

JAMAICA

AGRIBUSINESS

PROFILE



JAMPRO
TRADE & INVESTMENT JAMAICA



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INTRODUCTION

The Jamaican economy has undergone significant changes over the last 30 years that have moved the country from least developed to middle income status. This has been achieved through concerted efforts to promote and attract investments from the domestic business community as well as from overseas investors. The economy has now established itself as a leading competitive investment destination in the Latin America and Caribbean region.

In the Doing Business Report 2018, Jamaica ranked 70 out of 190 economies assessed for competitiveness. To this end, the country also emerged as the leading English-speaking Caribbean country - and 6th in the wider Latin American and Caribbean Region in the [Ease of] Doing Business Index. Jamaica also copped the region's most outstanding placement in the 2017 Global Competitiveness Report, moving up five places to rank 75th among 190 countries.

Such impressive rankings are the direct result of successive governments' efforts to implement necessary legislative and regulatory reforms to provide a more transparent, comprehensive and modern business and investment environment.

The suite of reforms implemented over the years has included duty free incentives for building of hotels, factory space, manufacturing plants and special economic zones. This coupled with improvements in the country's capital markets, no exchange controls, no restrictions on foreign ownership of assets nor the repatriation of profits has made Jamaica a favored investment destination in the region.

Beyond its vibrant culture and natural beauty, Jamaica's value proposition is underpinned by its business-friendly environment, educated and trained workforce, stable democracy, solid infrastructure and strategic location. Jamaica's reputation as one of the premier global destinations for investment

continues to rise, as discerning entrepreneurs increasingly seek to capitalise on the exciting business opportunities that abound in the country. Today, the Jamaican economy is well positioned as an investment location of choice.

There have been favourable returns on investments in various sectors; including the Information Technology, enabled Services (ITeS), Mining and Quarrying as well as the Hotel and Restaurant Sectors, despite crippling global economic shocks over the last decade landmarked by the global economic crisis of 2008. Notwithstanding, Jamaica has rebounded as a leading destination for Foreign Direct Investment (FDI) inflows, which have been trending upwards since 2013 to make the country the leading FDI recipient in the English-speaking Caribbean moving close to pre-crisis levels of US\$856m in 2016 and 6% ahead of the value of investment inflows of 2014. In fact, Jamaica is significantly better with its Caribbean neighbours with a compounded annual growth rate in FDI of 26% for the period 2011-2016 versus 3.5% for the region. As a Small Island Developing State (SIDS) Jamaica has also received recognition for attracting investment in energy and transport.

Successive governments have continued to undertake new strategies to bolster the country's economy and with tailored interventions have resulted in improvements in key economic indicators such as ease of doing business, economic efficiency and the ability of the overall economy to

withstand economic shocks. The modernization of Jamaica's public sector, coupled with infrastructural improvements in the country's road network and technology, its well-developed financial and services sectors, are at the heart of the progress of new investments to the country, making it poised to become the economic hub of the region.

GEOGRAPHIC PROFILE

Ideally located in the western Caribbean, Jamaica is the largest English-speaking island in the region and the third largest English-speaking nation in the Western Hemisphere, behind the United States and Canada.

Jamaica covers a total area of 10,991 sq. km (4,244 sq miles) and is abundantly endowed with natural resources such as rich mineral deposits of bauxite, high quality limestone and marble. The island's tropical climate and generally favourable weather all year round makes it the centrepiece of the region. The country is grouped among the islands of the Greater Antilles, and enjoys the distinction of being the forerunner in a number of social and economic developments, and is a cultural mosaic of fine cuisine, such as jerk, and internationally acclaimed music spanning Ska, Rock Steady and Reggae, while also demonstrating prowess in track and field, and other sports.

Jamaica's proximity to major markets contributes to its overall attractiveness as an investment destination, as, by air, it is only 90 minutes from Miami, three hours

QUICK FACTS

Location	Caribbean Sea, 145 km (90 m) from Cuba, 885 km (550 m) south of Miami, Florida
Area	10,991 sq. km (4,244 sq. miles)
Length	235 km (146 miles) east to west
Width	82 km (50 miles) at widest point
Total Coastline	1,022 km (635 miles)
Highest Point	Blue Mountain Peak - 2,256 meters (7,402 ft.)
Terrain	Hilly interior with narrow coastal plains
Climate	Tropical with temperate interior
Average Annual Temperature	27° C (81°F) - Coastal lowlands
Capital	Kingston
Geographic Advantage	Strategically located close to the main sea lanes for the Panama Canal

JAMAICA'S POLITICAL STRUCTURE

Jamaica is a parliamentary democracy that is primarily based on the Westminster model of government inherited from the country's history as a British colony. As an independent Commonwealth country since 1962, Jamaica recognizes Britain's reigning monarch as the titular head of state; the incumbent is represented in the island by the Governor General, who is appointed on the advice of the Prime Minister.

The Rule of Law is set out in the Constitution and the national legislative power is vested in a bi-cameral Parliament comprising a House of Representatives and a Senate. The House of Representatives comprises 63 members elected by persons over age 18, in a general election, constitutionally due every five years.

The political party with most members in the House of Representatives forms the government, which is headed by the Prime Minister. The two main political parties are the oldest in Jamaica - the Jamaica Labour Party (JLP), which currently forms the Government of Jamaica (GoJ), and the People's National Party (PNP), which currently forms the Opposition. The Senate consists of 21 persons appointed by the Governor General, 13 of whom are appointed on the advice of the Prime Minister and eight on the advice of the Leader of the Opposition. The principal instrument of policy making is the Cabinet, which is charged with the general direction and control of the Government. The Cabinet consists of the Prime Minister from members of the House of Representatives as well as appointed senators.

POPULATION

Jamaica's population is approximately 2.7 million, with the gender distribution almost evenly spread at 49.5% male and 50.5% female. The current working age population (persons between 15 and 64 years old) stands at 1.8 million, while the island's youthful cohort of persons aged 15 to 29 years represents 28% (757,700) of the total population.

The country has made strong strides in human development over the years, as evidenced by improvements in average life expectancy (74.1 years), infant mortality rate (16.7/1000 live births) and literacy rate (91.7%). The 2016 Human Development Index (HDI) produced by the United Nations Development Programme (UNDP) ranks Jamaica in the "high human development" category, ranking at 94 of 188 countries moving from 0.650 to 0.730 in 2016.

ECONOMIC PERFORMANCE

Jamaica is now on a growth path and is projected to achieve credible performance in Gross Domestic Product (GDP) by 2020. Having attained a net annual growth rate of at least 1.0% over the past three years, there is evidence that the country will continue on this positive path.

In 2017, GDP stood at US\$13.86 billion compared to US\$13 billion in 2016, and real value-added growth of 0.5%. The deceleration in 2017 was largely the result of lower agricultural output in a context of adverse weather conditions, highlighting the strong impact of this industry on the overall economy. The impact of the decline was, however, partly offset by increases in mining and quarrying.



Sector Overview

Jamaica's value proposition as the ideal location for agricultural and/or agribusiness-related investment is predicated on an expansive local market bolstered by over four million visiting tourists annually, the increasing demand for high quality Jamaican produce overseas and the country's proximity to key export markets.

The Jamaican agriculture industry has grown from producing mainly sugar, to include more than two dozen crops for domestic consumption and export. There is also thriving animal husbandry and fish farming activities across the island and these primary services contribute greatly to the country's diversified value-added food manufacturing industry. With roughly 41% of the total land area or 440,000 hectares of agricultural land, there are tremendous opportunities for investors in Jamaica's agriculture sector to serve domestic needs as well as export markets.¹ Investment is needed in climate resistant agricultural practices, which can allow the industry to produce at the potential of 1.4 million tonnes given climatic conditions vs 630,450 tonnes produced in 2017.

Key Indicators (2017)

Industry Size
 Contribution to GDP

US\$1 billion

Exports

US\$228 million

¹ World Bank

The total contribution of agriculture to the Jamaican economy extends beyond raw materials and commodities and into the manufacturing of goods. Combined, agricultural products and processed foods contributed US\$229 million or 19% to export earnings in 2016. The demand for Jamaican food goods is continually growing in overseas markets, even as local consumers and businesses increase consumption. The local agricultural sector is further poised for growth through investment in import replacement projects, to reduce the island's US\$800 million import food bill, or in production for the export market where Jamaican yams, ginger and pepper among other vegetables and condiments are in high demand. The upstream value chain of agricultural investment opportunities exists in the development of infrastructure for irrigation, packaging, cold storage and treatment facilities.

To boost local production, the Government of Jamaica has implemented an extensive agro park project, which plans to convert 20,000 acres of under-utilized land into agricultural production. To date, the Agro-Investment Corporation manages over 4,000 acres across four agro parks. Among the crops being cultivated in these agro-parks are onion, pepper, assorted fruits and vegetables, yam and ginger. The programme is targeted at "large investors with supply chain and logistics experience to use the agro-park as a base to buy, sort, grade and transport produce to the specification of individual buyers, including hotels."²

Private investment in the industry is ongoing as businesses improve the linkages between

producers and manufacturers, through contract farming arrangements which have improved the supply chain efficiency of beer manufacturer Red Stripe and poultry providers Caribbean Broilers (CB) and Jamaica Broilers. These arrangements spur significant investment and utilisation of land with over 200 acres in production of cassava.

Jamaica has strong farming traditions that are supported by an enabling environment and an abundance of well-trained personnel. The new millennium agricultural landscape for Jamaica is one of diversification, niche marketing and value-added products. Growth in the sector will require strong public-private partnership that is research-oriented, market-driven and export-led.

DEMAND DRIVERS

- **Internal Market:** A large domestic market and consistent tourist trade that require a steady supply of produce
- **External Market:** Global demand for high quality Jamaican produce, particularly in the diaspora and ethnic markets. Jamaica also has an untapped market potential through its membership in CARICOM.
- **Strategic Location:** Proximity to key markets such as the United States, Canada, Central and South America
- **Unique Flavour Profiles:** Premium Jamaican crops such as the world famous Blue Mountain Coffee, fine/flavour cocoa, high-quality pimento and ginger are rated among the best in the world.

KEY TRENDS

Globally, the agriculture sector is seeking to adopt more efficient and sustainable production techniques and adapt to climate change. Jamaica has several projects in place to realise these efficiencies and mitigate the challenges.

The world population is expected to grow by over a third (2.3 billion) between 2009 and 2050. The outlook for the growth of the agriculture sector is positive as market demand for food will continue to increase.

Companies continue to seek investment destinations with fresh water resources and land availability, as scarcity and land exhaustion are threats to the viability of the sector in traditional jurisdictions. Jamaica has vast amounts of unexplored lands zoned for agriculture, which make the country ideally suited for agricultural investment.

Demand for niche products allow small islands like Jamaica to produce high quality and unique products, which are recognisable and traceable to the island. Jamaican Jerk and Blue Mountain coffee are two protected geographic indicators placing them in a unique category among other products in the global market. Jamaican Black Castor Oil, though not protected is highly regarded for its effects in the personal care industry.

OPPORTUNITIES

Contract farming joint venture opportunities with manufacturers both local and overseas to produce crops all year round.

- Expansion of fruit tree production for agro-processing and fresh fruit market; specifically, ackee and citrus
- Value-added and niche market opportunities for an increasing range of products (functional foods, nutraceuticals, ingredients, seasonings, condiments, spices and other authentic Jamaican food and beverages)
- Aquaculture – expansion of shrimp and fresh water fish to meet the demand of the local market
- Cannabis – with the introduction of legislation to regulate the local cannabis industry, opportunities are available for medicinal products derived from cannabis
- Oilseeds – Castor beans can be processed for use in the biofuel, cosmetics and pharmaceutical industries

Overview

The manufacturing sector is a key component of the national economy, accounting for 8.5% of Gross Domestic Product (GDP) and generating export earnings of US\$486 million in 2016. Many of Jamaica's manufactured brands are well recognised internationally and have become synonymous with excellence.

There are currently over 300 companies in the sector engaged in a diverse array of manufacturing activities. The sector is divided into two main categories - traditional and non-traditional. Traditional manufactured goods include food, beverages and tobacco, while non-traditional goods include electronics, building materials, pharmaceuticals, among others.

With Jamaica being located at the hub of air and sea routes in the northern Caribbean, the country is ideally placed for export-oriented, high value niche manufacturing and assembly operations, which represent a clear competitive advantage in today's global marketplace. Under the Jamaica Logistics Hub initiative, which seeks to position the country as the next major global transshipment and logistics hub, there will be significant opportunities for business interests to be integrated into the global supply chain.

The Government of Jamaica in an effort to meet international obligations and develop local industry, enacted Special Economic Zone (SEZ) legislation to replace the Jamaica Export Free Zone Act. The introduction of an SEZ regime offers great potential for investment in manufacturing.

Jamaica's competitiveness as a destination for the production of high valued products is supported by improvements in the business environment and keen competitor analysis for establishment of manufacturing plants:

- Property rights
- Quality of port infrastructure
- Cost of labour

The emerging presence of electronics assembly and fabrication enterprises in Jamaica's manufacturing sector reflects the viability of the country in this regard. Jamaica provides a strong platform for companies seeking a cost-effective manufacturing hub to supply the CARICOM, Latin American or North American markets. The country is increasingly being recognised as a destination of choice for manufacturers looking to move facilities and sources of supply closer to end-markets to better manage costs and localize their product offerings appropriately with greater speed, agility, and accuracy.



Key Indicators (2017)

Industry Size
Estimated Earnings

US\$1.1 billion

Exports

US\$574 million

DEMAND DRIVERS

- **Strategic location and market access:** The country's proximity to the United States, Latin American and Caribbean markets provide convenient air and maritime access in moving goods and services to these markets. Along with numerous multilateral trade agreements within the Caribbean, Europe, Canada and Latin American countries.
- **Infrastructure:** The Port of Kingston has been expanded to accommodate large post-Panamax vessels. The island has a sophisticated road network, three international airports and modern transportation systems. There is also available commercial space to major ports in Kingston and Montego Bay.
- **Skilled and available labour pool:** Jamaica's large English-speaking and skilled workforce is competitively priced and well supported by an impressive mix of public and private sector training institutions.
- **Supportive business climate:** Jamaica offers attractive business incentives and access to key markets through strategic trade agreements. Local industry is also well supported by strong public and private sector stakeholders.

KEY TRENDS

- The prominent use of the "made in" slogan is key tagline for many countries with recognition for high quality and unique identifiers.
- Manufacturing jobs account for 21% of the global labour force and have remained stable over the last five years, despite the perceived threats of automation and robotics. Jobs have experienced displacements and creation in other areas of the industry.

- For developing countries, the manufacturing sector offers the opportunity to re-balance the economy towards higher value-added sectors.
- Manufacturers are moving even closer to the customer via supply chain reorganization and value-added services.

Opportunities

- **Pharmaceuticals:** With an established chemical industry, ease of positioning along trade routes and access to key inputs, Jamaica provides an excellent platform for the manufacturing of pharmaceutical products.
- **Cannabis:** The opening of the medical cannabis industry further incentivises companies to research, and process types of cannabis for the estimated US\$7.7 billion global cannabis market.
- **Electronics:** Manufacturing electronics in Jamaica is made easy through availability of a low-cost labour pool trained in engineering, electrical installation, computer science and other support skills. Whether production is done under the Special Economic Zone regime or external, incentives exist for the large-scale manufacturer through capital allowances, tax credits and inputs of raw materials.
- **Assembly/Fabrication:** Jamaica's Logistics Hub Initiative is primarily geared at light manufacturing and distribution of goods throughout the transport channels of the Americas. The fitting and remanufacturing of parts and machinery to meet just in time delivery needs of a growing consumer market of one billion persons can be facilitated in Jamaica's port warehousing facilities or near port plants for storage, assembly and distribution.

Agro Parks



Investment Modality

The Agro-Investment Corporation invites applications from investors to lease available lands for crop/livestock development and aquaculture in select locations.

Overview

Jamaica's Agro Park initiative was implemented in 2012 out of the need to increase agricultural production and improve the quality of produce for the domestic and international markets. The Agro Park initiative promotes intensive and targeted agricultural production in specific defined spaces utilizing optimum and efficient practices to yield product outputs, integrating all facets of the agricultural value chain from pre-production to production, post-harvesting and marketing. The Agro-Investment Corporation (AIC), which manages four government run parks is seeking to stabilise prices and improve predictability of supply through scheduled production. The AIC is expected to bring more acreage into production over the next 3 years, up to 10,000 by 2020.

Available lands

Plantation Garden River (PGR) – The PGR agro park located in St. Thomas is a 253-acre parcel suitable to produce roots and tubers, herbs and spices. The soil types found here include golden grove sandy clay loam, bonny gate stoney loam and killancholy clay. Investors are being encouraged to produce pumpkins, hot peppers, irish potatoes and bananas to satisfy local demand in addition to the export market.

Amity Hall – This 2,340-acre park located in St. Catherine is promoted as a prime location for developing the agribusiness value chain from raw material production to processing and export. With enough space

Agro Parks



for producing to scale and Sydenham clay soil in abundance investors are encouraged to explore opportunities in cucurbits (watermelon, cantaloupe, zucchini, and squash), hot peppers and okra, in addition to tubers like sweet potato.

Spring Plain and Ebony Park – These two agro parks are adjoining properties in the parish of Clarendon, spanning 2,000 acres (1,197 at Ebony Park and 944 acres in Spring Plain). Clay and clay loams soil are abundant across the properties and contribute to conditions suitable for the production of tubers, cucurbits, orchard crop such as fruit trees (mangoes, otaheite apples, papaya, and breadfruit), condiments and vegetables.

Project Highlights

Investors in Agro Parks can access among other features:

- Irrigation and drainage infrastructure
- Quality management systems (GlobalGAP)
- Farm layout and road networks
- Technical on-site support
- Business facilitation and market linkages
- Knowledge discovery and demonstration on-site
- Sharing economy – farm equipment, minimal processing facilities, security & insurance

Small Ruminant Investment

Jamaica currently imports between 60 and 70 percent of its meat consumption and 90% of its dairy product consumption. With less than 15% of registered Jamaican farmers engaged in the production of livestock, there is considerable opportunity for investments, enabling import substitution of meat and meat products. The development of small ruminant agro-parks that utilize lands previously mined for bauxite will allow for increased production and productivity.

The parishes of Clarendon, Manchester and St. Elizabeth have natural pastures suitable for grazing and for ruminants reared under strictly organic conditions to meet the growing organic/healthy market segment.

Jamaica's current chevon and mutton consumption is largely satisfied by Australia and New Zealand with imports totalling close to 2.5 million KGs in 2017 valuing \$851,982 US worth of chevon products and \$8,947,747 US of mutton and lamb products. Local production covers on average 15 % of the total national demand. To directly substitute these imports herd sizes need to increase by 250,000 ewes and 30,000 does.

The Small Ruminant Agro-Park will provide investors with:

- Sharing economy including security to help mitigate against praedial larceny
- Quality management systems
- Facilitation of movement along the value chain (slaughtering, processing, marketing)
- Technical on-site support
- Traceability improvement
- Integrated livestock production
- Improved small ruminant genetics

The market potential is remarkable and yearning for investment. Commercial small ruminant investment requires an estimated initial capital outlay of 4.5 million JMD.



Agriculture & Marketing Corporation Complex



Investment Modality

The property is available for leasing of individual warehousing/processing and office spaces and for a single lease of the entire property with existing tenant contracts to be honoured.

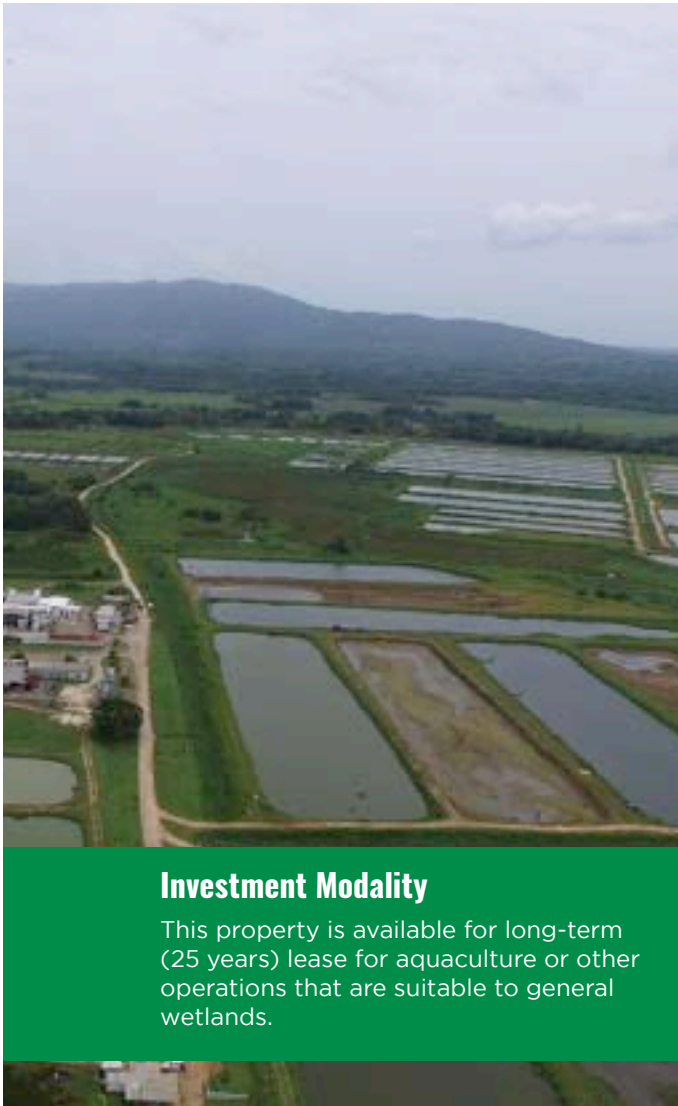
Overview

The Agricultural Marketing Corporation Complex located at 188 Spanish Town Road in Kingston is the future agro-industry logistics hub in Jamaica to support fresh produce exporting and agro-processing. Since its construction in the 1960s the complex has expanded to four levels with varying operations ongoing in post-harvest and exports management of commodities. With space for packing houses, cold storage and office space the facility is designed to be a full-service logistics partner supporting the agricultural sector. Connectivity is pivotal to movement of agricultural commodities and the AMC Complex provides exporters and distributors access to the domestic and international market due to close proximity to the Port of Kingston, Tinson Pen aerodrome, the Caymanas Special Economic Zone and less than 30 minutes from the Norman Manley International Airport.

Project Highlights

- The Agro-Investment Corporation managed complex is 102, 000 sq. ft. with 90,000 sq. ft. of dry and refrigerated/cold warehousing space and 12,000 sq. ft. of administrative space.
- The Complex currently houses some of Jamaica's most known food processors, exporters and service providers and is highly demanded by businesses in the distributive trade, agriculture and logistics.
- The Complex is incorporated into the Government of Jamaica's agricultural sector development plan as the centre to serve the over 16,000 hectares of land that are programmed for primary agricultural production over the short-term.

Aquaculture



Investment Modality

This property is available for long-term (25 years) lease for aquaculture or other operations that are suitable to general wetlands.

Overview

The Agro-Investment Corporation (AIC) has made available approximately 2,700 acres of property in Elim St. Elizabeth for the development of aquaculture production. The burgeoning opportunity in fish farming is supported by high domestic consumption of fish and crustaceans, over 30,000 tonnes annually and a regional and international market in the Americas which is growing. Jamaica imports approximately US\$60 million worth of fish, crustaceans and molluscs annually. Favourites among Jamaicans are tilapia, basa and shrimp.

The property which is part of the Government of Jamaica, Agro Parks initiative provides investors with the perfect opportunity to capitalize on the investment opportunities in the local aquaculture industry.

Project Highlights

- The property is near to major towns and markets for distribution of the product like Santa Cruz and Black River.
- The existing labour pool is trained and supported by research and scientific institutions including the neighbouring Sydney Pagon (STEM) Academy, The University of the West Indies Agricultural Research and Innovation Centre and the Northern Caribbean University campus which is in the neighbouring parish of Manchester.
- Surrounded by water sources provided by the Black River, this area is already home to an existing 300-acre fish farm and coconut plantations that can provide integration and diversification opportunities.



Agri Product Profiles

Hot Pepper

Overview

Jamaican peppers are world renowned for their flavour profile and spiciness, whether served fresh or as a part of jerk sauces. West Indian Red and Scotch Bonnet peppers have a high Scoville rating between 100,000 to 350,000 units and provide an intense taste experience. The Jamaican peppers contain high amounts of capsaicin, a compound which has benefits including aiding weight loss, heart health and congestion relief.

Domestic production of peppers up to 2017 was 14,520 tonnes reaped from 1,038 hectares of land, which continues to meet local consumption for fresh peppers. Sales from the thriving export market of fresh peppers and semi value added have climbed to US\$1 million from 474,973 kg in 2017, in addition to the 698,137 kg of pepper sauces valued US\$2.7 million.

Investment Requirements

Hot peppers are a cash crop for investors due to the crop maturity of 3 months and reaping period of 6 months. Peppers can be grown on most slightly acid to alkaline soil types, however well drained fertile loam or clay loam are preferred for optimal yield. The Jamaican Scotch Bonnet and West Indian red pepper can be easily grown across the island at costs ranging J\$72 to \$81 per kg for an acre of production. With domestic farmgate prices growing to average J\$344 per kg in 2017, the returns from costs are over 300%.

International Market

The international market for hot peppers is dominated by the USA who imports over 400 million kg annually, primarily from Mexico and the Dominican Republic.

The U.S. market for chili pepper/hot pepper has grown by 29% in 5 years, with imports growing from 364 million kgs in 2013 to 448 million kgs in 2017. The growth in value of imports has seen smaller growth due to declining prices from key markets in Mexico and the Dominican Republic.

Prices of imported peppers are at the lowest in 10 years, at average US 65 cents/kg. Market leading, Mexican peppers are landed at 64 cents/kg while the highest prices are from Trinidad and Tobago US\$6.09/kg and Jamaica US\$6.05/kg. Retail prices nationally

ranged US 72 cents/pound for serrano up to US\$2.24/pound for jalapenos.

Market Requirements and Positioning

Target markets for pepper growers include restaurants, hotels, supermarkets, agro-processors and exporters. Peppers from Jamaica are allowed entry into most countries, without barriers. For the US market, it is one of 52 products allowed preclearance into the USA and is inspected in Jamaica and at the port of destination. The common pepper varieties in the USA include: poblano, Anaheim, cayenne, jalapeno, serrano and habanero. These are promoted year-round and consumers expect availability at all times.

Value Proposition

Jamaican peppers are renowned for their spiciness measured in high Scoville rating whether used fresh or in sauces/pastes. The domestic and international market are open opportunities with projected profitability of 300%.



Papaya

Overview

The papaya is a tropical fruit gaining attention for its flavour, versatility in salads, value added products and as an individual fruit. Papaya is a key source of vitamin C and potassium, it is also high in folate which is needed for cell growth. Jamaica produces several varieties of papaya, for domestic and overseas consumption including the solo sunrise and maradol.

Local production of papaya has fluctuated since 2015 following increases to 9 million kg in 2014, with output in 2017 of 7.7 million kg coming from 371 hectares of production. The solo sunrise variety is the preferred variety grown by Jamaican producers, highly concentrated in the parishes of St. Elizabeth, Trelawny, St. Mary & Catherine. These parishes accounted for 79% of total production in 2017. Domestic consumption accounts for an average 82% of production with the balance exported to the USA.

Investment Requirements

Papaya thrives in temperatures of 21°C to 33°C in sandy, loamy or rocky soils. Latest estimated costs of production for papaya averages J\$125.97 per kg for a hectare of production. With an average yield of 20,768.19 kg per hectare up to 2017, the difference in farmgate price and cost of production remains above 100% at, 160.7% allowing for positive returns.

International Market

Global papaya production averages 12 million tonnes annually, from over 60 countries, with India, Brazil and Mexico the leading producers. World trade accounts for around 1% of production, and the US market accounts for over 50% of imported papaya. Up to 2016, 204,098 tonnes of papaya were valued US\$327 million in the international market. Mexico, Guatemala and Brazil are the world's leading suppliers while Mexico's output, three times that of Brazil allows it to be the most price competitive in the Americas. Estimated costs of Mexican papayas in 2017 have reached an historic low of US\$489 per tonne.

Within the region, the USA and Canada are close markets which Jamaica can access. While the UK is currently Jamaica's largest market and where Jamaican papayas are second to Brazilian. Other markets in the EU like Germany and the Netherlands

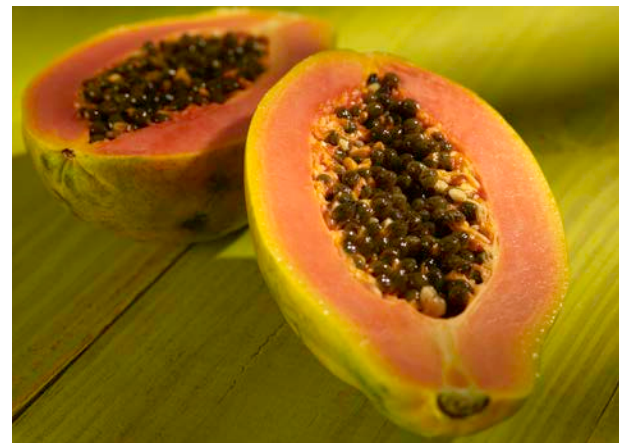
are leading importers of fresh papaya and present opportunities for exploration.

Market Requirements and Positioning

A phyto-sanitary certificate is required to export papaya to any of the identified markets and products inspected by the Plant Quarantine/ Produce Inspection Unit. Desired variety is key in marketing internationally. US consumers prefer the solo and maradol varieties, while in Europe the solo, golden and Formosa are popular. Small papayas are a preference in Europe, which facilitate individual consumption and are easier to eat, with similar experiences in North America.

Value Proposition

The Jamaican soil and climatic conditions present the right factors for the growth of papaya for domestic consumption and export in the US\$300 million market.



Mango

Overview

Mango is an in-demand product across the world, in North America, Europe and the Middle East. Grown primarily in tropics and subtropics, this benefits developing countries like India which is the world's largest producer and Mexico the largest exporter. Jamaican mango production is of three varieties – St. Julian, East Indian and Tommy Atkins – which satisfies at least 95% of the local market.

Local production has declined since a high in 2014 of 14 million kg, to 8.4 million in 2017. Five (5) percent of local production is exported, primarily to Canada and UK. However, due to export restrictions to the UK, domestic exports declined to under US\$1 million between 2015 and 2016 and are expected to recover in 2018 as the ban has been lifted.

Investment Requirements

Mangoes are a long-term crop with high initial capital investment, as maturity of plants takes up to 3 years before fruits are borne. Accumulated costs up to year 3 of production per hectare are estimated J\$97 per kg. Output up to year 5 is expected to increase, averaging 29% per annum to reach 10,265 kg, while annual costs reduce to \$9 per kg.

International Market

Mango thrives in the tropical regions and the world leading producers are found in India, China and Thailand who account for 57% of the 46.6 million tonnes produced in 2016. A small amount of global production is traded, 3% or 1.5 million tonnes with the USA as the largest destination market valued US\$538 million, 251,160 tonnes in 2016. In the Americas, Mexico is a key source in the region, supplying the North America market and the Netherlands which is a key trader to the EU.

The UK and Canadian markets are the preferred destinations for Jamaican mangoes, with consumption growing away from Hispanic and Asian consumers, into the mainstream market. The two markets are highly price competitive due to the high supply from Mexico, Brazil and Peru. Prices are influenced by supply periods and the varieties sourced, mainly: Keitt, Kent, Osteen and Tommy Atkins. Prevailing retail prices in the UK can range from €1.50 to €2.00 while Canadian

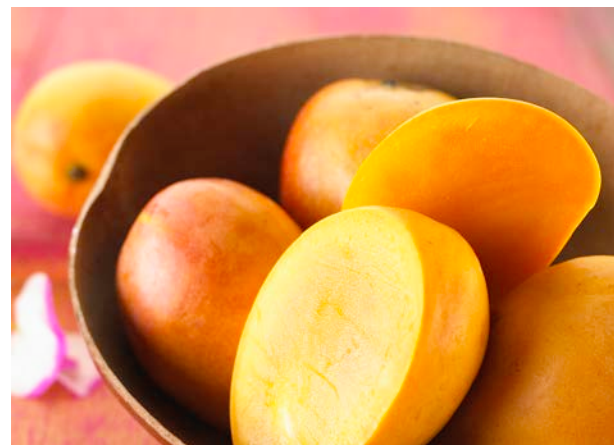
wholesalers range CAN\$7.50 to CAN\$24.50 for containers of 7 to 20 mangoes.

Market Requirements and Positioning

Export of mango from Jamaica to Canada and Europe requires a phytosanitary certificate issued from the Plant and Quarantine Division of the MICA. The USA requires further protocol, through hot water treatment and irradiation which has limited supply and presents an opportunity for investment in such a facility. Tree ripened and ready to eat mangoes are the desired forms of consumption for European buyers which either require close quality control or air freight to ensure taste profiles are maintained. Comparatively North American consumers are consuming mango whole, in salads and smoothies, for bursts of flavour.

Value Proposition

Jamaica's tropical climate provides perfect conditions for mango production, with export opportunities to Europe and Canada in fresh produce and value-added products under tariff free regimes.



Sweet Potato

Overview

Sweet potato is a highly valuable superfood, consumed in high quantities domestically and in the world market. Recognised as a key source of antioxidants and vitamins, sweet potato is one of seven foods, with global annual production of more than 100 million metric tonnes. Domestic consumption is met considerably by local production with enough for export production. Of the 48 million kg produced in 2016, 1.5 million was exported primarily to the UK and Canada.

Sweet potato is produced across the island, with high concentrations in Manchester, St. Elizabeth and Clarendon. St. Mary produces well above the all island average yield of 17,229 kg per hectare, at 19,487 kg per hectare in 2017. For optimal production, sweet potato should be grown in sandy or clay loams that are well drained.

Investment Requirements

The attractiveness of sweet potato is through its high turnover, with a crop maturity of 4 months, the tuber can be grown year-round. The cost of producing sweet potatoes have risen due to the requirements for Global GAP certification (necessary for the UK) and planting material for Beauregrad variety. In 2017, cost of production grew to J\$47.50 per kg, earning a mark-up of 208.6% due to prevailing farmgate prices of J\$146.59 per kg.

International Market

Sweet potato is grown commercially in approximately 118 countries, led by China with annual production averaging 70 million tonnes, accounting for 40% of global production in 2016 of 175 million tonnes. With such large production, less than 1% of global sweet potato production is exported, valuing the trade at US\$443 million in 2016. Global supply is led by the USA, a net exporter accounting for 39% of world exports while the UK leads imports accounting for 25% of world trade.

Market Requirements and Positioning

Exports of sweet potato must meet certain phyto sanitary requirements, a certificate is required for entry into the UK, while Canadian imports do not require a certificate but enforce a “soil free” rule on most vegetable products. With the US market satisfied by domestic production, opportunities lie to its neighbour Canada and the European continent where the UK and the Netherlands are some of the leading consumers globally. The Netherlands is primarily a trader of sweet potato to the EU, while the UK is importing for domestic consumption. The UK market is highly dominated by the American Covington and Spanish Beauregrad varieties with retail prices averaging £1 per kg.

Value Proposition

Sweet potato is one of the most widely grown crops in Jamaica, able to be produced in large quantities affordably for domestic and export markets.



Irish Potato

Overview

Irish potato is a staple product grown across the world in over 160 countries and provides a good source of vitamin C and potassium among other nutrients. Potato production is highly dependent on environmental conditions as it requires cool temperatures between 16-27°C for best yields. Weather conditions and storage affect the domestic production of potatoes, which satisfies 88% of the local consumption (5-year average 2013-2017). Therefore, domestic production of 17.1 million kg of potato was supported by 2 million in imports primarily from the Netherlands.

Irish potato is grown across the island on flat or sloping lands, on 1,039 hectares to produce at a yield of 16,504 kg per hectare. Production is concentrated in the first half of the year resulting in the need for imported potatoes to meet demand in the latter half.

Investment Requirements

Potatoes can be harvested 90 to 100 days after planting, allowing for multiple harvests in a cycle. Irish potatoes must not be grown in areas where tomatoes, peppers, tobacco, Irish potato and other members of the Solanaceae family have been grown in the last three years. The crop provides a high cash turnover due to farmgate prices (J\$181) triple the cost of production (J\$54 per kg) in 2017. Opportunities exist in completely meeting domestic demand through import substitution and in establishing cold storage space to ensure year-round supply for the commodity.

International Market

Global potato production averages well over 370 million tonnes annually, led by China, India and the Russian Federation. Up to 4% of potatoes produced globally are traded on the world market. The 13.6 million tons imported are destined to the EU accounting for 54% of global trade as the USA is the only non-EU country in the top 10 leading importers of potato annually. CARICOM countries are net importers of potato, with the largest market in Trinidad and Tobago valued US\$7.9 million (27,216 tonnes) in 2016 followed by Cuba US\$7.5 million.

Market Requirements and Positioning

The Caribbean region presents the greatest opportunity for export of Irish potato due to proximity and existing relationships with regional partners. Key competitors are the Netherlands and Canada, who supply all the markets with the exception of the Bahamas which is supplied wholly by US exporters. Prices of imported potatoes have been declining in the larger markets like Trinidad due to scale, reaching US\$431 per ton, while prices in Antigua and Barbuda are the highest reaching US\$1,706 per ton.

Value Proposition

With a US\$26 million CARICOM market, Jamaica's size and proximity present the ideal location for producing potatoes at scale for domestic consumption and export into the region.



Onion

Overview

Onions are one of the most heavily consumed foods in the world, maintaining a crucial part in the diet of most persons. Rich in flavonoids and antioxidants, they provide relief from allergies and lower the risk of coronary heart disease. Produced in over 140 countries, this staple product can be grown in most conditions due to the range of varieties, however consistent sunlight is crucial to its development. Onion production in Jamaica is low, averaging under 888,000 kg annually. In 2017, domestic demand was 8.5 million, 90% of which was largely derived by imports. Strategic efforts are underway to increase local production and is currently yielding results. Onion can be grown in each parish of Jamaica however up to 2017, 69 hectares of land was under production, with yields of 11,855 kg per hectare, almost half the global average yield per hectare. To meet domestic demand, investment in productive area is required from the present 69 hectares to approximately 576 hectares.

Investment Requirements

Onion farming continues to be profitable as the cost of producing per acre of production remains low (J\$53 per kg) while prices climb yearly, reaching J\$170 per kg average in 2017. The 110-day crop cycle requires careful attention to irrigation, crop nutrition and exposure to sunlight to ensure high yields. For commercial production, onions are best grown in full sunlight in medium-texture loams. Flat land with consistent wind circulant is necessary. It is recommended that fields chosen should not have been planted in any member of the onion family for at least five years. The consistently low onion yields present vertical opportunities for investment in research, technology and storage and post-harvest handling of onion.

International Market

Global onion production has averaged 88 million tonnes, with growth increasing yearly to 93 million in 2016; led by China and India accounting for 45% of global production. Global trade of onions continues to grow, reaching 8.6 million tonnes in 2016, valued US\$3.6 billion. Leading importers are across continents, from the Americas, Asia and Europe with the USA, a net importer, as the largest market valued US\$456

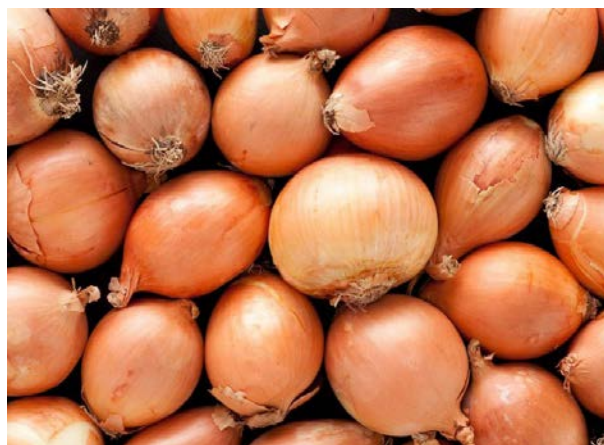
million for 932,053 tonnes. The Netherlands leads global exports of onions, leveraging its expertise in agricultural production and trade to supply Europe and the Americas.

Market Requirements and Positioning

The domestic market is of immediate concern to any investor in onion production. Market preference is for the yellow onion due to the long storability and use in a wide array of dishes. While red and white onions also feature in the domestic market to meet the needs of specific consumers. The target market for consumption includes retailers, processors, exporters and hotels who currently import year-round to meet their needs.

Value Proposition

Onions can be grown in any parish of Jamaica to significant yields. As a net importer the domestic and export market in the Caribbean are immediate opportunities for growth.



Breadfruit

Overview

Breadfruit is becoming one of the most popular foods, coined as “the next superfood to end world hunger”. This easy to grow crop is an excellent source of carbohydrates, fibre, antioxidants and other nutrients required for sustenance. Breadfruit’s popularity is further driven as it is a gluten free alternative to traditional foods, which can’t be consumed by gluten intolerant persons. Breadfruit has value added derivatives as flour, insect repellent, fabric and animal feed.

Breadfruit is grown wild in Jamaica, with some orchards in production, producing an estimated 617,040 kg in addition to 23.5 million kg grown in unorganized areas. This output is further reduced to a marketable yield of 14.5 million kg. The leading parishes for breadfruit cultivation are St. Thomas, St. James, Portland, Westmoreland, St. Mary, Hanover and St. Catherine. National consumption of 13.2 million kg is wholly met by domestic production with the remaining output exported to the USA, UK, Canada and other markets..

Investment Requirements

Breadfruit production has a large initial capital investment due to the three-year maturity of the fruit trees following planting. After the first harvest, maintenance of the orchard reduces significantly from the initial outlay as returns are positive. Up to 2017, average cost of production on a hectare was J\$11.39 per kg and estimated farmgate price of J\$132 per kg. The estimated yield from a hectare of production is 7,524 kg.

International Market

Breadfruit production is still relatively concentrated in the Americas and the South Pacific where most varieties of the product can be found. Global production is being supported by non-profits and the Food and Agriculture Organisation (FAO) as a means to increase food security. Preference for breadfruit in mainstream markets like the USA, UK and Canada is growing through immigrants and the alternative as a gluten free product.

Export opportunities exist in these markets for Jamaican breadfruit due to their lack of domestic production, growing demand and higher prices. The

American market, which is dominated by Mexican breadfruit wholesales at a range of US\$1.87 to US\$1.98 per kg. Canadian breadfruit at the wholesale averaged US\$2.28 per kg.

Market Requirements and Positioning

Breadfruit from Jamaica is allowed entry into most countries, without barriers. For the US market, it is one of 52 products allowed preclearance into the USA and is inspected in Jamaica and at the port of destination. UK and Canada exports require no certification outside of the exporter registration with the Ministry of Industry, Commerce, Agriculture and Fisheries and JAMPRO. Consumers in these markets eat fresh or dried breadfruit and increased interest in breadfruit flour and breadfruit chips is being explored.

Value Proposition

Breadfruit has emerged as one of the world’s newest superfoods. This traditional product in Jamaica can be scaled up to meet international demand for a healthy gluten free alternative starch.



Aquaculture

Overview

Aquaculture has allowed Jamaican producers and consumers a new method and source of bringing fish to the market. The stress on marine life from over harvesting and declining fish stocks is readily met by the opportunities in fish farming which allow for traceability of product, planned output and linkages to crop development through aquaponics. Further, Jamaica's advantage as a small island allows for production through mariculture and fish farming, due to the proximity to available sea water.

Domestic consumption of fish and crustaceans is over 30 thousand tonnes annually, a mix of imported seafood and domestic production. Traditional seafood production of fish and shellfish has been fluctuating due to weather conditions falling from a high of 14 thousand tonnes in 2013 to 12,940 tonnes in 2016. Aquaculture production has added an additional thousand tonnes through basa and tilapia farming, with output of 1.3 million kg in 2017. Output has increased due to the introduction of basa, production of this new fish has grown from 5,000 kg in the year of introduction, to 249,000 kg in 2017.

Aquaculture production occurs primarily on the South-Central plains of St. Catherine and Clarendon. Farming also occurs in St. Elizabeth, Westmoreland, St. Mary, Portland and Trelawny. These areas have suitable topography, good clay soils and available water supplies.

Investment Requirements

Fish ponds are best built in 1-acre plots, dug 1.22m to 1.83m deep in soils with 24% to 50% clay. Depth of the ponds is dependent on the maturity of fish stock. Tilapia fish mature in 2 to 3 months allowing for 2.5 cycles annually of 10,000 to 20,000 fingerlings per cycle. Basa fish is a longer cycle of 6 to 10 months maturity, however yield is 40,000 fingerlings per cycle and can increase if fish size varies.

Current costs of production for tilapia per acre pond is J\$311.3 per kg, with a farmgate price of \$697.40 per kg, a positive margin of 124% is attainable. Basa fish is in a market development phase with reduced prices to attract consumption of the new product.

International Market

The global seafood market remains positive as consumers seek diverse sources of protein. Aquaculture production continues to grow, reaching 83.6 million tonnes in 2017 as traditional fish capture remains stable at 90.4 million tonnes. The Food and Agriculture Organisation reports indicate aquaculture's share in human consumption has passed captured fish, to reach 55%, driven by supply and demand from Asia. International trade fluctuates spurred by demand from the US, having fallen to 259,115 tonnes (US\$941 million) in 2016 and forecast to decline as that market shrinks. Outside of the USA, Mexico and other Latin American countries are increasing demand for frozen tilapia, with prospects of increasing domestic production as well.

Value Proposition

Aquaculture provides the perfect opportunity to produce traceable fish and crustaceans in a controlled and safe system while protecting the volatile marine environment.





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