UK and EU; good management practices, mindset and skill-set; and cross-cultural communication training for all stakeholders in the value chain process.

A private and public partnership meeting should be convened at the national level, based on the hypothesis that the role of the private sector is to do business, and the role of the public sector is to create an enabling environment through regulation (making laws) and public service (using taxpayers' money or arranging development financing) to facilitate economic growth. A Trust (owned by the people) should be established to govern the export project, under the laws of the country, led by a private sector entity with the government's blessing.

In Saint Vincent and the Grenadines the majority of the sweet potato produced is sold to wholesalers who are also exporters. In Jamaica, the farmers sell to wholesalers or exporters directly. In these two countries, sweet potato is largely sold as fresh for exporting purposes.

Prices are lowest in Saint Vincent and the Grenadines and Jamaica, and highest in Antigua and Barbuda (Table 13). However, several micro and macroeconomic factors play a role in this differentiation. For instance, the 2015 GDP per capita, which compares GDP on a purchasing power parity basis (PPP) divided by population, is much higher in Antigua and Barbuda (US\$24,100) than in Jamaica (US\$9,000) and Saint Vincent and the Grenadines (US\$11,300) (CIA, 2017). PPP is a currency comparison unit which allows for the exchange rate of the countries to be taken into account, thus representing a real purchasing power comparison.

Jamaica is a significant exporter, with exports showing a fluctuating trend between 5,000 and 7,000 tons per year (4,536–6,350 tonnes). Saint Vincent and the Grenadines is also a significant exporter with regular fluctuations.

Major weaknesses for constraining exports of fresh sweet potato include the lack of timely and appropriate sources of finance and weak management of business systems (corporate governance, investment finance, marketing, operations and human resources development) (D. Deslandes, agricultural marketing consultant, Jamaica, and N. Abraham, agricultural consultant, Saint Vincent and the Grenadines, pers. comm.). Until these weaknesses have been effectively addressed, there is little hope of recovery from this regular fluctuation.

**Table 12** Market composition (%) for fresh sweet potato (2015)

	Saint Kitts and Nevis	Jamaica	Antigua and Barbuda	Saint Vincent and the Grenadines
Percentage of sales to wholesalers	5	40–50	70	90
Percentage of sales to processors	20	2	< 1	0.5
Percentage of sales to foodservice	40	N/A	25	0.5
Percentage of sales to exporters	0	60–70	0	90
Percentage of commodity sold under contract	25	0	-	0
Percentage of commodity sold on the open market	10	100	-	0

Source: Stewart (2015, p. 71).

Below: © All rights reserved



**Table 13** Price trends (US\$ per lb unless otherwise stated) (2015)

		2010	2011	2012	2013	2014
<b>Saint Kitts and Nevis</b>	PRICE RANGE					
	Farm gate	0.50-0.65	0.65-0.75	0.50-0.75	0.65-0.85	0.75-0.85
	Wholesale	N/A	N/A	N/A	N/A	N/A
	Retail	0.75-1.10	0.75-1.10	0.75-1.20	0.75-1.33	0.95-1.40
	AVERAGE PRICE					
	Farm gate	0.58	0.70	0.63	0.75	0.78
	Wholesale	N/A	N/A	N/A	N/A	N/A
	Retail	0.90	0.90	1.05	1.15	1.25
<b>Jamaica</b>	PRICE RANGE					
	Farm gate (Ja\$)	0.29-0.40	0.23-0.46	0.11-0.56	0.15-0.90	0.27-1.09
	Wholesale (Ja\$)	0.40-0.51	0.35-0.58	0.22-0.67	0.25-1.10	0.36-0.82
	Retail (Ja\$)	0.63-0.74	0.58-0.81	0.45-0.89	0.45-1.30	0.72
	AVERAGE PRICE	2010	2011	2012	2013	2014
	Farm gate	0.34	0.35	0.33	0.53	0.72
	Wholesale	0.46	0.46	0.45	0.68	0.59
	Retail					
	0.69	0.70	0.67	0.88	0.72	
<b>Antigua and Barbuda</b>	PRICE RANGE					
	Farm gate	0.74-1.87	0.74-1.87	0.74-1.87	0.74-1.87	0.74-1.87
	Wholesale	0.83-2.10	0.83-2.10	0.83-2.10	0.83-2.10	0.83-2.10
	Retail	0.93-2.24	0.93-2.24	0.93-2.24	0.93-2.24	0.93-2.24
	AVERAGE PRICE	2010	2011	2012	2013	2014
	Farm gate	1.31	1.31	1.31	1.31	1.31
	Wholesale	1.47	1.47	1.47	1.47	1.47
	Retail	1.59	1.59	1.59	1.59	1.59
<b>Saint Vincent and the Grenadines</b>	AVERAGE PRICE					
	Farm gate	0.44	0.33	0.33	0.32	0.49
	Retail	0.93	0.67	0.69	0.70	1.04

**Source:** Stewart (2015, p. 71), except Saint Vincent and the Grenadines (Saint Vincent and the Grenadines Ministry of Agriculture, Forestry, Fisheries and Rural Transformation Statistical Unit).

1 pound = 0.453592 kg

Ja\$ = Jamaican dollar

US\$1 = Ja\$128.15 (29/03/2017)

**Table 14** Trade statistics – Export trends

		2009	2010	2011	2012	2013	2014
<b>Jamaica</b>	US\$ '000	5,032	7,035	5,114	5,684	7,170	N/A
	Tons	4,041	2,015	2,297	2,865	3,005	N/A
<b>Antigua and Barbuda</b>	US\$	No data	No data	No data	1,101	1,075	Not yet available
	Tons	No data	No data	No data	210	297	Not yet available
<b>Saint Vincent and the Grenadines</b>	US\$	850,134	752,128.	737,751	966,406	720,661	458,019
	Tons	1,071	710	739	954	820	431

Source: Stewart (2015, p. 67).

Below: © Terry Harris / Alamy Stock Photo



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## Processing

Many parts of the sweet potato plant are edible, including the root, leaves and shoots (CIP, n.d.). Sweet potato vines also provide the basis for a high-protein animal feed. Sweet potato use has diversified considerably over the last four decades. With high starch content, it is well suited to processing and has become an important source of raw material for starch and starch-derived industrial products. This provides an excellent linkage with the livestock industry and can be another way to mitigate the risks of investments as the product portfolio diversifies.

Added value for farmers comes from a variety of products and ingredients made from sweet potato root including flour, dried chips, juice, bread, noodles, candy and pectin. New products include liquors and a growing interest in the use of the anthocyanin pigments in the purple varieties for

food colouring, and use in the cosmetics industry. Linkages with the cosmetic industry may provide another investment opportunity for FIs.

In the region, the major initiative for processed products is sweet potato fries, which are seen as a more nutritious substitute for white potato fries. Sweet potato in frozen convenience food products is very popular. Sweet potato flour is also very popular in baking and porridge recipes.

However, the majority of the sweet potato in the region is sold as fresh in the local and export market. CARDI would be the best source to obtain an up-to-date picture of the distribution of sweet potato value-added products. ■

# Process flow and costing of sweet potato value chain management

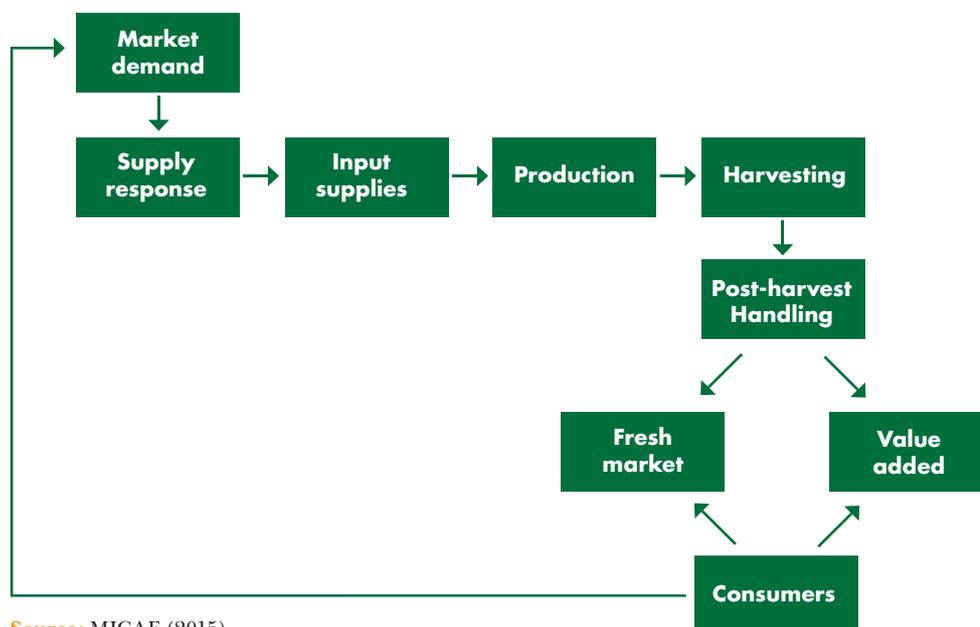


The focus of this chapter is on a carefully delineated process flow in the value chain, from acceptance of the order from the buyer, through selecting farmers, production planning, inputs procurement, production, harvesting and post-harvest handling and processing, to the delivery of the fresh or processed product to the buyer (through an economic cluster, such as a farmer aggregator, processor or VCC) and receiving the payment to dispose of the financial proceeds equitably to the team of stakeholders. The purpose of the process flow is to provide a basis from which to estimate all costs involved and the corresponding investment needs.

## Process flow

Figure 4 gives a high-level concept of what is involved in the sweet potato value chain.

**Figure 4** Schematic commodity value chain



Source: MICAF (2015).

As Figure 4 shows, the value chain for sweet potato is similar to that for other commodities. Each stakeholder in the value chain plays a significant role. The more efficient the coordination among the stakeholders, the more probability of chain maturity and growth. Other supporting value chain stakeholders, such as business development service providers, technical assistance providers and VCCs, could also play a significant role. For instance, they could aid in strengthening production capacity and resilience, organisational management, the implementation of risk mitigation practices, and coordinating the communication and operational flow among stakeholders.

Sweet potato has a 3-month growing cycle. If one month is allowed up front for farmer selection and production planning, an additional month allowed after for value addition where appropriate, and another month budgeted for packing, delivery and receipt of payment, the sweet potato investment cycle could be 5–6 months. Of course, there could be overlapping cycles in order to have a more even and regular spread over the supply season.

It is relevant to highlight that the agriculture sector in the CARIFORUM has some particularities that affect the value chain dynamics and the investment scheme from FIs. Farmers are highly dispersed and not necessarily aggregated in economic clusters. Farmers tend to sell individually to the best buyer to ensure immediate liquidity. There are some farmers' organisations, such as CaFAN, which is involved in developing a sweet potato export value chain on behalf of a diverse range of smallholder farmers in Saint Vincent and the Grenadines in particular.

In Jamaica, there is a group of 20 farmers in the parish of Manchester who are now more confident about the marketability of their sweet potatoes than ever before. This is a result of a capacity-building project involving the World Bank-funded Rural Economic Development Initiative (REDI) programme of the Jamaica Social Investment Fund

(JSIF). Belle Tropicals Ltd. are the exporters of the Manchester-grown sweet potatoes.

These initiatives are trying to coordinate and aggregate farmers and centralise the resolution to their needs. The fact that they are not aggregated is a key determinant when developing an agriculture financial scheme or product, as a multidimensional perspective is required. Chapter six will address this issue.

Box 2 provides examples of some of the challenges associated with trying to manage farmers' organisations and value chain coordination.

## Cost of production

Table 15 represents a costing exercise for a business case for a single crop of Beauregard variety sweet potatoes on 1 acre (0.404 ha) of rainfed land in Saint Vincent and the Grenadines<sup>3</sup>. All prices are in Eastern Caribbean dollars (EC\$). For additional information, a second costing exercise is presented in Annex III.

The statistics presented in Table 16 are indicative, based on a 2015 survey. The cost of production is increased by the cost of irrigation and conversely decreased by the increase in yield due to irrigation. The challenge is to introduce irrigated production systems which will have a net decrease in the cost of production. ■

<sup>3</sup> The exercise was validated by personal conversation with Norville Abraham, agricultural root crop practitioner and agricultural consultant in St Vincent and the Grenadines on 29 November 2016.

## Box 2

# Fresh produce export trading anecdotes

### Value chain coordinator anecdotes from experience in exporting sweet pepper weekly from Barbados to Holland

Farmers respond to a call to participate in a meeting about an irrigated sweet pepper export programme. The facilitator advised that all those who did not have access to irrigation water may feel free to leave at that time, and half of the attendees left the room.

The government insisted that farmers in a government-sponsored rural development programme (with irrigation) should be accommodated in the export programme – farmers signed up and planted the crop, but did not turn on the water because that meant they would incur the cost.

Sweet peppers were shipped by air in cardboard boxes with metal straps. Cargo handlers threw boxes into the hold of aircraft, causing straps to break and sweet peppers to scatter. An assembly line was eventually established to ensure cargo was handled more gently, although having a VCC could have anticipated issues like this and set handling protocols from the outset.

The airline pilot assured the VCC that he was aware of the controlled temperature setting for sweet peppers in the hold. The pilot looked at his temperature setting chart under ‘agriculture’ and set the hold at the temperature for ‘live chickens.’ On arrival in London for transshipment, the peppers were more suitable for soup than the fresh produce market.

When the sweet pepper shipment arrived in London for transshipment, the container was left on the tarmac in freezing temperatures, and the sweet peppers were no longer recognisable.

If correction fluid (e.g. White Out) has been used to correct a mistake on the export form, the entire shipment is at risk of being rejected. Only ‘clean’ forms without such corrections are accepted.

Weekly monitoring of crops during the growing period prevents any surprises at harvest time.

Farmers deliver one week and receive payment for the previous week when they bring the next shipment, which is good for their cash flow.

The client wanted full green or full red sweet pepper, with no mixed colour peppers. These are sold at a premium on the local market where consumers love the mixed colour to give colour to salads.

The window of opportunity for Barbados to export to Holland is December to March. Money was lost in December, but cumulatively a healthy profit was made by the end of March. The project was handed over to a local organisation of farmers, who closed it down at the end of December the next year because they lost money in December.

These experiences reveal the challenges and culture of the agriculture industry that could be common across CARIFORUM region countries. Illuminating these struggles is essential to understanding and creating a solid business systems foundation for aggregates and farmers.

**Source:** Author's personal reflection

**Table 15** Cost of production for sweet potato in Saint Vincent and the Grenadines (EC\$, 2016)

Items	Units	Rate (EC\$)	Number of units	Cost (EC\$)
<b>Labour operations</b>				
Land clearing – Spraying/Cleaning	Man-day	40	12	480
Ranging, forking and covering	Man-day	40	20	800
Cutting of vines and planting	Man-day	40	5	200
Weeding and moulding (manual) (as necessary)	Man-day	40	15	600
Fertiliser application (X 1)	Man-day	40	2	80
Harvesting (including sort and heading)	Man-day	40	15	600
<b>Subtotal</b>				<b>2,760.00</b>
<b>Materials</b>				
Planting materials (Seeds/seedlings)	N/A	N/A	N/A	0
Herbicide (Grammaxone and pre-emergent)	Gallons	205	1	205
Fertiliser (types) NPK	Sack	120	3	360
Tools (e.g.) fork, hoe, cutlass, file, spray can	N/A	N/A	1	475
Other (e.g.) boxes, bags	N/A	1	65	65
<b>Subtotal</b>				<b>1,105.00</b>
<b>Other costs</b>				
Land charges (lease/rent/share)	Acre	600	1	600
<b>Transportation</b>				<b>300</b>
<b>Subtotal</b>				<b>900.00</b>
<b>Total cost of production for one acre</b>				<b>4,765.00</b>
<b>Total yield</b>	lb/acre	10,000	N/A	N/A
<b>Total cost per unit of output (EC\$/lb)</b>				<b>EC\$0.477</b>
<b>Total cost per unit of output (US\$/lb)</b>				<b>US\$0.18</b>

**ASSUMPTIONS**

a) Plant spacing	1 X 3	within Row X Between Row (ft)
b) Plant density	14,520	plants per acre (plants/acre)
c) Marketable yields(lb)	10,000	
d) Losses (rejects and spoils)	Negligible	
e) Maturation period	3 months	

EC\$ = Eastern Caribbean dollar; US\$1 = EC\$2.70 (29/03/2017)

1 lb = 0.453592 kg

1 acre = 0.404686 ha

**Table 16** Fresh sweet potato cost of production in the Caribbean (US\$/lb, 2015)

	Saint Kitts and Nevis		Jamaica		Antigua and Barbuda	Saint Vincent and the Grenadines		
	Cost of production (US\$/lb)							
Production system	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed
Range	0.35–0.75	0.26–0.35	0.15–0.27	0.13–0.23	N/A	N/A	N/A	0.14–0.18
Average	0.50	0.31	0.21	0.18	\$0.17	\$0.10	N/A	0.15

**Source:** Stewart (2015, p. 67).

1 lb = 0.453592 kg

An opportunity  
for investment



This chapter discusses the investment cycle, profitability, investment risks, the investment required, existing financial ecosystem and innovative investment systems.

The following observation is particularly relevant:

*“...working capital, including payment terms and conditions – especially the credit system used by commercial buyers – limits the availability of financing to reinvest in the business. The standard established commercial financial institutions are not willing to take the risk associated with SMEs and their business. To address these issues, special financial arrangements need to be established” (Stewart, 2015)*

### The sweet potato investment cycle

Primary investment needs of the sweet potato sector include resources to provide an enabling environment, such as: provision of cultivation and irrigation equipment; climate adaptation technologies; a national agricultural statistical information system; and value chain coordination.

These particular investment needs will most likely require a term financing mechanism: working capital to cover the direct and indirect sweet potato production costs; and trade finance to facilitate exporting.

Term financing could be provided through a multistakeholder alliance as a blended finance solution to mitigate the risk of the medium/long-term investment vehicle. Working capital and trade finance could mainly be disbursed as advance payments against sales contracts.

For the working capital, delineation needs to occur at the points in which the working capital advances are required from the FI to successfully grow and deliver the crop to the buyer. Table 17 illustrates a value chain financial model that would be an acceptable standard in moving towards sustainability in the sweet potato market.

**Table 17** Value chain financing model

Stakeholder	Responsibility
Buyer	Places order
Input suppliers	Provide production inputs and packaging material
Financial Institution (FI)	Advances working capital
Production farmer(s)	Produces and harvests crop and delivers to farm gate
Economic cluster: farmer aggregator, processor or VCC	Organises and coordinates post-harvest handling/packing house operations and shipping
Shipper	Ships crop to buyer
Buyer	Pays FI as per agreement
FI	Pays stakeholders as per agreement

Farmer aggregators, processors or VCCs, input suppliers, FIs, farmers, post-harvest handling/packhouse operators and shippers have to be paid from the proceeds from the buyer. The stakeholders can be paid either up front as the expenses are incurred, when the proceeds are received from the buyer or at a combination of these payment points.

As the aggregation of farmers and the integration of supply-chain stakeholders in most of the cases of the CARIFORUM countries are weak, a deeper intervention of the proposed economic cluster, such as farmer aggregator, processor or VCC, might be required. The FI can finance the farmers directly

based on an agreement with the economic cluster, who also shares the risk and assumes certain responsibilities to monitor the execution of the investment and the timely delivery of the product according to the quality requirements set by the buyer. See Annex I for a detailed proposition for their potential roles and responsibilities.

The investment cycle to deliver fresh sweet potato in the export market is 4–6 months. The recommended payment schedule to stakeholders, with justification, is presented in Table 18.

**Table 18** Recommended payment point to stakeholders with justification

Stakeholder	Payment point	Justification
Input suppliers	On delivery of supplies to farmer	Assume bulk purchase discount
Financial institution	On receipt of funds from buyer	Risk taker with profit sharing
Farmer	At farm gate (Labour) On receipt of funds from buyer	Grower Risk taker with profit sharing
Transportation	Farm gate to packhouse	On contract
Packing material	Before packing	On contract
Packhouse operations Post-harvest handling	Per box when packed	On contract
Transportation	Packhouse to wharf	On contract
Shipper	When shipment received When shipment delivered	Commitment Safe delivery

The farmer aggregator, processor or VCC will be paid on contract by the farmer or buyer, or from developmental funds as the farmers' business matures. Blended public/private sector finance is a possible solution for financing the most competitive sweet potato farmers in the CARIFORUM to contribute to leveraging their business development, production resilience and a more robust value chain coordination. Blended finance is also a relevant risk mitigation strategy.

Advances from the FI are required to cover the following costs until the funds are received from the buyer:

- Input supplier on delivery to farmer
- Farmer for labour at farm gate
- Transportation from farm gate to packhouse at arrival
- Packing material when delivered
- Packhouse labour when packed

- Transportation from packhouse to wharf at arrival
- Shipper on receipt of shipment
- Shipper on delivery of shipment to the buyer
- Farmer when funds received from the buyer
- FI when funds received from the buyer.

The traditional FI loan model is not appropriate here since it is predicated on collateral requirements and monthly amortised repayments, neither of which can be accommodated in the sweet potato export trading situation. The instrument that would be more appropriate here is a working capital advance against sales contracts, ideally adjusting the repayment period of the capital to the investment cycle of 4–6 months.

## Profitability of the sweet potato business model

The European market for sweet potato is relatively small but growing considerably. Imports and consumption are rapidly expanding, increasing by over 100% over the five years ending in November 2016. European supermarkets are catering to a growing demand for more diverse food. Important destinations in Europe are the UK and the Netherlands, the latter being the main hub for the rest of Europe. The USA holds a 70% market share in the supply of sweet potatoes. Opportunities exist for suppliers from developing countries with differentiated or competitive products (CBI, 2016).

European demand for American sweet potatoes is growing rapidly as imports doubled between 2009 and 2014. Figures from the American Sweet potato Marketing Institute (ASPMI) said that in 2014, 46,000 tons (41,730 tonnes) of sweet potatoes were imported to the Benelux, France and Germany, compared with half that amount in 2009. The Caribbean has the opportunity to establish a niche market in Europe.

In 2011, just under half (49%) of the European sweet potato supply came from the USA, which rose to 63% in 2014. USA growers increased plantings for the 2015 season, with the first harvest expected to have begun in September of that same year. The first containers arrived in Europe at the beginning of October 2015, and the ASPMI said it would be participating in various consumer activities in Belgium and France.

“In the USA, consumption is growing, but demand from Europe is also increasing,” said a spokesperson. “It is expected that this year [2015], more sweet potatoes will be harvested compared to last year” (Pullman, 2015).

As the European sweet potato market grows, CARIFORUM countries also have the opportunity to expand their existing market share in this region.

The current price offered by the buyer is shrouded in secrecy in both Saint Vincent and the Grenadines and Jamaica. The specific price will be determined when the trade is being planned.

The estimated sweet potato cost, insurance and freight (CIF) price for Saint Vincent and the Grenadines was US\$0.66/lb (US\$1.45/kg) in December 2016 (N. Abraham, agricultural consultant, Saint Vincent and the Grenadines, pers.

comm.). Consumer prices for fresh sweet potato vary between €1.50 and €2.50/kg or US\$0.73–1.22/lb (2015) (Pullman, 2015).

There is a difference between the CIF price and the consumer price in Saint Vincent and the Grenadines ranging from US\$0.07/lb to US\$0.56/lb (US\$0.15–1.23/kg). The Jamaica CIF price will be less because the yield per acre is double that of Saint Vincent and the Grenadines.

UK farmers are now growing sweet potato at a much more competitive price than it is possible to import it, though the climatic season restricts such production (Poulter, 2015). As always, when exporting fresh produce from tropical countries to temperate countries there is a window of opportunity that favours the Caribbean region when the market price is high. This window has to be carefully researched and exploited in terms of production planning by CARIFORUM countries to address this potential.

Organic sweet potato is sold for more than double the price. The region is not planning to provide organic sweet potato at present, but it remains an option for the future.

When the buyer's price is confirmed, the profitability of the venture should be determined and the percentage share of the profits to the farmer and investor – the risk takers – should be agreed after discussion between the investor and the farmer aggregator, processor or VCC representing the farmer(s).

The gross profit realised from the difference between the CIF price and what the buyer pays should be shared between the FIs and the farmer. The more efficiently the system is managed, the better the buyer's price and the lower the CIF price, the greater the gross profit. The converse is also true.

## Investment risks

The existing financial landscape reveals that the business risks in the sweet potato sector, in general, are a major inhibitor to investment. These risks are carefully delineated in the following subsections. Of course, there are cases where forces majeures (e.g. extreme climate conditions) give rise to losses. As such, sweet potato producers are learning how to apply climate change adaptation practices to mitigate these associated risks.

Sweet potato is a drought tolerant crop and, as such, is itself used in strategies to mitigate climate stress. Most of the other climate-associated risks with sweet potato are mitigated through the use of proper agronomic practices for this crop. Being a three-month crop, it is relatively easy to mitigate the risks of 'climate stress' to sweet potato through good agronomic practices. Up-to-date, specific practices that farmers use in Jamaica or Saint Vincent and the Grenadines may be obtained from CARDI (2011), which has lead responsibility for the development of the regional sweet potato industry.

The attention of FIs is drawn to the inherent integrated business risks which inhibit successful production and trade. These risks in the agricultural sector may be categorised according to business system, i.e. corporate governance, investment finance, marketing, operations (technical and support) and people development.

### Corporate governance risk

- Little or no focus on management meeting culture to structure the foundation of the business (it is important to set targets monthly and monitor the performance of management monthly to keep a project on track)
- Failure to observe legal and environmental laws reflecting society's priorities or industry mandates
- Deleterious impact on the natural resource base.

### Financial investment risk

- Little or no focus on credit rating culture
- Repayment agreements which are not in sync with cash flows
- Low equity input by the entrepreneur in the business.

### Marketing risk

- Little or no focus on customer-centric culture
- No proactive, aggressive market-led sales and distribution strategy
- Unrealistic sales projections, especially for start-ups, re-births, spin-offs and scale-ups
- Unpredictable prices and markets
- Side-selling.

### Operations risk

- Little or no focus on profitability culture
- Use of low-tech tools and traditional technology
- Variations in output due to change in climate behaviour, pests, disease and value chain logistics/timing
- Praedial larceny

- Lack of crop insurance
- Outdated ICT and administrative systems
- Weak net cash flows.

### People development risk

- Little or no focus on productivity culture
- Poor time management practices
- A lack of passion, perseverance and patience in the entrepreneur
- Selection, training and motivation issues centred around family members and employees.

Good risk management strategies ensure that the value proposition is supported by the following support services to enhance the chances of business success:

1. Value chain coordination to ensure supply commitment, formal coordination and communication flow across stakeholders
2. Business development services to ensure optimal management of business systems
3. A sweet potato technical production guide, and training and assistance support to build resilience
4. Continual people development: building talent, skills and competencies
5. Working capital advances for the duration of the crop, coupled with trade finance vehicles
6. Blended finance for long-term investments; equity style when appropriate
7. Factoring and warehouse receipts
8. Formal market contracts from buyers
9. Profit sharing between the farmer and investor
10. An FI investment guide
11. Tracking social, environmental and economic impact indicators.

In Jamaica and Saint Vincent and the Grenadines, where the technical production aspects have been carefully addressed, more attention needs to be paid to the management of value chains, corporate governance, finance, marketing and people development as the industry expands.

## Investment required

The order of magnitude estimate of the working capital and trade finance investment required from an FI for a cycle of sweet potato production and trade is presented in Table 19.

The following general assumptions are made:

- The level of finance available from the FIs will not be a constraint once a specific opportunity is deemed to be export-ready
- The investment for infrastructural funding will be negotiated by the proposed economic cluster, such as the farmer aggregator, processor or VCC
- In this example, infrastructural requirements, including paying for the role of the farmer aggregator, processor or VCC, in the early stages will be paid from the grant component of the blended finance scheme or developmental funds
- Input suppliers (materials) are paid on delivery of inputs and suppliers are expected to give bulk purchase discounts
- The farmer is paid the labour component of his cost when the product is bagged to be sent to the packhouse
- Transportation to the packhouse from the farm gate is paid on delivery
- Packaging material at the farm gate is paid on delivery
- Packhouse operations are paid for when boxes are packed
- Transportation to the packhouse and from the packhouse to the wharf is paid on delivery
- The payment for freight is negotiated between the farm aggregator, processor or VCC and shipper
- Repayment of the advance to the FI is made when the buyer pays
- The FI enters into a profit sharing arrangement with the farmer and is paid a dividend when the buyer pays
- Farmers are paid a dividend when the buyer pays
- For this exercise, additional storage costs are not considered.

Below: © USDA/Lance Cheung



**Table 19** Sweet potato trading cycle in Saint Vincent and the Grenadines cash flow projection (US\$)

	Month 1	Month 2	Month 3	Month 4	Month 5
<b>Opening Bank/Cash Balance</b>	\$0	\$0	\$0	\$0	\$0
<b>Cash in-flow</b>					
<b>Advance from FI</b>	594,074	\$0	877,037	3,382,526	\$0
<b>Payment from buyer</b>	\$0	\$0	\$0	\$0	5,656,000
<b>Total cash in-flow</b>	594,074	\$0	877,037	3,382,526	5,656,000
<b>Cash out-flow</b>					
<b>Materials</b>	594,074	\$0	\$0	\$0	\$0
<b>Farmer (labour)</b>	\$0	\$0	817,778	\$0	\$0
<b>Farm to packhouse</b>	\$0	\$0	59,259	\$0	\$0
<b>Packaging material</b>	\$0	\$0	\$0	592,593	\$0
<b>Packhouse operations</b>	\$0	\$0	\$0	296,296	\$0
<b>Packhouse to wharf</b>	\$0	\$0	\$0	197,531	\$0
<b>Freight</b>	\$0	\$0	\$0	2,296,106	\$0
<b>Repayment of advance to FI</b>	\$0	\$0	\$0	\$0	4,853,637
<b>Total cash out-flow</b>	594,074	\$0	877,037	3,382,526	4,853,637
<b>Net cash flow</b>	\$0	\$0	\$0	\$0	802,363
<b>Cumulative cash flow</b>	\$0	\$0	\$0	\$0	802,363

Table 19 (cont)

Specific assumptions			US\$/lb
Marketable yield	lb/acre	10,000	N/A
Land	acres	800	N/A
Crop yield	tons	3,571	N/A
Trading cycle	5 months	1	N/A
1) Materials	US\$/acre	743	0.074
2) Farm labour	US\$/acre	1,022	0.102
3) Farm to packhouse	US\$/100lb sack	0.74	0.007
4) Packaging material	US\$/30lb box	2.22	0.074
5) Packhouse operations	US\$/30lb box	1.11	0.037
6) Packhouse to wharf	US\$/30lb box	0.74	0.025
7) Reefer container†	US\$/container	3,487.21	0.287
		Total CIF cost UK	0.607
		Buyer pays	0.707
<b>Investment by FI is US\$4,853,637. 800 acres yields 3,571 tons. Investment per ton is US\$1,359</b>			
Sensitivity analysis			
	<i>Buyer pays</i>	<i>Surplus*</i>	<i>CIF plus</i>
<b>Scenario</b>	US\$/lb	US\$	US\$/lb
1	0.607	2,363	0.00
2	0.657	402,363	0.05
3	0.707	802,363	0.10
4	0.757	1,202,363	0.15
5	0.807	1,602,363	0.20

\*Surplus to be shared between farmers and FIs.

† One 20 ft. container holds 405 x 30lb boxes (Geest Line)

**Source:** N. Abraham, agricultural consultant, Saint Vincent and the Grenadines, pers. comm.

1 lb = 0.453592 kg

1 acre = 0.404686 ha

1 ton = 0.907185 tonne

The investment required from the FI for one investment cycle would be US\$594,074 in month one, US\$877,037 in month three and US\$3,382,526 in month four, with an expected full repayment, including dividends, by month five.

As the acreage under production increases, this estimate of the investment required increases commensurately with the expected benefits from economies of scale.

The buying price varies and has to be negotiated between the proposed economic cluster, the farmer aggregator, processor or VCC and the buyer, using the above CIF price and the market intelligence in the buyer's marketplace.

The consumer prices for fresh sweet potato vary between US\$0.73–1.22/lb (US\$1.61–2.69/kg) (2015) (CBI, 2016).

This sensitivity analysis indicates that if the buyer offers a price of US\$0.707/lb (US\$1.56/kg), or US\$0.10/lb (US\$0.22/kg) more than the CIF cost, then the project surplus is over US\$800,000, which is to be shared between the farmer and the FI.

If the buyer offers US\$0.20/lb (US\$0.44/kg) more than the CIF cost, then the project surplus is over US\$1.6 million, to be shared between the farmer and the FI.

As the business grows, the profit grows, and then there is less need for a developmental financier because the business can pay for itself.

'Start small, do it right, make a profit, then expand!'

## Existing financial ecosystem

### Ease of doing business in the Caribbean

The 2016 Doing Business Report from the World Bank ranks Jamaica second in the Caribbean (64th worldwide) in terms of ease of doing business, while the Dominican Republic is in sixth place (93rd worldwide), and Saint Vincent and the Grenadines ranks 10th (111th worldwide) (World Bank, 2016).

The report also includes country-specific information on a variety of credit indicators in the region, with detailed rankings on the strength of legal rights and national credit reforms, as well as how well credit information systems and collateral and bankruptcy laws in Caribbean economies facilitate access to credit.

On ease of access to credit, both Jamaica and Trinidad and Tobago actually rank higher than the Organisation for Economic Cooperation and Development (OECD) High-Income average and the Latin American average. The Bahamas, Barbados, Dominica, Grenada, Jamaica and Trinidad and Tobago, also have stronger legal rights when accessing credit than the OECD High-Income average and the Latin American average. Lastly, on the index indicating how much credit information is shared and how widely, the Dominican Republic and Jamaica outrank the OECD High-Income average and the Latin American average, and Trinidad and Tobago is competitive. This information should be promising to any investor seeking good business opportunities in the Caribbean region.

Across the CARIFORUM there is a wide range of FIs providing limited products and services to the agriculture sector, including sweet potato businesses. The categories of FIs which focus more on agricultural MSMEs are microfinance and credit unions with regulatory and support services from government in terms of guarantees, incentives and legislation.

Table 20 shows a summary of the outcomes of a 2015 rapid assessment survey, 'The Improvement of Financing Schemes to Support the Development of Commodity Value Chains Involving Agricultural MSMEs', conducted by the Intra-ACP Agricultural Policy Programme (APP) (Stewart, 2015).

The data from the survey (Table 20) are instructive to investors in the context of the range of institutions surveyed, the situation analysis of FI classification by data-set element across countries, the weaknesses of FIs in meeting MSME needs and the recommendations to strengthen FIs to meet MSME needs better.

**Table 20** Primary financial institutions surveyed by category and country

	Countries											Total
	BAR	DOM	DR	GRE	GUY	HAI	JAM	SKN	SLU	SVG	TT	
Microfinance		1	3		2	11	8		4	3		32
Credit union		2		1			2	2	3	2		12
Government	2	1	4	1	2		1		1	1	3	16
Private finance	1		2			1	2	1				7
Commercial bank	5	5	6	5	5	5	6	5	6	5	6	59
Cooperative		1	1							2		4
Youth Business Trust	1	1		1	1		1	1	1	1	1	9

BAR – Barbados; DOM – Dominica; DR – Dominican Republic; GRE – Grenada; GUY – Guyana; HAI – Haiti; JAM – Jamaica; SKN – Saint Kitts and Nevis; SLU – Saint Lucia; SVG – Saint Vincent and the Grenadines; TT – Trinidad and Tobago.

**Source:** Springer (2015).

The major regional commercial banks are present in many CARIFORUM countries, and hence commercial banks headed the list in terms of numbers.

Microfinance institutions were the next highest in number, government institutions third and credit unions fourth.

With regards to the products offered, Table 21 gives a snapshot of the status of existing FIs across 11 countries regarding their services by data-set element to agricultural MSME customers. None of the large social lenders (e.g. Rabobank, Oikocredit) are known to be active in the Caribbean region at the time of this writing.

**Table 21** Situation analysis of financial institution classification by data-set element across countries

	Financial institution classification						
	Micro-finance	Credit union	Govt. institution	Private institution	Commercial bank	Coop	YBT
<b>Data-set element</b>							
<b>Product</b>	Loans	Loans	Loans	Loans	Loans	Loans	Loans
<b>Due diligence</b>	Farmer registered	Members Farmer registered	Farmer registered	Character references	Character references Farmer registered	Affiliates	Youth
<b>Collateral</b>	Tangible	Tangible	Tangible	Tangible	Tangible	Tangible	Flexible
<b>Co-financing</b>	Yes	Yes	Yes	No	No	No	Yes
<b>New products</b>	None	None	None	None	None†	None	None
<b>Investment</b>	Flexible	Flexible	Flexible	Flexible	Flexible	Flexible	Small
<b>Mentoring</b>	No	No	Yes	No	No	No	Yes
<b>Agricultural MSMEs</b>	Individual	Individual	Individual	Individual	Individual	Individual	Individual
<b>Terms</b>	Flexible	Preferential	Preferential	Flexible	Flexible	Flexible	Flexible
<b>Delinquency</b>	Classified	Low	High	Classified	Classified	Low	Low

† Government guarantees to commercial banks for MSMEs.

Source: Springer (2015).

Lending interest rates for CARIFORUM countries remain similar to other countries in Latin America. Table 22 highlights country averages.

Although commercial banks headed the list in terms of information recorded, their client loan profile in the agricultural sector tends towards larger businesses which can provide tangible collateral as security for loans. They are therefore not the first port of call for MSMEs.

The categories of institutions which focus on agricultural MSMEs are microfinance and credit unions with regulatory and support services from

government in terms of guarantees, incentives and legislation.

Box 3 provides a synopsis for each data-set element and draws attention to weaknesses in FIs with respect to the needs of the MSME agricultural sector. The corresponding comments pertain to dealing with MSMEs, suggesting how these weaknesses may be strengthened.

If FIs are innovative in designing a financial instrument which can be profitable, then the sweet potato sector – where the cash in-flow has a period of about six months – is a good opportunity for investment.

**Table 22** Lending interest rates for CARIFORUM countries (%) (2015)

Country	2015 %
Antigua and Barbuda	9.8
Bahamas	4.8
Barbados	8.1
Belize	10.3
Dominica	8.7
Dominican Republic	14.9
Grenada	9.0
Guyana	12.8
Haiti	12.9
Jamaica	17.0
Saint Kitts and Nevis	9.3
Saint Lucia	8.9
Suriname	12.6
Saint Vincent and the Grenadines	9.3
Trinidad and Tobago	8.2

Source: <http://data.worldbank.org/>

that there is upside potential in terms of the global sweet potato export market and there are tremendous downstream macro-socio-economic and environmental benefits; hence the sweet potato value chain is a perfect example of how to achieve targeted objectives of the triple bottom line (profit, planet and people).

Alas, to achieve growth risk must be taken, but corresponding stakeholders must manage these risks to increase the chances of business success. These risks can be effectively managed by incorporating measures such as:

- Farmer/FI partnership to share in the profits
- Integration of value chain stakeholders
- Value chain coordination and management schemes
- Change in the mindset of the farmer to become an entrepreneur and not just a producer
- Business development services, including mentoring
- Technical assistance and support
- Sales contracts as guarantees
- Advance payments from buyers
- Factoring of receivables
- Refrigerated warehouse receipts
- Crop insurance (as the industry grows). ■

When a commercial bank gives an individual a loan to buy a car or house, the bank secures a bill of sale on the car and a mortgage on the house, but they also want to see the individual's job letter to see that the salary is large enough to repay the amortised monthly repayments of principal and interest. This not the case for sweet potato exports. In this case, the product for which the financing is sought is perishable, the cash flow cycle is around five to six months, and the business risks are high.

An innovative financier (a credit union or microfinance institution, for example), may realise

## Box 3

# Weaknesses of financial institutions in meeting MSME needs

### Product

#### Weakness

FIs offer mainly loans, although some offer equity products.

#### Reducing the weakness

The loan product is only accessible to MSMEs that can meet the tangible collateral requirement and have initial cash flows that are strong enough to service the loan repayment schedule. There needs to be an adjustment to the collateral requirement and the loan repayment schedule that makes loans more accessible to the MSME while at the same time managing the risk to the FIs.

The equity product is only attractive to MSMEs when the MSME starts with a strong enough MSME equity injection to assume majority shareholding and when there is an exit strategy that allows the MSME to buy back the shares of the investor, at the market rate on the day, when the MSME cash flows are strong enough.

### Due diligence

#### Weakness

FIs mainly rely on client screening by other entities, e.g. farmer registration, affiliates, character references and youth programmes.

#### Reducing the weakness

MSMEs, in their own interest and the interest of the FI, need to be assessed as to the preparedness of their mindset, e.g. passion, perseverance and patience, as well as their potential to manage their business systems, if sustainable success is to be achieved.

### Collateral

#### Weakness

MSMEs are often unable to provide the tangible collateral (land, buildings, furniture, equipment, personal guarantees, bills of sale and crop

insurance – if appropriate and available) required to obtain a loan and, as a result, their businesses' opportunities seldom see the light of day.

#### Reducing the weakness

The collateral, although it protects the FIs' investors, does little if anything to mitigate the risk of business failure. FIs must place greater emphasis on introducing innovative business risk mitigation measures to redress this situation.

Cash flow projections may be accepted by some institutions as a risk mitigation measure, but projections are based on uncertain assumptions, especially for start-ups, re-births, spin-offs and scale-ups. Other innovative risk mitigation measures must, therefore, be explored.

### Co-financing

#### Weakness

Not all FIs practise co-financing with other organisations as a means of spreading risk and hence effecting a greater level of overall risk mitigation.

#### Reducing the weakness

Access to finance is a critical constraint for MSMEs. They will consider all combinations of funding in order to access funding and move along a path of sustainable success.

### New products

#### Weakness

FIs have not shown much interest in departing from their existing product lines, certainly not in the agricultural sector which is perceived to be high risk. Private sector FIs generally have high-profit levels, and there is no incentive to change.

### Reducing the weakness

MSMEs would appreciate more visionary thinking and greater research into risk mitigation innovation to reverse this perception.

## Box 3 (cont)

### Investment size

#### Weakness

Most FIs are very flexible in terms of the size of their loan investments guided by their risk management advice.

#### Reducing the weakness

Many MSMEs adopt the growth strategy of 'start small, do it right, make a profit and then expand,' which also implies a small initial investment. MSMEs could benefit if FIs were to work with them by offering small initial loans, once they adopt this culture. Once this proves successful, then the MSMEs would expect FIs to have greater confidence and to grow with them.

### Mentoring

#### Weakness

Most FIs do not include mentoring as part of their loan or equity packages, probably because they focus more on the protection of their depositors' investment, which is adequately secured by the collateral offered by their clients.

#### Reducing the weakness

MSMEs need help, both in changing their mindset and in the management of their business systems, which in turn would reduce the risk of business failure. This would not only increase the chances of growing the economy, but also protect the depositor's investment in the FI.

### MSME focus

#### Weakness

FIs are traditionally risk averse. They do not discriminate between lending to individual MSME agricultural clients and MSME agricultural value chain coordinators.

#### Reducing the weakness

MSMEs would benefit from FIs welcoming presentations from agricultural value chain coordinators, since they are likely to increase the chances of trading success and hence reduce the investment risk.

### Terms offered

#### Weakness

FIs are very flexible in the terms offered, but only within the bounds of their risk averseness.

#### Reducing the weakness

MSMEs could benefit from more flexibility from FIs, if approaches were made through an agricultural value chain rather than individually, such as in economic clusters or farmer aggregators.

### Delinquency

#### Weakness

FIs are not disposed to releasing their delinquency rate generally, and certainly not for the relatively small subset of their portfolios related to agriculture.

#### Reducing the weakness

MSMEs could contribute to a reduction of the delinquency rates if mentoring were rolled into the package of services provided by FIs.

# Annex I

The following is a detailed description of the suggested responsibilities of proposed stakeholders to be involved in sweet potato trading.

Stakeholder	Responsibility
Buyer	Places order
Economic cluster: farmer aggregator, processor or VCC	Selects farmers and plans production
Input suppliers	Provide production inputs and packaging material
Economic cluster: farmer aggregator, processor or VCC	Makes arrangements with Financial Institution(s)
Financial Institution	Advances working capital
Economic cluster: farmer aggregator, processor or VCC	Advises on production practices
Farmer(s)	Produces and harvests crop and delivers to farm gate
Economic cluster: farmer aggregator, processor or VCC	Organises post-harvest handling/packing
Economic cluster: farmer aggregator, processor or VCC	Coordinates post-harvest handling/packhouse operations
Economic cluster: farmer aggregator, processor or VCC	Negotiates with trader/shipper
Shipper	Ships crop to buyer
Buyer	Pays VCC/FI as per agreement
Economic cluster: farmer aggregator, processor or VCC/FI	Pays stakeholders as per agreement
Economic cluster: farmer aggregator, processor or VCC	Advises value chain on business management issues

The duties of the farmer aggregator, processor or VCC are delineated as follows:

<b>Farmer aggregator, processor or VCC's Responsibility</b>
<b>Confirms order with buyer</b>
<b>Selects farmers and plans production</b>
<b>Makes arrangements with Financial Institution(s)</b>
<b>Advises on production practices</b>
<b>Organises post-harvest handling/packing</b>
<b>Coordinates post-harvest handling/packhouse operations</b>
<b>Negotiates with trader/shipper</b>
<b>Receives funds from buyer as per buyer agreement</b>
<b>Pays stakeholders as per stakeholder agreement</b>
<b>Advises value chain stakeholders on business management issues</b>

The farmer aggregator, processor or VCC is essential to successful sweet potato trading. In Jamaica and Saint Vincent and the Grenadines, in particular, and in the region in general, sweet potato production is primarily done by small farmers. The major responsibilities of the farmer aggregator, processor or VCC are the selection of farmers, planning of production and representation of these farmers in all aspects of the export trade. Without the farmer aggregator, processor or VCC, there will be no sustainable sweet potato export trade.

The cost of the farmer aggregator, processor or VCC cannot be borne by the farmers in the initial stages of an export thrust because the profits may be too small to consider an incentive, such as a minimum salary plus a bonus based on success. Developmental funds must be sought to offset the cost. As the trade grows, however, it is expected that the profitability

will grow to the extent that the development funds can be phased out and then a full farmer aggregator, processor or VCC incentive package may be considered.

Climate-related risk is a very important consideration in the region. Since there are no sweet potato insurance schemes in place, farmers are vulnerable to extreme weather conditions. It is proposed that the sweet potato business in the region be organised using a coordinated value chain approach. Consideration should be given to providing developmental assistance to the value chain, to alleviate the direct impact on the farmer of climate change.

Risk mitigation measures such as mentoring, factoring and warehouse receipts may be considered, but each has its costs.

The nature of the assistance should be for the value chain, through the farmer aggregator, processor or VCC, to receive developmental assistance so that the value chain stakeholders can obtain another working capital advance for the next crop. The farmer aggregator, processor or VCC should then supervise the repayment of the working capital advance for the crop which is lost, as a cost of doing business, over a period of time which is linked to the strength of the cash flow. The value chain then gradually reimburses the developmental assistance source.

The role of government is regulatory and as a service, which means that they may consider introducing regulations for the enabling environment or giving grants and incentives in return for macro-level socio-economic benefits. The role of the private sector (e.g. farmer and investor) is to do business. When government money is involved the business is done through a Trust which is run by the private sector and reports to the government on a quarterly basis to account for the use of the funds.

The farmer aggregator, processor or VCC's responsibilities are managed under the governance of the Trust.

# Annex II

## Contact information for selected microfinance institutions and credit unions by country (2015)

Country	Financial institution	Contact person	Telephone number and email
<b>BAR</b>	The Barbados Agency for Micro-Enterprise Development Ltd. (Fund Access)	Hamilton Roach	(246) 228-1366 fundaccess@caribsurf.com
<b>BAR</b>	Barbados Public Workers' Co-operative Credit Union Ltd.	Clorinda Alleyne	(246) 430-5200 contact@bpwccul.bb
<b>DOM</b>	National Co-Operative Credit Union Ltd.	Marie Louise Julien-Grell	(767) 255-2159 mgrell@nccudominica.com
<b>DOM</b>	Dominica Agricultural Industrial and Development Bank	Josephine Dechausay Titre	(767) 448-2853 Josephine. dechausay.titre@aidbank.com
<b>DR</b>	Banco Múltiple Ademi	Victor Reynoso	(809) 683-0203, (829) 732-3364 vreynoso@bancoademi.com.do
<b>DR</b>	Banco de Ahorro y Crédito Adopem	Sonia Reyes	(809) 563-9003 sreyes@adopem.com.do
<b>GRE</b>	GUT cooperative credit Union	Samuel Britton	(473) 440-1354 gutcu@spiceisle.com
<b>GRE</b>	Grenada Cooperative Bank	Deon Moses	(473) 440-2111 info@grenadaco-opbank.com
<b>GUY</b>	Institute of Private Enterprise Development (IPED)	Yogieraj Das	(592) 225-8949 ydas@ipedgy.com

Country	Financial institution	Contact person	Telephone number and email
GUY	Small Business Development Finance Trust	Manjula Bridgemohan	(592) 223-6167 sbdfedtc@networksgy.com
JAM	First Heritage Cooperative Credit Union	Lascelles Watson	(876) 929-5142 Lascelles.Watson@Fhccu.Com
JAM	Proactive Financial Services	Tashieka Black	(876) 908-1397 info@pfsmoney.com
SKN	Saint Kitts Nevis Finance Company Ltd	Steve Farier	(869) 465-6516 Steve.farier@tdcltd.com
SKN	FND Enterprise Cooperative Credit Union	James Webbe	(869) 762-3447 James.webbe@fndcuonline.com
SLU	Saint Lucia Workers Credit Union	Celina Hercules	(758) 451-6683 Celina.hercules@sluwcu.org
SLU	BELFUND INC.	Fabian Issac	(758) 720-1525 fabebulous@yahoo.com
SVG	ST. VINCENT BUILDING and LOAN ASSOC	Richard Branch	(784) 457-1796 richard.branch@buildingandloansvg.com
SVG	First Saint Vincent Bank Ltd	Chiaka Cato	(784) 456-1873 Loans.firstvinbank@gmail.com
TT	National Enterprise Development Co. Ltd	Julian Henry	(868) 498-8335 jhenry@nedco.gov.tt
TT	Agricultural Development Bank	Sheivan Ramnath	(868) 623-6261 adbpos@adbtt.com

BAR – Barbados; DOM – Dominica; DR – Dominican Republic; GRE – Grenada; GUY – Guyana; HAI – Haiti; JAM – Jamaica; SKN – Saint Kitts and Nevis; SLU – Saint Lucia; SVG – Saint Vincent and the Grenadines; TT – Trinidad and Tobago.

# Annex III

## Cost of production (2015)

**CROP:** Sweet potato

**VARIETY:** Mixed

**ACREAGE:** 1 acre

**DATE:** 19/1/2015

ITEMS	Units	Rate (EC\$)	NO	Cost (EC\$)
<b>LABOUR OPERATIONS</b>				
Land clearing – spraying/cleaning	Man-day	40.00	12	480.00
Ranging, forking and covering	Man-day	40.00	20	800.00
Cutting of vines and planting	Man-day	40.00	5	200.00
Weeding and moulding (manual) ( X2)	Man-day	40.00	15	600.00
Fertiliser application ( X 1)	Man-day	40.00	2	80.00
Harvesting (incl. sort and heading)	Man-day	40.00	15	600.00
<b>Subtotal</b>				<b>2,760.00</b>
<b>MATERIALS</b>				
Herbicide (Grammaxone)	Gallon	128.00		128.00
Fertiliser (types) NPK	Sack	80.00	3	240.00
Tools (e.g.) Fork,Hoe,Cutlass,File,Spray can		615.00	1	615.00
Other (e.g.) Boxes, bags		1.00	65	65.00
<b>Subtotal</b>				<b>1,048.00</b>
<b>OTHER COSTS</b>				
Land charges (Lease/Rent/Share)	Acre	500.00		500.00
Transportation				300.00
Supervision				
<b>Subtotal</b>				<b>800.00</b>
<b>Total cost of production</b>				<b>EC\$4,608.00</b>
<b>Total cost per unit of output(\$/lb)</b>				<b>EC\$0.58 US\$ 0.21<sup>4</sup></b>

<sup>4</sup>Exchange rate as of January 20, 2017

<b>ASSUMPTIONS</b>		
<b>a) Plant spacing</b>	1 X 3	Within row X between row (ft)
<b>b) Plant density</b>	14,520	plants/acre
<b>c) Marketable yields(lb)</b>	8,000	
<b>d) Losses (rejects and spoils)</b>	Negligible	
<b>e) Maturation period</b>	3 months	
<b>f) Farmgate price</b>	EC\$0.93/lb	
<b>Retail price</b>	EC\$1.85/lb	

EC\$ = Eastern Caribbean dollar; US\$1 = EC\$2.70  
(29/03/2017)

1 lb = 0.453592 kg

1 acre = 0.404686 ha

1 ft = 30.48 cm

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## About this publication

This guide aims at introducing financial institutions to the world of sweet potato farming in the CARIFORUM region by showing the potential for investment that exists in the fields of the Caribbean, and at promoting responsible investment that can help the region access export markets. It presents the cycles of production and investment to help potential investors understand the financial and operational requirements associated with sweet potato production, and when a farmer would start to earn the income required to repay a loan.

The guide also presents the risks associated with investment in the Caribbean sweet potato sector and basic recommendations for how they could be addressed.

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