



TECHNICAL MARKET ACCESS SURVEY

Cultivation of *Ananas comosus* (L.) Merr., (pineapple) in Jamaica



Ananas comosus (L.) Merr., (Pineapple)

image courtesy of : Sanniell Wilson

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TECHNICAL MARKET ACCESS SURVEY:

Ananas comosus (L.) Merr.,

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Introduction

This document was prepared by the Pest Risk Analysis Unit of the Plant Quarantine Branch, Ministry of Agriculture & Fisheries, Jamaica. The content reflects the Unit's best attempt to garner information available to it at the time of preparation. This document provides market access information for the exportation of pineapple from Jamaica to the Cayman intended for consumption. The information provided is expected to be used to conduct an import risk assessment for pineapple entering the Cayman Islands from Jamaica.

The survey gives detail on the following areas of pineapple production

- General commodity/produce information
- Pre-harvest information
- Post-harvest information
- A comprehensive list of pest/pathogen affecting the commodity
- Documentation on pest management
- Export for pineapple from Jamaica.

The pineapple fruit (*Ananas comosus*) is native to Southern Brazil and Paraguay. In 1493, Columbus found the fruit in Guadeloupe, carried it back to Spain and reported that the Carib Indians cultivated pineapple in the West Indies. It is thought that from here, the fruit spread around the world (Ministry of Agriculture & Fisheries Databank, 2010).

Commodity Identity

NAME	<i>Ananas comosus</i> (L.) Merr.
SYNONYMS	<i>Ananas sativus</i> , <i>Bromelia sativus</i> (LINDL.)
TAXONOMIC POSITION	Monocotyledonae: Bromeliales: Bromeliaceae
COMMON NAMES	Pineapple
INTENDED USE	Consumption

Production area



Figure 1: Map illustration of the Main Pineapple Production Area in Jamaica

The climate and soils in Jamaica are ideal for growing pineapple and there is a high demand for the fruit locally; consequently the crop is cultivated in all parishes. However, according to a survey done in 2009, the main pineapple production areas are in the parishes of St. Elizabeth, Westmoreland and St. James (Ministry of Agriculture, 2010).

Eco-climatic condition in the areas of production

Pineapple is grown all over Jamaica from close to sea level to the foothills of the Blue Mountains. The optimum elevation at which pineapple is grown in Jamaica is between 1000 to 1500metres above sea level. Optimum temperature for best growth ranges between 24°C to 28°C.

Pineapple thrives well on a wide range of soils from clay loams to sandy loams although sandy loams which are acidic (pH 4-6) are preferred provided that the drainage and aeration are good.

Rainfall should be between 500 to 2500 mm/year and well distributed for good production.

Phenology of the crop

Pineapples are propagated using either of the four planting materials, suckers, slips, crowns or butts. The sucker and the basal slips are mostly used in Jamaica for establishing large commercial farms.

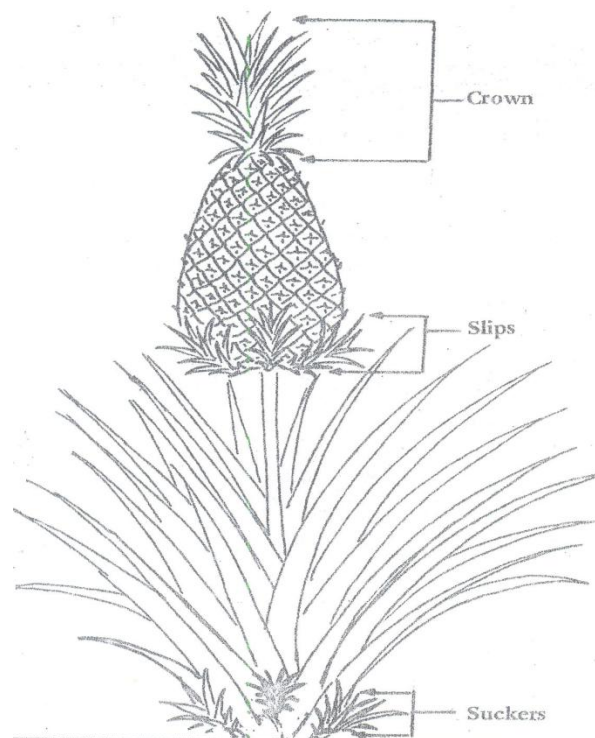


Figure 2: The crown, slip and sucker of a pineapple plant (source: Ministry of Agriculture, 1979)

Land Preparation

The land preparation for planting pineapple is usually thorough since pineapple roots are shallow and weak. The land is first ploughed and harrowed to a fine tilth. The field is laid out to enable easy access and movements between rows to carry out cultural practices.



Figure 3: Pineapple production area in St. Mary, Jamaica

Varieties grown in Jamaica

The traditional varieties of pineapple grown in Jamaica are Sugar Loaf, Red Spanish, Ripley and Smooth Cayenne. The Sugar Loaf is popular in the local fresh fruit market for its rich and sweet flavour. The Red Spanish variety is accepted by both pineapple processors and the local market. The Smooth Cayenne is the variety preferred by commercial growers as well as by processors because of the combination of good flavour, lack of spines and the square shape of the fruit. More recently, the three economic important varieties to Jamaica are Cowboy, Ripley and Sugarloaf. However, in 2009 the MD2 variety of pineapple was introduced into the island.

Sugar Loaf

The Sugar Loaf is the largest of the four varieties. The plant varies in size depending on the location and management practices. The leaves have spines along their entire margins or edge. The fruit is conical in shape, sweet and juicy. This variety is not used for processing because of its shape and the colour of its flesh.

MD2

Scientists have recently developed a new strain of pineapple variety (MD2) that is sweeter than the regular varieties. The MD2 grows to a uniform size, ripens evenly and has a longer shelf-life than the other varieties.

Pest associated with pineapple production in Jamaica (Table 1).

Pests		Presence on Pathway (fruit)	Affected Plant Part	Quarantine Status in Jamaica	References
SCIENTIFIC NAME	COMMON NAME				
INSECTS					
<i>Aleurocanthus woglumi</i> Ashby	Blackfly	No	Leaves, stem	¹ Not a quarantine pest	Williams 2000
<i>Diaspis bromeliae</i> Kern.	Pineapple diaspis	No	Leaves	¹ Not a quarantine pest	Williams 2000, Jayasingh, 1996
<i>Diaspis boisduvalii</i>	Boisduval scale	Yes	Leaf, stem, fruit	¹ Not a quarantine pest	² R&D Database
<i>Dysmicoccus (Pseudococcus) brevipes</i>	Pineapple mealybug	Yes	Fruits, leaves, stems, roots	¹ Not a quarantine pest	Williams 2000, Jayasingh, 1996
<i>Exophthalmus</i> sp	Fiddler beetle			¹ Not a quarantine pest	² R&D Database
<i>Ferrisia virgata</i>	Striped mealybug	Yes	Fruits, leaves, stems, roots	¹ Not a quarantine pest	² R&D Database
<i>Metamasius hemipterus</i>	West Indian cane weevil	No	Leaves, stem	¹ Not a quarantine pest	² R&D Database
<i>Metamasius ritchiei</i> Mshll.	Pineapple weevil	Yes	Fruit, stem	¹ Not a quarantine pest	Williams 2000, Jayasingh, 1996
<i>Planococcus citri</i>	Citrus mealybug	Yes	Roots, bark, fruit, foliage	¹ Not a quarantine pest	² R&D Database
<i>Pseudococcus jackbeardsleyi</i> Gimpel and Miller, 1996	Jack Beardsley mealybug	Yes	Fruits/pods, leaves	¹ Not a quarantine pest	² R&D Database
<i>Pseudococcus longispinus</i>	Long-tailed mealybug	Yes	Leaf, stem, fruit	¹ Not a quarantine pest	² R&D Database
<i>Solenopsis geminata</i> Fab.	Fire ant	Yes	Fruits, stem, seed, vegetative organs	¹ Not a quarantine pest	Williams 2000, Jayasingh, 1996
<i>Unaspis citri</i>	Citrus snow scale	Yes	Leaf, stem, fruit	¹ Not a quarantine pest	² R&D Database
MITES					
<i>Tetranychus</i> spp	Red Spider Mite	Yes	Fruit	¹ Not a quarantine pest	² R&D Database
FUNGUS					

<i>Ceratocystis paradoxa</i> (Dade) Moreau	Black, Base or but rot	Yes	Fruit, leaf	¹ Not a quarantine pest	Williams 2000
<i>Phytophthora nicotianae</i> de Haan var. <i>parasitica</i> (Dastur) Waterh.	Basal rot	Yes	Fruits, leaves, roots, stem	¹ Not a quarantine pest	Williams 2000
<i>Botryodiplodia theobromae</i> Pat.	Basal rot	Yes	Fruits, leaves, roots, stem, seed	¹ Not a quarantine pest	Williams 2000
<i>Phomopsis</i> sp.	Basal rot	Yes	Fruit	¹ Not a quarantine pest	Williams 2000
<i>Fuligo septica</i>	Slime mould	Yes	Fruit	¹ Not a quarantine pest	Williams 2000
BACTERIA					
<i>Pectobacterium carotovorum</i> (Jones) Waldee	Stem rot	Yes	leaves, stem, vegetative organ	¹ Not a quarantine pest	Williams 2000
NEMATODES					
<i>Aphelenchoides</i> sp.	Nematode	No	Root	¹ Not a quarantine pest	Williams 2000
<i>Aphelenchus</i> sp.	Nematode	No	Root	¹ Not a quarantine pest	Williams 2000
<i>Cacopaurus</i> sp.	Nematode	No	Root	¹ Not a quarantine pest	Williams 2000
<i>Criconemoides</i> sp.	Ring nematode	No	Fruits, pod, root	¹ Not a quarantine pest	Williams 2000
<i>Ditylenchus</i> sp.	Nematode	No	Root	¹ Not a quarantine pest	Williams 2000
<i>Helicotylenchus</i> sp.	Spiral nematodes	No	Root	¹ Not a quarantine pest	Williams 2000
<i>Helicotylenchus erythrinae</i> (Zimm.) Golden	Spiral nematode	No	Root	¹ Not a quarantine pest	Williams 2000
<i>Helicotylenchus multicinctus</i> (Cobb) Golden	Spiral nematode	No	Root	¹ Not a quarantine pest	Williams 2000
<i>Helicotylenchus nannus</i> Steiner	Spiral nematode	No	Leaves, roots, vegetative organs	¹ Not a quarantine pest	Williams 2000
<i>Hoplolaimus</i> sp.	Nematode	No	Root	¹ Not a quarantine pest	Williams 2000
<i>Longidorus</i> sp.	Nematode	No	Root	¹ Not a quarantine pest	Williams 2000
<i>Meloidogyne</i> sp.	Root-knot nematode	No	Root	¹ Not a quarantine pest	Williams 2000
<i>Paratylenchus</i> sp.	Nematode	No	Root	¹ Not a quarantine pest	Williams 2000
<i>Pratylenchus</i> sp.	Nematode	No	Root	¹ Not a quarantine pest	Williams 2000
<i>Rotylenchulus reniformis</i> Linford & Olivera	Reniform nematode	No	Root	¹ Not a quarantine pest	Williams 2000
<i>Scutellonema</i> sp.	Nematode	No	Root	¹ Not a quarantine pest	Williams 2000
<i>Tylenchorhynchus acutus</i>	Stunt nematode	No	Root	¹ Not a quarantine pest	Williams 2000

Allen					
<i>Tylenchus</i> sp.	Nematode	No	Root	¹ Not a quarantine pest	Williams 2000
<i>Xiphinema</i> sp.	Nematode	No	Root	¹ Not a quarantine pest	Williams 2000

¹ Not a quarantine pest in Jamaica means it is not on the country's quarantine pest list.

² R&D Database refers to the database held at the Research and Development Division of the Ministry of Agriculture.

Pest Management

The management of pests in pineapple production requires an integrated approach, which involves the selection and treatment of planting material and the cultural and chemical practices to complement. The practices employed in pineapple production in Jamaica are as follows:

Selection of planting material

Proper selection of planting materials (suckers, slips and crowns) is essential to good field establishment and high yields. Planting materials are carefully selected with the following desirable characteristics:

- The fruits should be long, cylindrical and broad shouldered with large flat eyes and a small core.
- The fruit should be borne on a short fruit stalk
- Plants should have no more than three basal slips
- The stem of the plant should be relatively short with two suckers originating close to the ground to ensure a stable ratoon plant

Preparation of planting material

Planting material must be free from all pests and in a condition in which they will produce roots and develop into healthy plants. The following preparatory measures are done to the planting material before they are planted:

- All dried leaves are removed from the base of the planting material. In the case of the tops (crowns), the small basal leaves are removed leaving the stem exposed.
- The plants are stored 'base up' in a cool dry place until ready for planting
- Tops are cut from fruits to prevent infection by fungus
- Planting materials are treated with a fungicide-insecticide mixture. This aids in preventing rotting and the controlling of mealy bugs
- Planting materials are grouped into suckers, crowns and slips and are planted separately to prevent unevenness in the field.

Cultivation/ Management practices

The major pests of concern with pineapple production in Jamaica are: fungi, mealy bugs and nematodes. The following management practices are employed to mitigate the effect of these pests:

- Pineapples are planted in well-drained soil.
- Plant material dipped into fungicide are allowed to drain for 30 minutes before planting
- The soil is sprayed with insecticide and nematicide to control mealy bugs and nematode respectively.

Harvesting

Pineapples reach maturity in approximately 14 to 18 months. Indication of the fruit maturity is seen with a change in the coloration starting at the base (see figure 4). Alternatively, the ease with which leaves within the crown may be removed is also an indication that the fruits are matured and ready for harvesting.



Figure 4: Mature pineapple fruit ready for harvesting.

Postharvest Treatments

Pineapples are harvested and invertedly packed into crates (see figure 5); these crates are usually padded. The fruits are then transported to a shed, where they are sorted and dipped into a

postharvest fungicide and allowed to dry. The crowns may or may not be shaved. The dried fruits are repacked into the crates with padding between the inverted pineapples.



Figure 5: Crates in which pineapples are packaged

Pineapple Export

Pineapples for export are usually reaped when they are mature but still green or just showing light yellow at the base. The fruits are subjected to the postharvest treatment previously mentioned and then transported to the port, where they are inspected by Plant Quarantine Officers and an Entomologist. Pineapples showing signs of pests' damage are rejected. Once the pineapple satisfies the import country's requirements, a phytosanitary certificate is issued by the Plant Quarantine Branch, Ministry of Agriculture & Fisheries, Jamaica (National Plant Protection Organization). Jamaica produced an average 19000 tonnes of pineapple annually and exports an average of 2550.5 kg primarily to the United Kingdom.

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