

The CARICOM Regional Transformation Programme for Agriculture

DRAFT

MARKET INTELLIGENCE REPORT

PAPAYA



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Our discussion with officials in the Ministries of Agriculture in the Region proved helpful in reconciling some of the deficiencies we encountered in the review. Technical support was provided through the assistance of Brent Theophhile, Rebecca Gookool, Jai Rampersad and David Hanson, to which the Core Team also expresses support. To Ms. Martha Jiminez-Spence and Ms. Indira Buchoon-Ousman, we express our sincere thanks for their logistical organizational and communication support.

Although we tried to ensure accuracy of the database used for the review, nonetheless we accept responsibility for any errors that may be discovered. This may be the result of the multiple databases from which we had to access the data. The small ruminants sector in the Caribbean is just emerging unlike countries such as Australia and systems of data recording for this commodity have not yet entered the mainstream databases. This gap we recommend should be addressed with urgency.

Dedication

We dedicate this work to the Memory of our Colleague and member of the study team, Dr Lloyd B. Rankine. Dr Rankine passed away on October 25, 2006. He was a colleague with whom we shared many long hours in dialogue, in the field and in the class room. His life long endeavours and dedication reflect his passion for agriculture in the Caribbean.

Dr. Rankine was an integral part of the University of the West Indies having served the University (both Mona and St. Augustine campuses) from 2nd December 1968 to June 3, 2006 when he suffered a debilitating stroke. He served as Head of the Department of Agricultural Economics and Extension from 1977 to 1990 and taught in the capacity of Senior Lecturer up until 2003, when he retired. From 2003 to June 3, 2006, he lectured part-time in the Department

Dr. Rankine also served as Director and Chairman on many Boards in Trinidad and Tobago. .



Ranjit H. Singh & Govind Seepersad

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EXECUTIVE SUMMARY

PAPAYA: MARKET INTELLIGENCE

1. INTRODUCTION

1.1 Background to the Study: The CARICOM Regional Transformation Studies on Competitiveness

This Report constitutes the results of a review of the Markets for Papaya from the perspective of the CARICOM industry. It is part of a larger study commissioned by the CARICOM Regional Transformation Programme for Agriculture. The study evaluates the international competitiveness of five commodities: hot pepper, papaya, sweet potato, coconuts and small ruminants.

This Market Intelligence Report was preceded by a review of the general agricultural sector policies as well as those specific to the selected commodities in the seven CARICOM countries selected for the overall study, namely: Jamaica, Belize, Barbados, Guyana, St Vincent, St Lucia and Trinidad and Tobago.

The market intelligence study covers a review of the global situation – production and trade flows. It focuses on the Markets of interest to CARICOM producers with respect to competition, opportunities and challenges. This market intelligence report is followed by the final component of the overall study which evaluates the competitiveness of the Industry in each of the country studied as well as identifying strategies for development.

1.2 Markets of Interest to CARICOM

A necessary component of the RTP Competitiveness Studies is the determination of the competitiveness of the selected commodities. Given the globalization process that has been taking place, international competitiveness requires industries to be competitive in the domestic and relevant foreign markets since the removal of barriers to trade have resulted in the integration of both. In the case of Papaya, it is our view that the relatively small and spatially fragmented market within CARICOM is unlikely to be of significant interest to global producers of this fruit. At the same time, Regional producers have as one of the main target extra-regional markets for

the fresh fruit. Given the logistics of transportation as well as shipping costs, the feasible export markets option at this time for Caribbean Papaya are the Eastern States of the USA, Eastern Provinces of Canada and Western Europe (mainly, the UK).

We have therefore selected the above markets for our investigation of market entry requirements, as well as an assessment of the competitiveness forces. For each market, we attempt to determine the structure and functioning, as well as the key drivers of competition, including consumer preference patterns, trends in consumer demand, the main participants in these markets, the sources of competition for the main players in the market, the roles of produce quality and price, and finally, the regulatory requirements for market entry. Information from such an analysis is critical to developing an effective market entry strategy and maintaining ones market share.

This report on the Global Market Intelligence for Papaya is an attempt to determine the above parameters of market competitiveness. It provides the basis for analyzing the potential for the industry in the selected CARICOM countries.

1.3 Market Features

In our review of the three markets of interest to CARICOM, we found that the USA and the European Union dominated global imports, accounting for 38% and 33% respectively. Canada imports a relatively smaller quantity, accounting for 5% of global imports in value terms. Although opportunities exist in these markets, we found that each market had its own pre-entry conditions that must be satisfied.

In this report, the discussions emphasized the demand side factors to be satisfied, clearly (as the case of hot peppers). However, we are of the opinion that the greatest challenge of Caribbean papaya producers/exporters lies in the ability to consistently supply large volumes of papaya of high quality to these three markets. The market appears to have a stronger preference for smaller single serve fruits and in this regard there is a marked preference for the Solo and Solo Sunrise varieties giving these varieties a competitive edge over other larger varieties such as Maridol and Red Flesh. The major findings of this papaya market intelligence study are presented below.

2. THE USA MARKET FOR PAPAYA

Competitors: The USA is clearly the most important market for CARICOM producers to target given the size of the market (USD 58.3 mn), growth trends and close proximity. While this market offers opportunities there are challenges. Primary among these is the competition from low cost producers, namely Mexico, Brazil and the Dominican Republic. At present Mexico dominates this market supplying 72% of imports of Papaya. Other major suppliers are Belize (12%), Brazil (9%), Jamaica (6%) and the Dominican Republic (2%).

Market Preferences: An analysis of prices on the basis of variety clearly demonstrated stronger revealed consumer preferences for some varieties. The market was differentiated firstly, on the basis of size of fruits in terms of 'single serve sizes' and secondly, in terms of flavour. Preferences also varied in some cases across markets and also by the country of origin for the fruit.

The five dominant varieties in the USA market were Maridol, Solo, Solo Sunrise, Red Flesh and Golden. Our examination of database shows a clear preference in terms of prices for the smaller and more highly flavoured Solo and Solo Sunrise.

Solo from Hawaii attracted the highest price among all Papaya varieties traded in the market. The average annual price of Solo in New York and Los Angeles was \$3.67 per kg whereas Solo sold on the Miami Terminal Market attracted an average price of \$1.67; less than one half of the average price for the other two terminals. Since Solo traded at the Miami Terminal was exported by Brazil and Guatemala, one possible explanation for the significant price differential is a quality difference.

In the Miami Market, the highest preference was shown for the Golden and Solo Sunrise varieties while significantly lower preferences were indicated for Solo (from Brazil and Guatemala) and Red Flesh, with Maridol at the base.

In the case of New York, the two varieties for which the strongest preference is revealed (on the basis of prices) are Solo and Red Flesh while significantly lower preferences were shown for Golden and Maridol.

Price Trends: An analysis of average annual wholesale prices for Papaya at the three Terminal Markets suggests a general upward movement over the three-year period, 2003 - 2005. This was particularly discernable in the case of the Los Angeles and New York Terminal Markets. For example, the average wholesale price of Solo Papaya increased by 22% in the Los Angeles Market and by 17% in the New York Market. In the case of Red Flesh Papaya, the increases were 27% and 31%, respectively at these markets. Maridol, which is one of the major varieties traded, experienced a fall in price in 2004, but regained most of the lost ground in 2005. The noticeable decline in prices for Maridol in 2004 may be related to the quality of the produce exported in that year.

Price Differential by Terminal: A comparison of average monthly papaya prices (all papaya, unweighted) at the three Terminals showed that the New York Terminal prices were the highest at USD 2.68 / kg. Interestingly, prices at this Terminal showed an upward trend for the first five months of the year, thereafter varying within a narrow range. The lower average prices were observed at the Miami Terminal USD 1.65 / kg.

Regulations: CARICOM Access: Papaya is allowed entry into all ports of the USA except Hawaii from Barbados, Jamaica, St Lucia, St Vincent, Trinidad and Tobago and Belize. In the case of Belize, boxes containing the Solo variety must be stamped '*Not for sale in Hawaii*'. In the case of Guyana, papaya is not allowed entry into the USA. These restrictions are on the basis of SPS factors.

3. THE CANADIAN MARKET FOR PAPAYA

Major Suppliers / Competitors: Canada imports an estimated USD 10 mn of papaya on an annual basis. The Western Canadian market is dominated by supplies from Hawaii whereas in Eastern Canada the market is largely controlled by two exporters, Belize and Brazil. During the early 1990s, Jamaica controlled this market but with the onset of diseases, exports disappeared.

Preferences: There appears to be a distinct seasonal preference for Papaya in the Canadian market during the summer months. This is revealed by price movements, whereby average summer prices were higher than for the rest of the year. For example, the average price for Solo Sunrise during the months May – August period was \$3.16 per kg whereas for the rest of the year

prices declined to \$2.92. In the case of the Red Flesh Variety, the summer average was \$2.29 per kg compared to \$1.78 during the rest of the year. These represent, respectively, seasonal premiums of 8.2% and 28.9%.

A varietal preference was also observed in the Canadian papaya market. In 2005, the market was dominated by two varieties: Solo Sunrise and Red Flesh. During that year, the average wholesale price for Solo Sunrise was \$3.02 per kg compared to \$2.00 per kg for Red Flesh – that is, consumers were willing to pay a 33% premium for Solo Sunrise. We therefore assume that the price differential reveals preference for one variety relative to the other.

Price Trend: Average prices for papaya in the Canadian market have shown a definite upward trend consistent with other markets. During 2005, average monthly prices showed steady increases.

Regulations: Papaya from the Caribbean can enter the Canadian market without any major restrictions. Nonetheless, importers are required to be licensed with the Canadian Food Inspection Agency and /or be a member of the Dispute Resolution Council and imports must be accompanied with an Inspection Certificate indicating that products meet the minimum import requirements for quality, labeling, and packaging. Fresh fruits must comply with the health and safety requirements of the Food and Drug Regulations (eg. maximum chemical residue levels) and a phytosanitary certificate or an import permit is also required from certain countries.

4. THE MARKET FOR PAPAYA IN THE UK

The size of the EU market is estimated at USD 59 mn. Within the EU, the United Kingdom Market is the most attractive for CARICOM exporters of Papaya on account of the higher level of demand in comparison to other EU countries, transportation logistics and cost.

Major Suppliers / Competitors: Brazil dominates the exports of Papaya to the UK market. Other exporters to this market are Bangladesh, Cote d'Ivoire, Ghana, Hawaii and Barbados.

Regularity of supply seems to be an important factor for entering this market and maintaining market share.

Preferences: Price data on Papaya traded in the UK market was not differentiated by variety, as was the case for the USA and Canadian markets. However, the major exporters to this market supply the smaller varieties. For example, Brazil (with the largest share of the UK market) has as one of its major varieties Solo Sunrise. So too are Jamaica and the Canary Islands.

Our analysis of prices also revealed that both the size of fruit and packaging influenced prices. We note that there is a market preference for fruits that constitute an individual serving (300 – 440 gm). This is reflected by the significantly higher prices in comparison to the larger fruits (by a factor of about 1:2 at the wholesale level).

Market Prices: In the UK, both the Glasgow and Liverpool markets showed a relatively constant price throughout the year, with slight fluctuations around the USD 2.50/kg level. However, the average monthly price at Birmingham was significantly lower than the Glasgow and Liverpool markets, and also showed significant fluctuations from month to month. The much lower annual average price at Birmingham (USD 1.50/kg), is assumed to reflect the trade in much larger fruits - - which command the lowest prices in the market. Prices at Western International averaged USD 2.25/kg (annual average) and exhibited wide fluctuations, reflecting a situation where there is a mix of both “high-end” and “low-end” produce being traded.

The prices received for Papaya exported to the UK from the Caribbean and Brazil, suggest the supply of individual fruits of preferred varieties. For example, exports of Solo Sunrise from Jamaica and Brazil earn over USD 2.50/kg. Similarly, exports from Barbados and Costa Rica attracted prices in excess of USD 2.50/kg in 2005.

Regulations: The EU has a series of health, food safety and other regulations such as those related to packaging, waste, recycling and labour laws. The Union also has a coordinating programme and has set Maximum Residue Levels for an estimated 600 active substances and many crops/foodstuffs. Further, management of packaging and packaging waste as it relates to environmental protection, tracability and the issue of Genetically Modified Foods have been gaining increasing attention.

5. THE CARICOM MARKET

Within the Region, Papaya is used both as a table fruit and in its green form, the latter intended as a processing raw material. Today the Regional demand for Papaya remains undersupplied with respect to the various uses. Given the strong preference for Papaya as a fruit by the local population as well as the Tourism sector, the potential of the regional market needs to be more fully explored. Also given the perishability of the fruit, supply chain management is of critical importance.

6. THE CHALLENGES: KEY COMPETITIVENESS FACTORS

Markets: All three extra-regional markets analyzed for Papaya offer opportunities to CARICOM entrepreneurs. While the CARICOM domestic market also offers tremendous opportunities for expansion, the challenges to supply chain management including avoiding excessive post harvest losses are rather daunting to the typical entrepreneur. It is for the latter reason that most large scale producers of papaya target the extra-regional market, primarily on account of their ability to absorb large volumes of the fruits on an ongoing basis.

Drivers of Competitiveness: The opportunities offered by extra-regional markets are not without challenges. These markets are characterized by increasing levels of competition as existing suppliers expand their production base and also new entrants are attracted to the market. Expansion and development of the CARICOM Papaya Industry must therefore be premised on an efficient and competitive production and marketing base. Based on the analysis of the market, we now highlight some of the key drivers of competitiveness in the extra-regional papaya markets:

1.Competitors in the market	<p>The attractiveness of the US market for Papaya in terms of prices, size and growth potential has attracted increasing competition from a number of countries. Although Belize has a 12% share of the market and Jamaica a minor presence, the market remains controlled by Mexico, both in terms of volume of exports and cost. The Dominican Republic and Brazil are also in the market, both noted for their low cost of production, but Brazil more so for its capacity to export large volumes. Mexico, as does Belize and Jamaica, have the advantage of proximity and lower transportation cost.</p>
2.Price Competitiveness	<p>In all three markets, prices have shown an increasing trend over recent past. This trend reflecting an increasing acceptance of the fruit. However, over the longer term it is our view that real prices are likely to hold at their current levels or decline as supplies into these markets expands.</p> <p>Competitiveness therefore calls for a highly efficient production and marketing/transportation system.</p>
3.Quality Attributes	<p>The market has shown a definite preference for the smaller single serve fruits. However, we recommend a market evaluation of the range of smaller varieties with a view to selecting varieties that are also preferred on the basis of other important consumer attributes including:</p> <ul style="list-style-type: none"> • Texture • Sweetness • Ripening qualities • Shelf life • Resistance to bruising / good handling characteristics
4. SPS Market Entry Req'ements	<p>Increasing concerns regarding invasive alien species and food safety suggest that CARICOM producers need to adopt high standards to ensure SPS measures and other access regulations are complied.</p>
5.Supply Conditions	<p>Papaya importers and brokers would not handle small volumes of Papayas. Getting into the main stream markets requires a capacity to:</p> <ul style="list-style-type: none"> • Supply fruits in large volumes • Regularity of supply • Consistency in quality • GAP, traceability and other export requirements (eg bioterrorism)

SECTION 1

GLOBAL OVERVIEW

1.0 Introduction

This section presents a global overview of the market situation for papaya. Firstly, the crop is defined followed by an examination of the leading world producers as well as the trade and major markets. Additionally, the major world exporters are determined, all of which will serve to direct the focus for this market intelligence study. A brief description of the major varieties that enters world trade is presented at the end of this section.

1.1 Product Attributes & Classification

Papaya (*Carica papaya* L.) also known as *Pawpaw*, *Mikana*, *Milikana*, *Papaia*, *He'I* is a plant native to tropical America. It is popularly grown in the tropics and is adapted to diverse soils and climates. The fruit has a sweet taste and good flavours, and is high in vitamin C and other nutrients.

Papaya has multiple uses. Unripe fruits can be cooked as a vegetable much like a summer squash or used in cubes for salads. Papain, a proteolytic enzyme found in papaya, is widely used in food industries to tenderize meat and clarify beer¹. It also has uses in the photography, leather, wool and rayon industries (Seelig 1970, Poulter and Caygill 1985)².

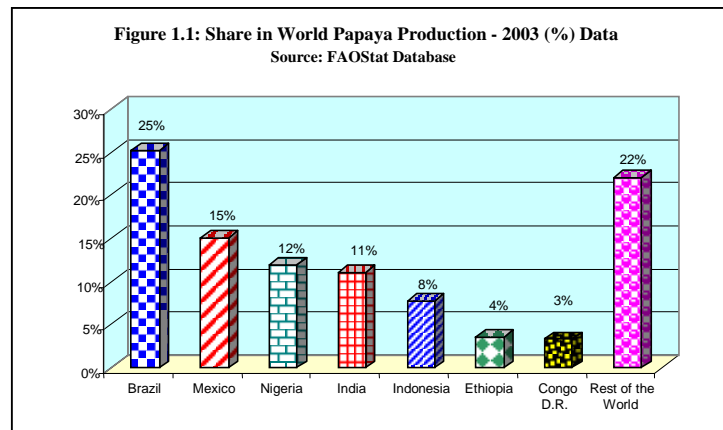
1.2 World Papaya Production

World papaya production showed an upward trend between 1999 and 2003. Over this period production increased, by almost 20%, from 5,304 million tonnes to 6,342 million tonnes (Annex Table A1.1) Leading global producers of papaya are Brazil (27%), Mexico (15%), Nigeria (12%), India (11%), Indonesia (8%) and Ethiopia (4%), with the Rest of the World (23%) as shown in

¹ The latex may be either sun-dried or oven-dried and sold in powdered form to be used in beer clarifiers, meat tenderizers, digestion aids, wound debridement aids, tooth-cleaning powders, and other products. Papaya Croip Knowledge Master. <
http://www.extento.hawaii.edu/kbase/crop/crops/i_papa.htm >

² <http://www.hort.purdue.edu/newcrop/proceedings1990/v1-364.html> Papaya: A Potential Annual Crop Under Middle Georgia Conditions. U.L. Yadava, Janice A. Burris, and D. McCrary

Figure 1.1. Together the top five countries produce more than 63% of total world production. Within the Western Hemisphere, Peru's production is ranked 8th in the World; Venezuela 10th; Cuba 12th; Colombia 13th; Costa Rica 19th; Guatemala 20th; and the Dominican Republic ranked at 21st.



1.3 World Papaya Trade

Global trade in Papaya was estimated to value USD 181 mn representing 237 thousand tonnes in 2003, dominated by imports to the USA and the European Union. In 2003, the USA accounted for 38% of world import trade, followed by the EU at approximately 33% (Figure 1.2). Other major importing countries were Hong Kong (9%), Japan (6%) and Canada (5%) in value terms (Table 1.1). Countries of the EU recorded the highest import growth rates in value between 1999 to 2003, ranging from 14% in the case of France to 83% for Luxembourg (see Annex Table A1.2).

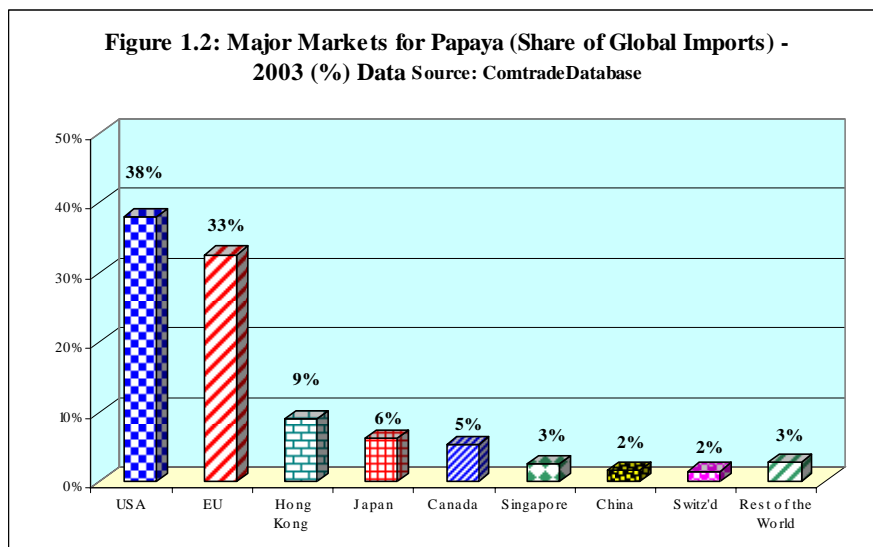


Table 1.1: Selected List of Importers of Papaya - World 2003

HS 080720 Papaws (papayas), fresh

Importers	Value imported in 2003, in USD mn	Quantity imported in 2003 (000 Tonnes)	Share in world imports, %
World estimate	\$181	237	100
United States of America	\$69	106	38
European Union	\$59	43	35
Hong Kong	\$16	30	9
Japan	\$11	4	6
Canada	\$10	6	5
Singapore	\$5	29	3
China	\$3	4	2
Switzerland	\$3	1	2

Source: ITC's Market Analysis Services (MAS) < <http://www.intracen.org/mas/welcome.htm>, > ITC calculations based on COMTRADE statistics

The leading world exporters were Mexico (29%), Brazil (18%) and Malaysia (16%) as shown in Figure 1.3 and Table 1.2. Mexico recorded a 50% increase in quantity exported from 1999 - 2003 and while the increase in value was only 21 % during the same period, the export earnings between 2002 and 2003 increased by approximately 65%.

It should also be noted that while Malaysia ranked #16 in terms of world production, the country had the third highest export market share.

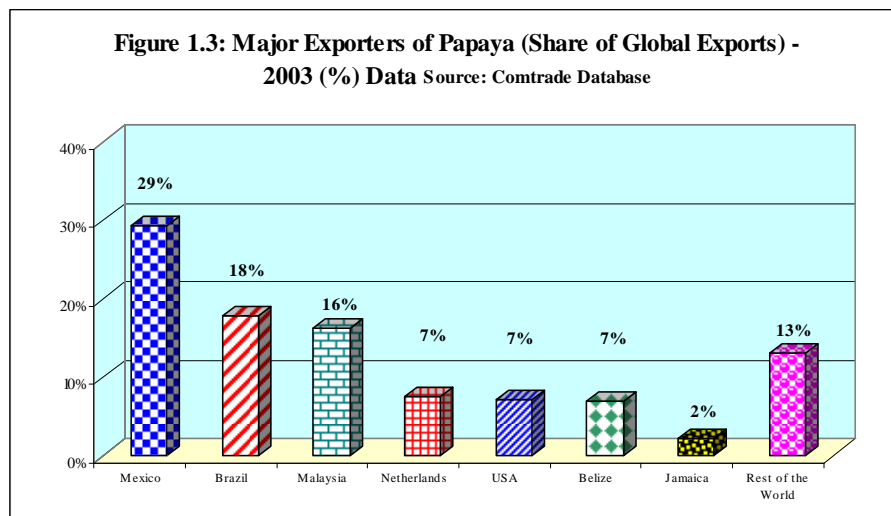


Table 1.2: Selected List of Exporters of Papaya in 2003
HS 080720 Papaws (papayas), fresh

Exporters	Value exported in 2003, (USD million)	Quantity exported in 2003 (tons)	Unit value (USD/ton)	Annual growth in value between 1999-2003, %	Annual growth in quantity between 1999-2003, %	Annual growth in value between 2002-2003, %	Share in world exports, %
World estimate	163.5	404.3	404	12	29	19	100
Mexico	47.9	229.5	209	21	50	65	29
Brazil	29.2	39.5	740	19	24	35	18
Malaysia	26.5	71.5	371	15	12	1	16
Netherlands	12.2	6.8	1,792	12	19	60	7
USA	11.5	5.2	2,204	-4	-1	8	7
Belize	11.4	16.9	674	22	41	11	7
Jamaica	3.5	1.9	1,870	-7	-4	-34	2

Source: ITC's Market Analysis Services (MAS) < <http://www.intracen.org/mas/welcome.htm>, > ITC calculations based on COMTRADE statistics

1.4 Papaya Varieties

The major qualitative features of papaya varieties dominating world trade are presented in Table 1.3 and Illustration 1.1. Also presented in the Table are the sources of origin. The varieties differ in size, flesh and skin colour, productivity and tolerance to bruises/damage during transport.

Table 1.3: Major Varieties of Papaya in Global Trade (2004/05): Characteristics

Variety	Average Size	Colour of Flesh	Colour of Skin	Productivity of the Crop	Durability (For Shipping)
Solo (Hawaii)	454 to 909 grams	Orange/Red	-	-	Good (Hard outer shell)
Solo Sunrise (Hawaii)	565 Grams	Red/Pink	-	100 fruits per year	Good (Hard outer shell)
Red Maradol (Mexico)	1.5 to 2.6 kg	Deep Red	Yellow-Orange	-	Thick skin
Gold Maridol (Mexico)	2.8 to 3.8 kg	Yellow	-	-	-
Red Lady (Belize)	1.5 to 2.0 kg	Red	-	35 per season	-
Golden Papaya (Brazil)	-	Light Pink	Yellow	-	-
Solo Sunrise (Taiwan)	400-500 grams	Red/Pink	-	100 fruits per year	Hard outer shell
Solo Sunset (Hawaii)	425 grams	Red/Pink	-	-	Hard outer shell
Linda (Mexico)	-	Salmon pink	-	80 per season	
Waimanalo X-77 (Hawaii)	680 grams	Orange	-	-	-
You #1 F1 Hygrid (Taiwan)	1.6 to 3.0 kg	Yellow	-	-	-
Tainung #1 (Taiwan)	1.1 kg	Red	Green –Orange	-	Very sturdy outer shell
Tainung #2 (Taiwan)	1.1 kg	Orange/Red	Green – Orange	-	Soft outer shell (Local shipping only)
Tainung #3 (Taiwan)	1.3 kg	Yellow – Orange	Yellow – Gold	-	-

Source: <http://www.tradewindsfruit.com/order.htm>; and <http://www.alohaseed.com/papaya.html>

Illustration 1.1: Major Varieties of Papaya in World Trade (2004/05)



Gold Maradol F1 Hybrid- Origin Mexico



Red Lady #786 F1 Hybrid - Known You Brand - Origin Taiwan



Tainung #1 F1 Hybrid Known You Brand - Origin Taiwan



Know You Brand, Solo Sunrise - Taiwan



Aloha Seed Brand Hawaiian Solo-Sunset - Origin Hawaii



Known-You #1 F1 - Taiwan



Tainung #2 F1 Hybrid - Taiwan



Tainung #3 F1 Hybrid - Taiwan



Aloha Seed Brand Waimanalo X-77 Low Bearing (Hawaii)

Source: <http://www.tradewindsfruit.com/order.htm>; and <http://www.alohaseed.com/papaya.html>

SECTION 2

MARKET PROFILE: THE UNITED STATES OF AMERICA

2.0 Introduction

In this Section of the Report we present a profile of the USA market for Papaya in terms of trading patterns and consumption levels. With this background, the specific US market destinations of interest to CARICOM are then examined. These include the Miami and New York markets. The profile and analysis are primarily based on conditions at the Terminal Markets for fresh fruits and vegetables. However, it should be noted that the Terminal Markets handle only a fraction of the total imports since there is also direct trade between importers and wholesalers, conducted through private warehouses.

2.1 Consumption Levels and Trade

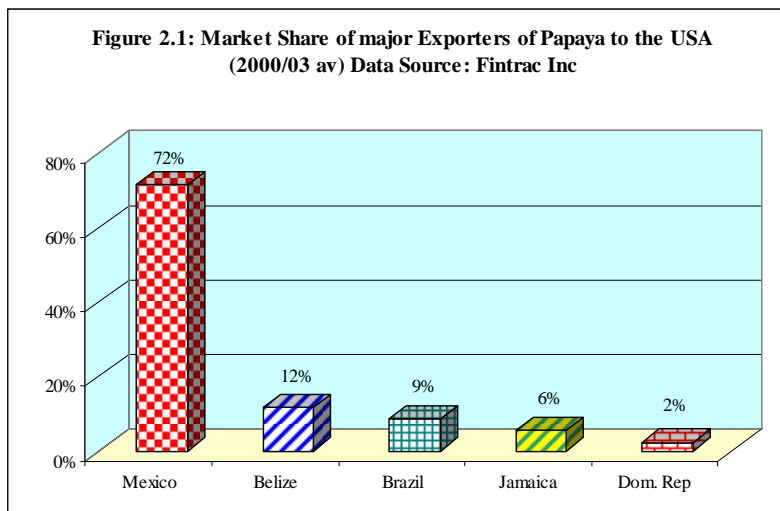
Although Hawaii produces significant quantities of papaya, the bulk of US consumption is satisfied through imports. In 2002, the country's consumption was estimated at 109,429 tonnes (Table 2.1). Imported papaya represented about 80% of consumption in 2002, with most of domestic supply coming from Hawaii.

The imports of papaya in 2002 were valued at USD 58.3 million. Mexico was the major source of imports estimated at 72% or USD 38.0 mn (See Annex Table A 2.1 and A 2.2). Belize accounted for 12% or USD 6.2mn and Brazil 9% or USD 4.6mn as shown in Figure 2.1. Jamaica also benefited from a 6% share of this market valued at USD 2.9 mn and the Dominican Republic 2% or USD 0.3 mn.

Table 2.1: Production, Trade and Consumption of Papaya – USA (Tonnes)

	1999	2000	2001	2002
Production	19,232	24,766	24,948	20,870
Import	66,479	69887	84401	88559
Consumption	79,758	94,653	109,349	109,429
Import as % of Consumption	83.35	73.83	77.18	80.93

(Source: Fintrac Inc)



2.2 Marketing Channels

While papaya consumption and trade figures are reported for the USA in total, fresh papaya imports enter the country at various border entry points. In the case of the Caribbean, the important ports of entry are the New York and Miami terminal markets as well as a number of private warehouses - routes or channels through which papaya finds its way to intermediaries and consumers.

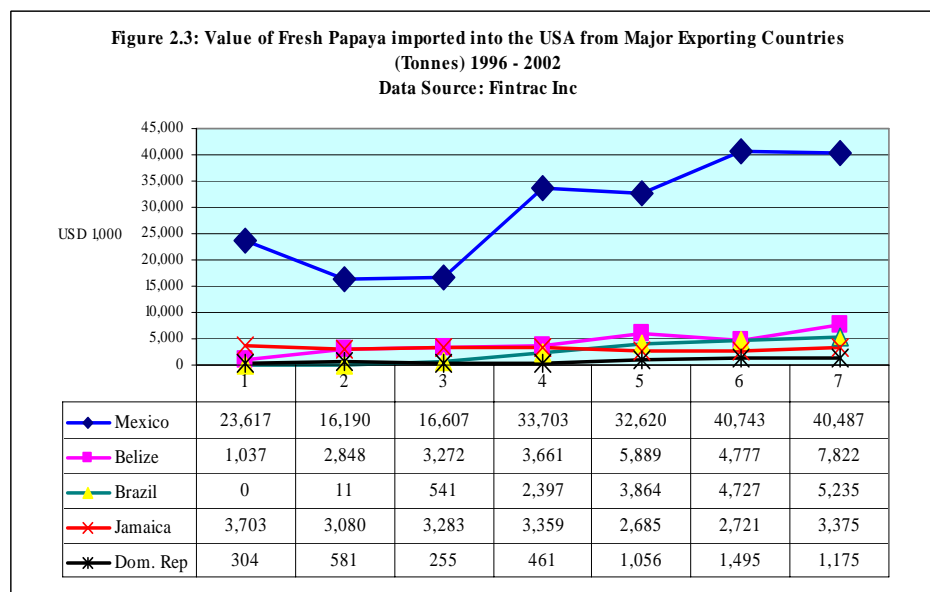
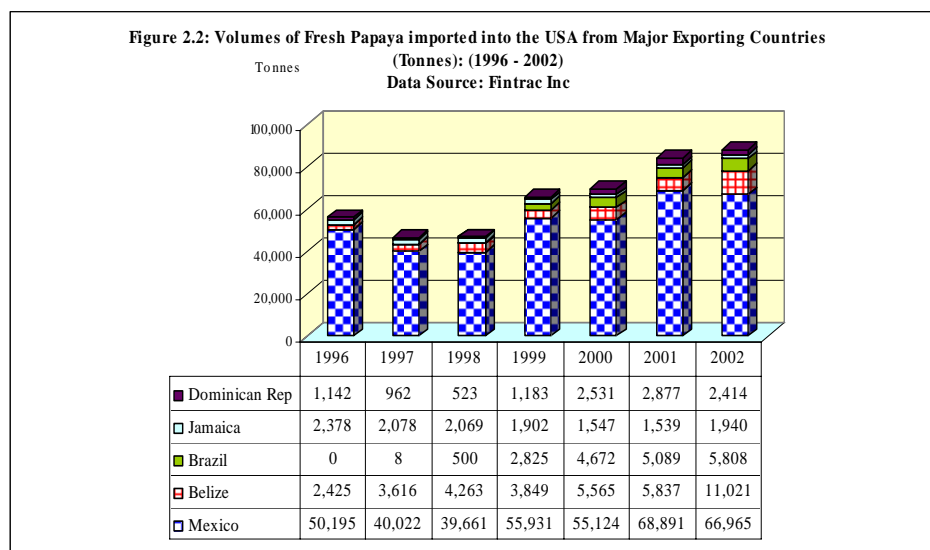
The New York City (NYC) Terminal Market has been in operation for about 30 years catering for a large, ethnically diverse 15 million residents. Deliveries by rail, tractor trailer and air cargo from all over the world are received daily for an estimated 50 market merchants who trade a large selection of fresh fruits and vegetables from around the world. The Miami Terminal Market also supplies a similar diverse population including a large number from Latin America and the Caribbean, who are already familiar with the fruit. The Los Angeles Terminal market on the western seaboard of the USA was also examined for comparative purposes.

2.3 Market Trends

The data on the volume of papaya imports into the USA indicate an increasing trend, with the volume of imports increasing by as much as 85% between 1998 and 2002 from 47,908 tonnes to 88,559 tonnes. This trend is expected to continue in the future. It was noted however, that the value of imports increased at a faster rate – by an estimated 133% over the same period, from

USD 25.0 mn to USD 58.3 mn. Most of this increase accrued to Mexico with its share of imports (value basis) increasing from 66% in 1998 to 69% in 2002. However, it should be noted that this occurred at a time when Mexico's share of US imports on a volume basis declined from 83% to 76%.

Over the period 1996 to 2002, imports of Papaya into the USA increased both in volume and value (Figures 2.2 and 2.3). From the perspective of CARICOM exporters, the main competitors in the USA Papaya market are Mexico (ranked #2 in global production), Brazil (ranked #1) and the Dominican Republic (ranked #21). For these suppliers, the data suggest a trend of increasing production, with the obvious aim to expand exports.



2.4 Product Range

Varieties offered for sale at the NYC Terminal Market include Maridol, Red Flesh, Solo and Golden. Sources of imports include Hawaii, Belize, Brazil, Guatemala and Mexico³. These, including Solo Sunrise, are also found in the Miami Terminal market. Maridol in the Miami market originates from Mexico, Belize and the Dominican Republic; Solo Sunrise from Brazil, Jamaica and Guatemala and Red Flesh from Belize and the Dominican Republic. In other parts of the USA such as Los Angeles, Solo from Hawaii is found competing with those imported from Belize and Brazil as well as the full range of other varieties.

The range of products available on the market includes whole fresh papaya and small quantities of processed papaya slices and fruit cocktails. In the case of the papaya fruit cocktail, this product originates from Thailand.

2.5 Retail Market Trends

The preferences and shopping habits of consumers provide important packaging and presentation information for exporters of papaya. Recent research in the USA found that 35% of consumers said loose produce items comprise 76% to 100% of their fresh produce purchases. In the case of pre-packaged items, 42% said this made up less than 15% of their purchases. Further, smaller, more flexible packages are preferred to larger, rigid packages. The reasons given for flexibility were being able to “see” and “feel” the produce, as well as ease of storage. Reasons given for smaller packages related to household size, with 52% saying they purchase produce for a smaller family, and 28% saying that larger packaging may spoil too quickly. The survey was conducted for PMA by Opinion Dynamics Corporation in the spring of 2004⁴. To the extent this is a widespread phenomenon, packaging must be flexible enough to allow for the individual choice of consumers while minimizing mechanical damage of the fruit. Pictures 2.1 and 2.2 present a range of papaya displayed at a retail fresh produce market in Fort Lauderdale, Florida, USA.

³ Varieties reported by Today Market Prices database

⁴ Source: From Tommy Leighton in California .[Packaging research highlights consumer split](http://64.4.22.250/cgi-bin/linkrd?_lang=EN&lah=aee8890a60d01292b857f600d5ee50c1&lat=1098104565&hm___action=http%3a%2f%2fwww%2efreshinfo%2ecom%2findex%2ephp%3fs%3dn%26ss%3dnd%26sid%3d34884) Freshinfo news: http://64.4.22.250/cgi-bin/linkrd?_lang=EN&lah=aee8890a60d01292b857f600d5ee50c1&lat=1098104565&hm___action=http%3a%2f%2fwww%2efreshinfo%2ecom%2findex%2ephp%3fs%3dn%26ss%3dnd%26sid%3d34884



Picture 2.1 Papaya display for retail sales – Fort Lauderdale, Florida, USA



Picture 2.2 Papaya in Open Crates Wrapped in Paper to Prevent Bruising While Allowing Sorting by Consumers

SECTION 3

MARKET PROFILE: THE CANADIAN MARKET

3.1 Consumption and Trade

Canada imports all its papaya to satisfy its consumption needs. The country imported 5.5 million kg of papaya in 2001 valued at USD 8.9 mn. Over the 1999 - 2001 period, imports of papaya increased both in volume (37%) and value terms (31%).

The major suppliers to the Canadian market in 2001 were Hawaii with 43% market share, followed by Brazil with 34% market share, Belize 7%, Jamaica 5%, Ecuador 4% and Mexico 3% (Figure 3.1). Over the period 1999 - 2001, Hawaii, Brazil, Belize and Equador have all increased their market share while Jamaica and Mexico experienced a loss (Table 3.1, Figure 3.2).

The range of papaya products available on the Canadian market includes fresh whole papaya, frozen slices and canned diced cubes. The fresh fruit dominates the market with major varieties being ‘Solo Sunrise’, ‘Red Flesh’/Caribbean Red and ‘Tainung’.

Our visits to Toronto and Montreal markets show both Brazil and Belize being the dominant suppliers whereas in the Western Provinces of British Colombia and Alberta, Hawaiian papaya dominates.

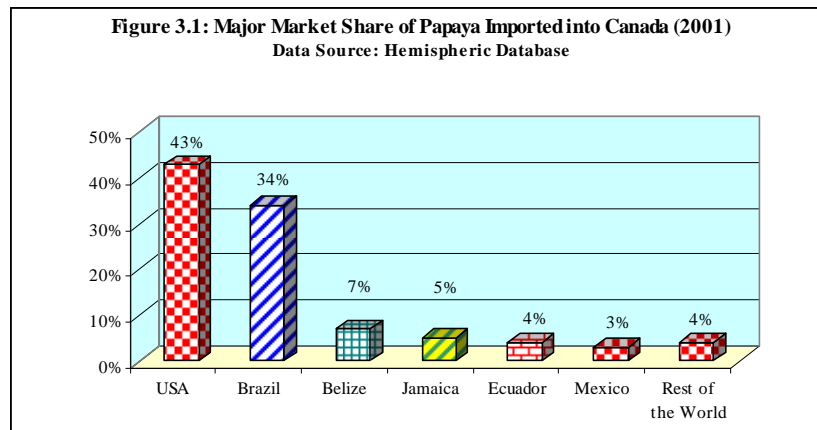


Table 3.1: Papaya (HS 080720) Imports into Canada (1999 – 2001)

Countries	Imports					
	2001		2000		1999	
	Value (000 USD)	Volume (Tonnes)	Value (000) USD	Volume (Tonnes)	Value (000) USD	Volume (Tonnes)
Hawaii	3,879	2,330	3,362	1,847	2,712	1,536
Brazil	3,012	1,766	2,960	1,791	1,774	1,042
Belize	612	478	579	397	586	405
Jamaica	443	250	183	104	852	462
Ecuador	360	237	447	281	1	1
Mexico	246	164	252	175	361	249
Belgium – Lux'bourg	180	140	198	130	107	69
Thailand	72	54	81	57	151	107
Dominican Republic	42	25	37	21	32	18
Trinidad and Tobago	21	11	69	39	111	62
Costa Rica	17	10	44	26	74	60
Total Imports	8,905	5,483	8,230	4,883	6,795	4,036

Data Source: FTAA Hemispheric Database

3.2 Marketing Channels And Characteristics

The Ontario Food Terminal is the main entry terminal for fresh agricultural produce into Eastern Canada while on the West Coast, Vancouver serves as the port of entry for imports from Hawaii, East Asia and some South American countries. Produce then moves from these points of entry into the other provinces of Canada. Like the USA, the trade in fresh produce in Canada is conducted both through the terminal markets and through direct sales to individual importers.

The market trends for Toronto indicate that there are larger numbers of transactions for the 8 – 12 fruits per 4 kg (10 lb) carton sizes than for the larger fruits. Further, higher number of sale volumes were generally recorded for the 9's, 10's and 12's sizes of fruits, indicating the market has a preference for the smaller 'single-serve' sized fruit. A similar trend was observed in the Montreal market. The market also shows the highest supply on the market in March, declining thereafter. However, the volumes recorded at the terminal markets seem to be a fraction of the total imports into Canada and may thus be incomplete.

Solo Sunrise, Caribbean Red (Red Flesh) and Solo are traded as mature green fruits, in boxes of 9's – 12's in ten pound boxes (4.54 kg). Maridol, a much bigger papaya is packaged in cartons

of 4 in ten pound boxes as well as 35lbs boxes (16kg). Pictures 3.1 to 3.4 show papaya display for sale at the Toronto Terminal market.



Picture 3.1: Papaya Stacked – Toronto Terminal Market



Picture 3.2: Papaya Displayed in 10 lbs Carton – Toronto Terminal Market



Picture 3.3: Papaya Displayed in 10 lbs Carton – Toronto Terminal Market



Picture 3.4: Papaya Displayed in 35 lbs Carton – Toronto Terminal Market.

SECTION 4

MARKET PROFILE: THE EUROPEAN UNION

4.1 Consumption and Trade

The EU consisted of 15 countries in 2002 with a population of 379.4 million⁵. Between 2000 and 2002, papaya imports into the EU increased by an estimated 50% with respect to both value and volume⁶. In 2002, total imports reached €56 million for 33 thousand tonnes. EU production is relatively small, and concentrated mainly in the Canary Islands.

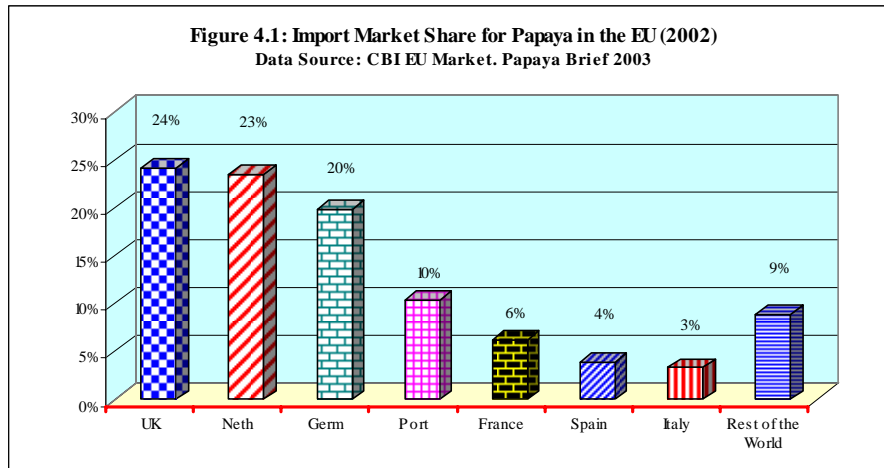
The average consumption of fresh papaya on a per capita basis for the EU as a whole is relatively low, estimated at approximately 30 grams, but has shown an increasing trend in recent years. Consumption is reported to be somewhat seasonal, very high at Christmas and Easter periods. The low level of consumption is reportedly due to a lack of awareness about the fruit among some EU consumers. For example, Papaya is often classified in the EU as a lesser-known tropical fruit.

Imports: The largest EU importers of Papaya are the United Kingdom, The Netherlands, Germany, Portugal, France and Spain (Figure 4.1 and Table 4.1). In 2002, the UK was the leading EU papaya importer, accounting for 24% of the total imported value, followed by the Netherlands (23%), Germany (20%), Portugal (10%) and France (6%). Together these countries account for 75 to 90 percent of the total EU consumption⁷.

⁵ Size Area: 31,443,000 km², 11 languages, GDP/capita € 21,023. The Currencies currently in use are the €, UK£, DKr. SKr (Exchange rate (December 2003) €1 = US\$ 1.34)

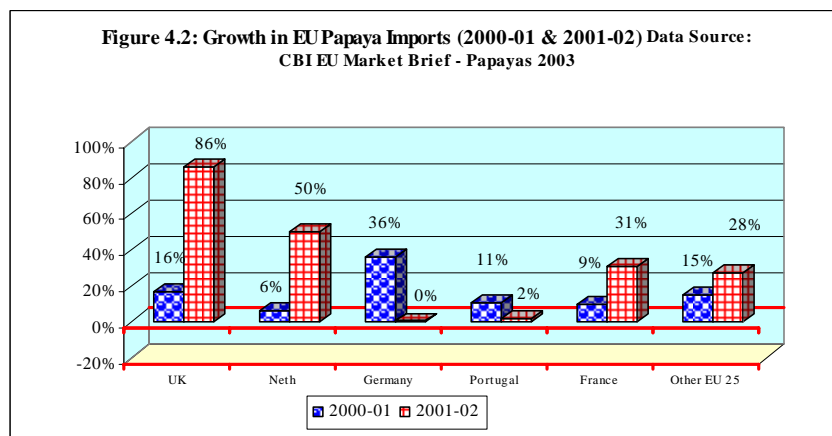
⁶ EU Market Brief Papayas 2003. < http://www.cbi.nl/show.php?file=show_summary.html&id=2314 >

⁷ EU Market Brief Papayas 2003. < http://www.cbi.nl/show.php?file=show_summary.html&id=2314 >



The highest growth in imports of papaya was observed with the UK (86%), followed by the Netherlands (50%) and France (31%). The average EU growth was 28% (Figure 4.2). In the case of Germany, growth was estimated at 36% and Portugal 11% in 2000-01 / 2001-02 period.

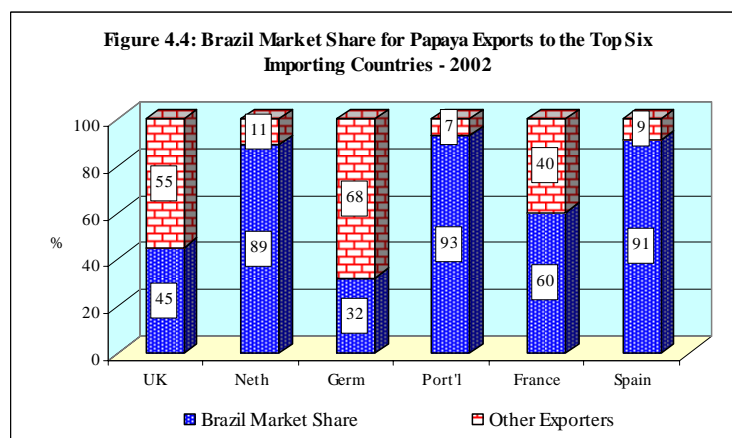
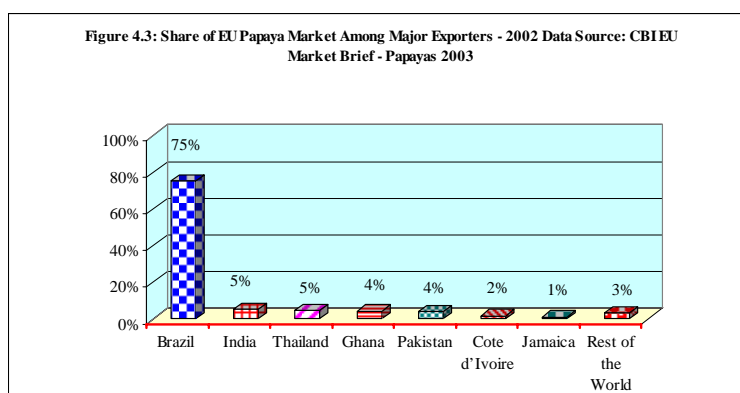
It should be noted that an estimated 20% of papaya imports are re-exported through other EU countries. The Netherlands serves as an important gateway to Germany, Italy and the Scandinavian countries (EU Market Papaya Brief 2003). The Netherlands re-exported 64% of the total in 2002 (value terms), followed by France (18%), Belgium (9%), Germany (5%) and Spain (2%). The leading destination has been Germany, accounting for almost 60 percent of the exported value, followed by The Netherlands (13%), Belgium (4%), France (3%) and Austria (3%).

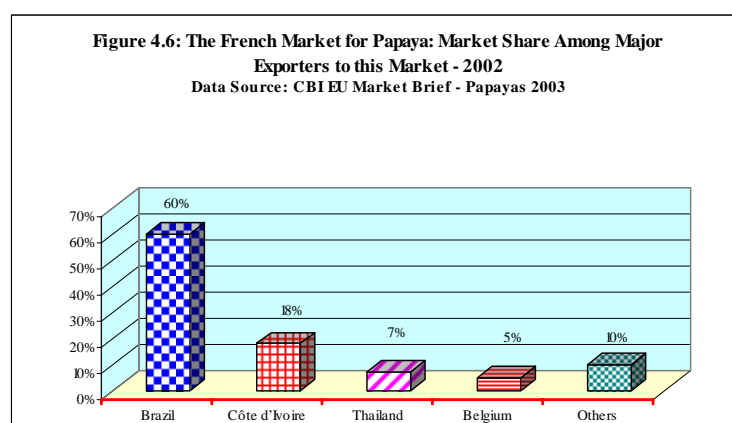
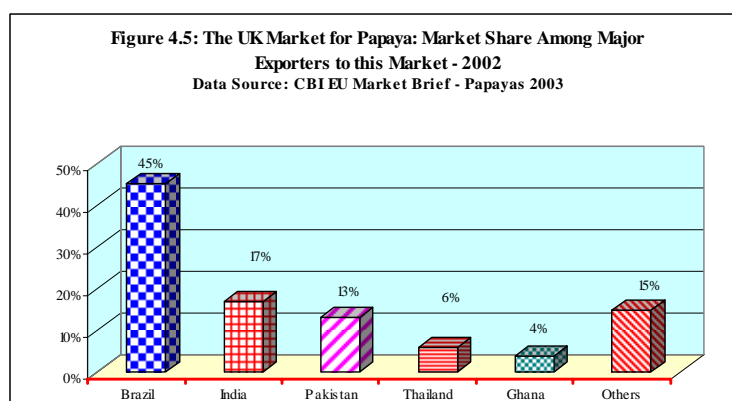


4.2 MARKET SHARES FOR MAJOR EXPORTERS OF PAPAYA TO THE EU

Brazil is by far, the leading papaya exporter to the EU market, accounting for 76 % or USD 31.5 mn of the 41.9 mn market in 2002 (Figure 4.3 and Table 4.2). Other exporters supplying the EU market have significantly smaller volumes and include Ghana with 4.3% of the total EU market, Pakistan with 4.0%, India with 3.9%, Thailand with 2.0%, Cote d'Ivoire with 1.0% and Jamaica with 0.4%.

Within the major EU markets for Papaya (top six importing countries), Brazil is clearly the market leader. (See Figure 4.4 and Table 4.3). Brazilian papaya exports accounts for about 90% of Spain, Portugal and The Netherlands imports. In the case of Germany, most of the imports originate from The Netherlands which are indeed Brazilian re-exports. The two markets with a more diversified source of supply are the UK and France. In the case of the UK papaya market, Brazil controls 45% of the market, with India supplying 17%, Pakistan 13%, Thailand 6% and Ghana 4% (Figure 4.5). Brazil supplies 60% of the French papaya market;; Cote d'Ivoire, also a major supplier, accounts for 18%, while Thailand accounts for 7% and Belgium 5% in 2002 (See Figure 4.6).





The major CARICOM exporters of Papaya to the EU market in 2001 were Jamaica, valued at USD 366, 891, Suriname USD 2,526 and Trinidad and Tobago USD 1,263. This accounted for less than about 1% of EU papaya imports.

Table 4.1: EU Member Countries HS 080720 Papaya Imports - 2002
(Source CBI EU Market Brief – Papayas – December 2003⁸)

Importing Country	Value (1,000 USD)			Volume (Tonnes)		
	2000	2001	2002	2000	2001	2002
United Kingdom	6155	7169	13366	3588	4131	8028
The Netherlands	8125	8616	12949	4408	4897	8294
Germany	8006	10922	10973	3626	5118	5965
Portugal	5051	5605	5702	2866	3186	3943
France	2406	2633	3454	1125	1233	1689
Spain	1820	1817	2154	975	936	1312
Italy	1637	1712	1827	732	825	909
Belgium	1834	1912	1472	1339	1217	955
Austria	569	546	1159	209	188	435
Ireland	96	461	569	40	152	216
Luxembourg	481	788	511	542	934	581
Sweden	826	623	475	284	212	170
Others	548	518	686	216	204	289
Total Imports	37557	43323	55297	19948	23235	32786

⁸ EU Market Brief Papayas 2003. < http://www.cbi.nl/show.php?file=show_summary.html&id=2314 >

Table 4.2: EU Imports of HS 080720 Papaya from Developing Countries - 2002(Source CBI EU Market Brief – Papayas – December 2003⁹)

Exporting Country	Value (1,000 USD)	Volume (Tonnes)
Brazil	31504	20245
India	2262	1288
Thailand	1995	645
Ghana	1819	1415
Pakistan	1725	1301
Cote d'Ivoire	718	339
Jamaica	411	235
Malaysia	361	122
South Africa	242	94
Egypt	197	172
Mexico	148	100
Cameroon	105	51
Colombia	100	24
Zimbabwe	99	27
Sierra Leone	95	57
Sri Lanka	83	43
Total	41866	26,158

Table 4.3: Leading Exporting Countries for Papaya to the Top-6 EU Importers: (% of Imported Value in 2002)

Importing Country	Import Value (€1,000)	Leading Suppliers in 2002 & Market Share (%)				
United Kingdom	13,487	Brazil (45%)	India (17%)	Pakistan (13%)	Thailand (6%)	Ghana (4%)
The Netherlands	13,067	Brazil (89%)	France (4%)	Thailand (2%)	Malaysia (2%)	
Germany	11,073	The Netherlands (53%)	Brazil (32%)	USA (8%)	Thailand (2%)	
Portugal	5,754	Brazil (93%)	Spain (6%)			
France	3,485	Brazil (60%)	Côte d'Ivoire (18%)	Thailand(7%)	Belgium (5%)	
Spain	2,174	Brazil (91%)	Germany (3%)	Portugal (2%)		

Source: EU Market Brief Papayas 2003. < http://www.cbi.nl/show.php?file=show_summary.html&id=2314 >⁹ EU Market Brief Papayas 2003. < http://www.cbi.nl/show.php?file=show_summary.html&id=2314 >

4.3 Operational Features of the EU Market for Papaya

The tendency in the EU fruit market is towards concentration and greater vertical integration. Direct trading lines between producers / exporters and large retail chains has partly replaced the specialized importers.

Wholesale Level: The importers (importing wholesalers) increasingly address their own logistics and prepare the imported goods for distribution. There are also specialized agents who act as marketing intermediaries; they do not actually trade products but rather establish contacts between exporters and importers. In the case of *Fruit Combines*, they run their own plantations and buy additional products from private producers if necessary. *The Combines* run their own fleets of ship. The trend is towards more fruit combines¹⁰.

In an attempt to retain or expand market share and/or enter new market segments in the EU, fruit and vegetable exporters from the Caribbean would have to direct greater focus and attention to the demands set by the large retail chains. The requirements for maintaining the supply chain include:

- (i) A regular supply/flow of significant volume of produce to satisfy market requirements as well as realize economies in transportation and handling
- (ii) Produce of high quality with respect to wholesomeness, appearance, shelf life and flavours
- (iii) Presentation and packaging to meet retailers specification
- (iv) Uniformity in product quality
- (v) Willingness to supply produce on the basis of prearranged prices

This consolidation of buyers will also call for better supply chain management to guarantee supplies. In this regard, buyers in the EU would increasingly seek to “develop partnerships of preferred suppliers” in order to ensure continuous availability and supplies. The implications of such systems are economies of scale in shipping and concentration of production in certain specific locations.

Retail Level: At the retail trade level for fruits, the consumers are allowed to choose and select from various points of sale:

- specialized fruit and vegetables shops
- hyper / supermarkets
- open-air markets
- producers/farmers (in some instances)

Traditional trade channels such as the *fresh produce markets* and *greengrocers* are expected to continue to sell a significant share of fresh products. In Italy and Spain, the large supermarkets and hypermarket chains have not made significant inroads; in France and the United Kingdom, “*multiples*” are increasing their share in the fresh fruit market and the *hyper* and *supermarkets* are driving the *pre-packed produce market*. The fresh produce assortment has been increasingly diversified with significant investments taking place in the design of fresh produce departments.

Supermarket organizations have increasingly extended their operations to now include wholesaling and importing. There is also a tendency to model and design the fruit and vegetables departments of the superstores to resemble the typical characteristics of the (small) specialist shop.

4.4 Papaya Varieties and Forms

The main varieties of fresh papaya available on the EU market are Solo, Solo Sunrise, Waimanalo and Amazon Red. Smaller quantities of Solo Sunset and Taiung are also available. Additionally, other members of the papaya family have been receiving increasing interest including Babaco (a large pentagonal sectioned fruit weighing up to 2 kg each, imported from New Zealand, and Papayuelo (similar to babaco, yellow but more rounded, with a higher content of papain making it more suitable for cooking)¹¹.

Papaya is mostly consumed fresh in slices or chunks and in fruit compotes¹². The fruit is increasingly being used to prepare juices, sauces and other preserves.

There are also a range of derivatives / products from papaya which includes juices, fruit cocktails and papain and a range of papaya-related products on the market. In Europe, papain is available as an ingredient in several non-prescription products¹³.

¹⁰ CBI Market Survey “Fresh Fruit and Vegetables” September 2004.

¹¹ Guidelines for Exporters of Fruit and Vegetables to the European Markets. Commonwealth Secretariat, 2001.Pp 112.

¹² fruit cooked in sugar or syrup, served as a hot or cold dessert

4.5 Product Presentation / Packaging

Papayas are ideally packed in single layers with a protective lining to prevent bruising and damage. In some countries, such as the Côte d'Ivoire, a lining of cotton lint is placed in the carton, while in Jamaica and Ghana, the fruits are wrapped in individual sheets of paper (see example in Picture 4.1) or placed in cells or may be protected using expanded poly-sleeves. In Malaysia, plastic form sheeting is used.

The boxes may be telescopic, single-piece, folding (with or without top flaps), typical dimensions are 310 x 410 x 110mm.



Picture 4.1: Papaya Fruits are wrapped in individual sheets of paper

4.6 Grading

In the EU, papayas are classified according to quality, size and ripeness. Size grades are expressed in the number of fruits per box and may vary from 6 to 16. For example, a 4-kilogramme carton, may contain the following number of papayas, depending on the fruit size:

- Small: 13 to 16 count (308 to 250 grams);
- Medium: 9 to 12 count (440 to 330 grams); and
- Large: 6 to 8 count (666 to 500 grams).

¹³ (Papain forms: High-activity stable Refined papain, Refined Purified papain, papain sub-enzyme, Papain Coarse-enzyme, crude papain, liquid papain, papaya powder, papaya extract, and the products are widely used in food industry, cosmetic, medical, forage

In the case of product ripeness, the classification used is as follows:

- M1: fruit green with yellow spots;
- M2: fruit yellow over one third of the surface; and
- M3: fruit yellow over at least half of the surface.

Additionally, each package must indicate the name of the packer, the variety, the country of origin, the class, the size code, the number of units and net weight (optional)¹⁴.

industry)

¹⁴ CBI market survey, "Fresh fruit and vegetables", September 2004 http://www.cbi.nl/show.php?file=show_summary.html&id=719 as cited from ITC Market News Service, Issue 41, December 2003. More information about regulations concerning packaging methods and labeling is detailed in CBI's Access Guide at www.cbi.nl/accessguide

SECTION 5

PRICE ANALYSIS

5.0 Introduction

This Section of the report presents an analysis of the prevailing prices for fresh Papaya in the major markets of economic interest to CARICOM. These are firstly, the USA market, principally through import and trade transactions at the Miami and New York Terminal Markets; secondly, the Canadian market, principally through import and trade at the Toronto and Montreal Terminal Markets and finally the EU market, principally through import and trade at UK markets.

Prices are analyzed with respect to trends in prices, price differentials by varieties of Papaya, and seasonality in prices. The analysis is limited to market prices for the years 2003, 2004 and 2005.

5.1 The USA: The Miami, New York and Los Angeles Terminal Markets

The five dominant varieties in the USA market are Maridol, Solo, Solo Sunrise, Red Flesh and Golden. Detailed below and summarized in Figures 5.1 to 5.5 and Tables 5.1 to 5.6 are some of the major findings of the analyses.

5.1.1 Profile of the Miami Terminal Market

The supply of Papaya to the Miami Terminal Market is dominated by the four largest exporters, Mexico, Belize, Brazil and the Dominican Republic. Other smaller suppliers are Jamaica and Guatemala (Table 5.1).

The dominant varieties traded in the Miami markets are Maridol, originating from Mexico and Belize; Red Flesh from Belize and the Dominican Republic; and Golden from Brazil. Solo Sunrise and Solo are also traded but in smaller quantities and for a limited period of the year. Maridol, Red Flesh and Golden are traded throughout the year. The monthly availability and flow of various Papaya varieties at the Miami Terminal Market are shown in Table 5.2.

Table 5.1: Profile of the Trade in Papaya at the Miami Terminal Market

Supply Source	Main Suppliers	Mexico, Belize, the DR and Brazil
	Other (smaller) Suppliers	Jamaica, Guatemala
Varieties	Main Varieties & Supplying Countries	Maridol from Mexico & Belize
		Red Flesh from Belize & the DR
		Golden from Brazil
	Other Varieties:	Solo Sunrise from Brazil & Guatemala
		Solo from Brazil & Guatemala

Table 5.2: Availability of Fresh Papaya Varieties at the Miami Terminal Market: Jan - Dec

Sources of Supply	Availability on the USA Market - Miami											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mexico	Maridol	Maridol	Maridol	Maridol	Maridol	Maridol	Maridol	Maridol	Maridol	Maridol	Maridol	Maridol
Belize	Maridol	Maridol	Maridol	Maridol	Maridol	Maridol	Maridol	Maridol	Maridol	Maridol	Maridol	Maridol
			Solo	Solo	Solo	Solo		Solo	Solo			Solo
		Red Flesh	Red Flesh	Red Flesh	Red Flesh	Red Flesh	Red Flesh	Red Flesh	Red Flesh	Red Flesh	Red Flesh	Red Flesh
Dominican Republic	Maridol	Maridol	Maridol	Maridol	Maridol	Maridol	Maridol	Maridol				
		Red Flesh	Red Flesh	Red Flesh	Red Flesh	Red Flesh	Red Flesh	Red Flesh	Red Flesh	Red Flesh	Red Flesh	Red Flesh
Brazil	Golden	Golden	Golden	Golden	Golden	Golden	Golden	Golden	Golden	Golden	Golden	Golden
			Solo	Solo	Solo	Solo						
	Solo Sunrise	Solo Sunrise	Solo Sunrise									
Jamaica	Solo Sunrise	Solo Sunrise	Solo Sunrise									
Guatemala			Solo	Solo	Solo	Solo						
	Solo Sunrise	Solo Sunrise	Solo Sunrise							Solo Sunrise	Solo Sunrise	Solo Sunrise

Source: USDA and Today Market Prices Databases

5.1.2 Profile of the New York Market

The main suppliers of Papaya to the New York Terminal Market are Mexico, Belize, Brazil and Hawaii. Other smaller suppliers are Guatemala, the Dominican Republic and Jamaica (Table 5.3). The main varieties traded at the New York Market are Maridol supplied by Mexico and Belize; Red Flesh mainly from Brazil and Belize with smaller quantities traded from Guatemala; and

Solo supplied by Hawaii. Small quantities of Golden are exported by Mexico and Belize for a limited period during the year.

The monthly availability and flow of various Papaya varieties at the New York Terminal Market are shown in Table 5.4.

Table 5.3: Profile of the Trade in Papaya at the New York Terminal Market

Supply Source	Main Suppliers	Mexico, Belize, Brazil and Hawaii
	Other (smaller) Suppliers	Guatemala, the DR and Jamaica
Varieties	Main Varieties	Maridol from Mexico & Belize
		Red Flesh from Brazil, Belize and Guatemala
		Solo from Hawaii and Belize
	Other Varieties:	Golden from Mexico & Belize

Table 5.4: Availability of Fresh Papaya Varieties at the New York Terminal Market: Jan-Dec

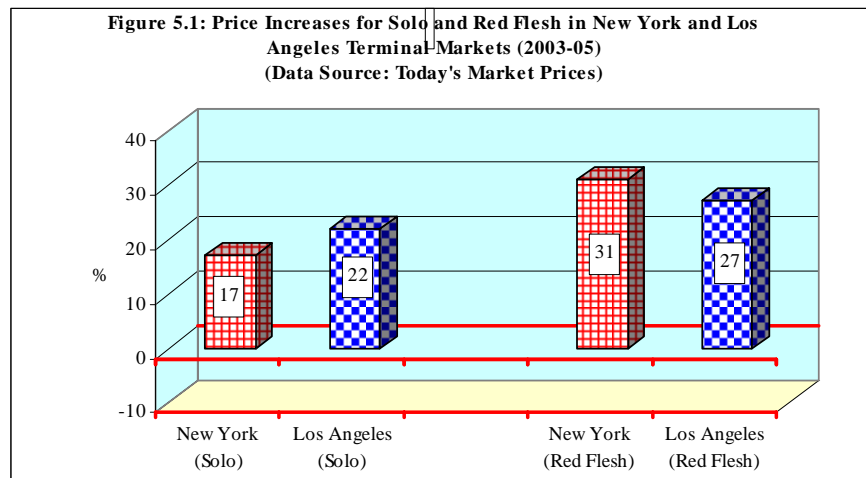
Sources of Supply	Availability on the USA Market – New York											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mexico	Maridol	Maridol	Maridol	Maridol	Maridol	Maridol	Maridol	Maridol	Maridol	Maridol	Maridol	Maridol
			Golden	Golden								
					Red Flesh	Red Flesh	Red Flesh					
Belize	Maridol	Maridol	Maridol	Maridol	Maridol	Maridol	Maridol	Maridol	Maridol	Maridol	Maridol	Maridol
	Golden	Golden	Solo	Solo	Solo	Solo	Solo	Solo				
				Red Flesh	Red Flesh	Red Flesh	Red Flesh	Red Flesh	Red Flesh	Red Flesh	Red Flesh	Red Flesh
Brazil	Red Flesh	Red Flesh	Red Flesh	Red Flesh	Red Flesh	Red Flesh	Red Flesh	Red Flesh	Red Flesh	Red Flesh	Red Flesh	Red Flesh
Hawaii	Solo	Solo	Solo	Solo	Solo	Solo	Solo	Solo	Solo	Solo	Solo	Solo
Guatemala		Red Flesh	Red Flesh	Red Flesh	Red Flesh							

5.1.3 The Los Angeles Market

The major suppliers of Papaya to the Los Angeles Market are Hawaii and Mexico. The former supplies the Solo variety throughout the year whereas Mexico exports Maridol and Golden for most of the year. Other suppliers of fresh Papaya to the Los Angeles Market are Brazil and Jamaica. In addition to the Solo, Maridol and Golden varieties, smaller quantities of Solo Sunrise, and Red Flesh are exported to this market.

5.1.4 Price Analysis

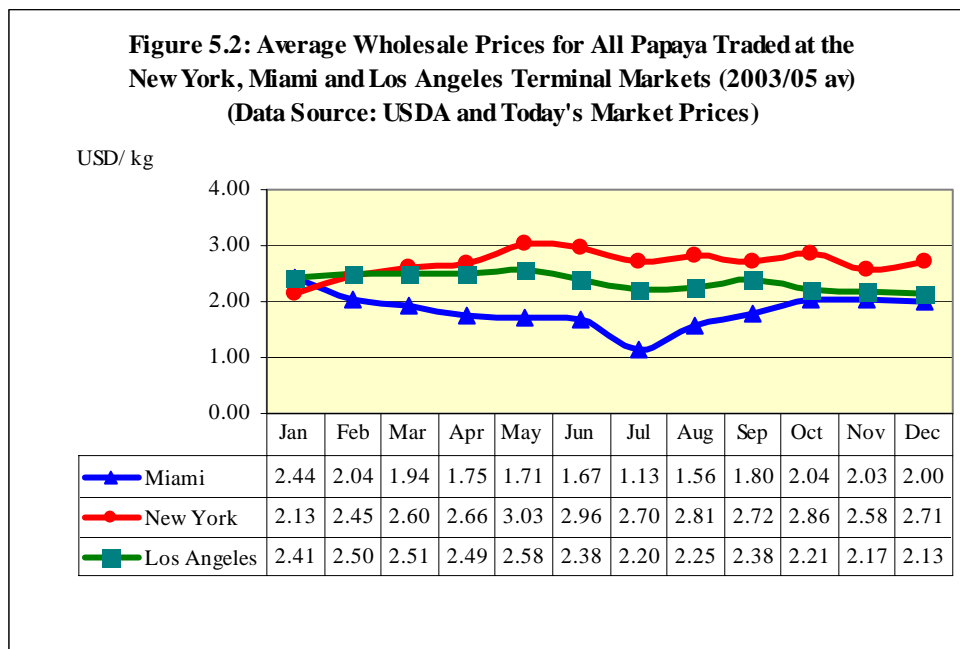
Price Trends: An analysis of average annual wholesale prices for Papaya at the three Terminal Markets suggests a general upward movement over the three-year period, 2003 - 2005. This was particularly discernable in the case of the Los Angeles and New York Terminal Markets. For example, the average wholesale price of Solo Papaya increased by 22% in the Los Angeles Market and by 17% in the New York Market. In the case of Red Flesh Papaya, the increases were 27% and 31%, respectively at these markets (Figure 5.1). Maridol, which is one of the major varieties traded, experienced a fall in price in 2004, but regained most of the lost ground in 2005. The noticeable decline in prices for Maridol in 2004 may be related to the quality of the produce exported in that year.



Price Differential by Terminal: A comparison of average monthly papaya prices (all papaya, unweighted) at the three Terminals showed that the New York Terminal prices were the highest at USD 2.68 / kg. Interestingly, prices at this Terminal showed an upward trend for the first five months of the year, thereafter varying within a narrow range (Figure 5.2). Average prices at the

Los Angeles Terminal were the second highest at USD 2.35 / kg. The lowest average prices were observed at the Miami Terminal USD 1.65 / kg.

Prices at the Miami Terminal varied to a greater extent (Std Dev = USD 0.32 / kg¹⁵) than New York (Std Dev = USD 0.24 / kg), while the Los Angeles market maintained relatively constant prices throughout the year (Std Dev = USD 0.15 / kg). Further, at the Miami Terminal Market prices declined by as much as 60% between January and July. However, prices gradually regained lost ground, finishing the year at close to the level it was at the beginning of the year.



Varietal Preferences for Papaya: An analysis of prices on the basis of variety clearly demonstrated stronger revealed consumer preferences for some varieties. However, preferences varied across markets and also in some cases preferences varied by the country of origin for the fruit. For example, Solo from Hawaii attracted the highest price among all Papaya varieties traded in the market. The average annual price of Solo in New York and Los Angeles was \$3.67 per kg whereas Solo sold on the Miami Terminal Market attracted an average price of \$1.67; less than one half of the average price for the other two terminals. Since Solo traded at the Miami

¹⁵ The standard deviation is a measure of how widely values are dispersed from the average value (the mean).

Terminal was exported by Brazil and Guatemala, one possible explanation for the significant price differential is a quality difference.

Based on the average annual price at each of the Terminal markets, the revealed preference pattern at the various markets is as follows:

- (i) **Miami Terminal Market:** The preference pattern for the various varieties traded at this market is shown in Figure 5.3. The highest preference is for the Golden and Solo Sunrise varieties. Significantly lower preferences are indicated for Solo (from Brazil and Guatemala) and Red Flesh, with Maridol at the base.
- (ii) **New York:** In the New York market, the two varieties for which the strongest preference is revealed (on the basis of prices) are Solo and Red Flesh. Significantly lower preferences are shown for Golden and Maridol (Figure 5.4).
- (iii) **Los Angeles:** Figure 5.5 indicates that Red Flesh, Solo and Solo Sunrise varieties attracted the highest average prices at this market. At the lower end of the group were Golden and Maridol.

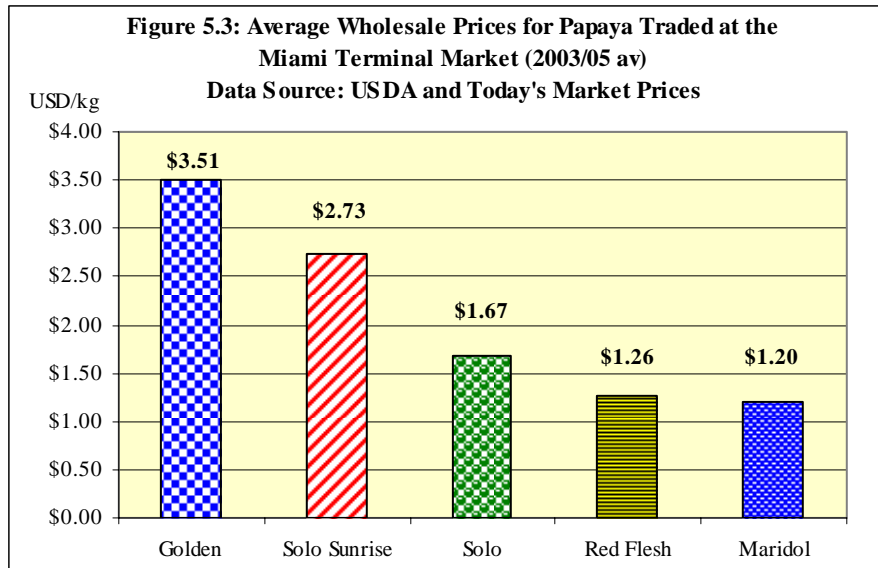


Figure 5.4: Average Wholesale Prices for Papaya Traded at the New York Terminal Market (2003/05 av)
Data Source: USDA and Today's Market Prices

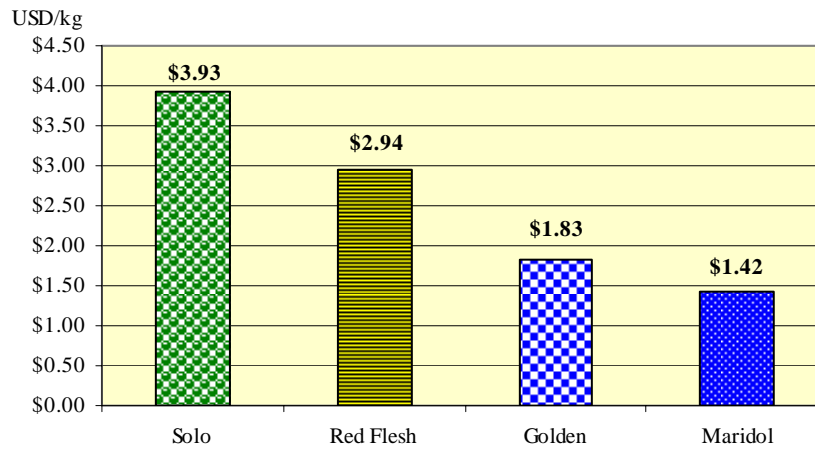


Figure 5.5: Average Wholesale Prices for Papaya Traded at the Los Angeles Terminal Market (2005 av)
Data Source: USDA and Today's Market Prices

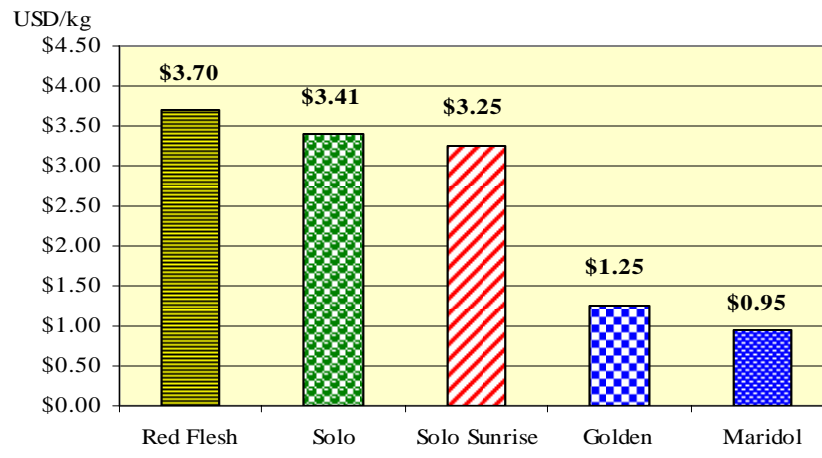


Table 5.5: Origin and Price Trends of Papaya Supplied to the Miami and New York Terminal Markets in 2003/05

Sources of Supply				Average Prices (2003 – 2005) (USD/kg)			Price Trends (USD / kg)		
Varieties	Miami	New York	Los Angeles	Miami	New York	Los Angeles	Miami	New York	Los Angeles
Maridol	Mexico Belize Dominican Republic	Mexico Belize	Mexico	\$1.20/kg	\$1.42/kg	\$0.95/kg	2005 \$1.19 2004 \$1.11 2003 \$1.29	2005 \$1.55 2004 \$1.28 2003 \$1.44	2005 \$0.89 2004 \$1.00 2003 -
Solo Sunrise	Brazil Jamaica Guatemala	-	-	\$2.73/kg	-	\$3.25/kg	2005 - 2004 \$2.96 2003 \$2.50	2005 - 2004 - 2003 -	2005 - 2004 - 2003 \$3.25
Solo	Brazil Belize Guatemala	Hawaii Belize Brazil Guatemala	Hawaii	\$1.67/kg	\$3.93/kg	\$3.41/kg	2005 \$1.59 2004 \$1.75 2003 -	2005 \$4.03 2004 \$4.32 2003 \$3.45	2005 \$3.63 2004 \$3.63 2003 \$2.97
Red Flesh	Belize Dominican Republic (2003 only)	Brazil Mexico Belize Guatemala	Hawaii Mexico Brazil Jamaica	\$1.26/kg	\$2.94/kg	\$3.70/kg	2005 - 2004 - 2003 \$1.26	2005 \$3.14 2004 \$3.09 2003 \$2.60	2005 \$3.96 2004 \$4.02 2003 \$3.13
Golden	Brazil	Belize Brazil Mexico	-	\$3.51/kg	\$1.83/kg	\$1.25/kg	2005 \$4.84 2004 \$3.01 2003 \$2.67	2005 \$1.14 2004 - 2003 \$2.51	2005 - 2004 - 2003 \$1.25

Source: USDA and Today Market Prices Databases

Table 5.6: Papaya Price Variation in the Miami, New York and Los Angeles Terminal Markets

Markets	Comparison Parameters	Golden (Per kg)	Maridol (Per kg)	Solo (Per kg)	Solo Sunrise (Per kg)	Red Flesh (Per kg)
Miami	<i>Average</i>	\$3.51	\$1.20	\$1.67	\$2.73	\$1.26
	<i>High</i>	\$4.84	\$1.45	\$2.13	\$2.97	\$1.50
	<i>Low</i>	\$2.38	\$1.03	\$1.25	\$2.18	\$1.03
	Price Variation	\$2.46	\$0.42	\$0.88	\$0.79	\$0.46
New York	<i>Average</i>	\$1.83	\$1.42	\$3.93	-	\$2.94
	<i>High</i>	\$2.99	\$2.05	\$6.16	-	\$4.00
	<i>Low</i>	\$1.06	\$0.99	\$2.71	-	\$1.63
	Price Variation	\$1.94	\$1.06	\$3.45	-	\$2.38
Los Angeles	<i>Average</i>	\$1.25	\$0.95	\$3.41	\$3.25	\$3.70
	<i>High</i>	\$1.45	\$1.34	\$5.46	\$3.43	\$6.29
	<i>Low</i>	\$1.03	\$0.81	\$2.64	\$3.15	\$2.64
	Price Variation	\$0.42	\$0.53	\$2.82	\$0.29	\$3.65

Source: USDA and Today Market Prices Databases

5.2 The Canadian Market (Eastern Provinces)

As discussed earlier, the Canadian market of interest to CARICOM exporters are the Eastern Provinces of the country since transportation cost to the West would make exports uncompetitive. The two major Produce Terminals in the East at which imports of fruits and fresh produce are traded are the Toronto and the Montreal Produce Terminals. However, as reported for the USA market, not all imports pass through the Terminal Markets, since direct sales also take place with importers/brokers.

Today the market for Papaya in Eastern Canada is dominated by two exporters, Belize and Brazil (See Tables 5.7 and 5.8). During the early 1990s, Jamaica controlled this market but with the onset of diseases, exports disappeared. Analysis of prevailing prices at both markets shows:

- (i) **Price Trend:** There is an upward trend in prices. During 2005, average monthly prices showed steady increases (See Figure 5.6).
- (ii) **Seasonality:** The data suggest some degree of seasonality in consumption pattern. This is revealed by price movements, whereby average summer prices are higher than for the rest of the year. For example, the average price for Solo Sunrise for the May – August period was \$3.16 per kg, and for the rest of the year \$2.92. In the case of the Red Flesh Variety, the summer average was \$2.29 per kg compared to \$1.78 during the rest of the year. These represent, respectively, premiums of 8.2% and 28.9%.
- (iii) **Varietal Preference:** In 2005 the market was dominated by two varieties, Solo Sunrise and Red Flesh. We assume that the price differential reveals preference for one variety relative to the other. During 2005, the average wholesale price for Solo Sunrise was \$3.02 per kg compared to \$2.00 per kg for Red Flesh – that is, consumers were willing to pay a 33% premium for Solo Sunrise.

Figure 5.6: Comparison of Market Prices for Solo Sunrise vs Red Flesh in the Canadian Market - 2005 (Data Source: Infohort)

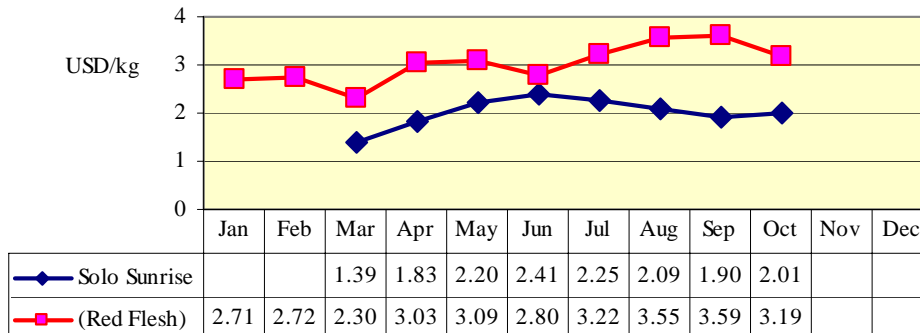


Table 5.7: Availability of Fresh Papaya Varieties at the Ontario Food Terminal, Toronto in 2005

Sources of Supply	Availability on the Canadian Market - Toronto											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Belize	Solo Sunrise	Solo Sunrise	Solo Sunrise	Solo Sunrise	Solo Sunrise	Solo Sunrise	Solo Sunrise	Solo Sunrise	Solo Sunrise	Solo Sunrise	Solo Sunrise	Solo Sunrise
Brazil	Solo Sunrise	Solo Sunrise	Solo Sunrise	Solo Sunrise	Solo Sunrise	Solo Sunrise	Solo Sunrise	Solo Sunrise	Solo Sunrise	Solo Sunrise	Solo Sunrise	Solo Sunrise

Source: Infohort and Today Market Prices Databases

Table 5.8: Availability of Fresh Papaya Varieties at the Montreal Terminal Market in - 2005

Sources of Supply	Availability on the Canadian Market – Montreal											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Belize	Solo Sunrise	Solo Sunrise	Solo Sunrise	Solo Sunrise	Solo Sunrise		Red Flesh	Red Flesh	Red Flesh			
Brazil	Solo Sunrise	Solo Sunrise	Solo Sunrise	Solo Sunrise	Solo Sunrise		Red Flesh	Red Flesh		Red Flesh	Red Flesh	
Guatemala							Red Flesh	Red Flesh	Red Flesh	Red Flesh	Red Flesh	
Puerto Rico								Tainung	Tainung			

Source: Infohort and Today Market Prices Databases

5.3 The European Union Market

In the analysis of the EU market, we focus primarily on the UK. Five terminal markets were chosen to represent this market: Liverpool, Birmingham, Glasgow, Western International and New Spitalfields.

Varieties, Fruit Size & Prices: Price data on Papaya traded in the UK market was not differentiated by variety, as was the case for the USA and Canadian markets. However, the major exporters to this market supply smaller varieties. For example, Brazil (with the largest share of the UK market) has as one of its major varieties Solo Sunrise. So too are Jamaica and the Canary Islands.

Our analysis of prices revealed that both the size of fruit and packaging influenced prices. Size of fruits was indeed a function of variety as discussed in Section 2. More specifically, we note that the market preference is for fruits that are of a size of an individual serving 300 – 440 gm as shown in Table 5.9. Papaya is typically packaged into two basic size categories/classifications, 3.5 – 4 kg and 35 – 40 lbs. The number of fruits contained range from 6 to 12. In the smaller containers, the larger fruit sizes, that is 6's – 8's, each exceed 440 gm, which is more than the typical serving. In the UK, consumers demand for fruits of this size is relatively low in comparison to fruits that are of a size of an individual serving (350- 440 gms). This is revealed by the significant price differentials, a factor of about 1:2 at the wholesale market as indicated in Table 5.9. The much larger fruits, packaged in 35- 40 lbs containers, are generally in excess of 1 kg (typical range 1.0 – 2.3 kg) and therefore are appropriate for multiple servings. The demand for these was the lowest in the market, attracting the lowest prices.

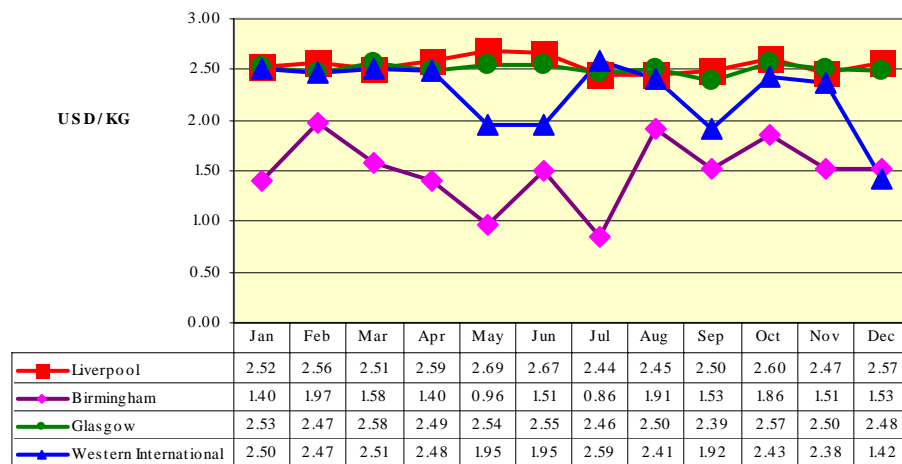
Table 5.9: Preference Patterns for Papaya Fruits in the UK Market

Packaging (Small fruits)	Size	Avg wt (gm)	Sample of Average Prices in 2005 (USD/kg)	Preference
3.5 – 4 kg containers Multiple Servings (small)	6s	575 - 650	1.20	Low Preference for Small Fruits (multiple Serving) 6s – 8s
	7s	500 - 575	1.22	
	8s	440 - 500		
3.5 – 4 kg containers Each Fruit: Individual serving	9s	400 - 440	2.14 – 2.80	Strongest Preference for small fruits (individual serving) 9s – 12s
	10s	350 - 400		
	12s	300 - 350		
Packaging (Larger fruits)		Avg Wt (kg)	Price range (USD/kg)	
35 – 40 lb containers	8s	2.0 – 2.3	\$1.20 – 1.50	Lowest Preference for largest fruits
Each Fruit: Multiple Servings	to 12 s	to 1.3 – 1.5		

Terminal Prices: Figure 5.7 shows the 2001-2005 average monthly price movement at four Terminal markets. Both the Glasgow and Liverpool markets showed a relatively constant price throughout the year, with slight fluctuations around the USD 2.50/kg level. However, the average monthly price at Birmingham was significantly lower than the Glasgow and Liverpool markets, and also showed significant fluctuations from month to month. The much lower annual average price at Birmingham (USD 1.50/kg), is assumed to reflect the trade in much larger fruits -- which command the lowest prices in the market. Prices at Western International averaged USD 2.25/kg (annual average) and exhibited wide fluctuations, reflecting a situation where there is a mix of both “high-end” and “low-end” produce being traded.

The prices of Papaya exported to the UK from the Caribbean, as well as Brazil, suggest the supply of individual fruits of preferred varieties. For example, exports of Solo Sunrise from Jamaica and Brazil earn over USD 2.50/kg. Similarly, exports from Barbados and Costa Rica attracted prices in excess of USD 2.50/kg in 2005.

Figure 5.7: Average Wholesale Prices for Papaya Traded at Various EU Terminal Markets (2001/05 av) (Data Source: Freshinfo)



Product Availability: Table 5.10 shows the monthly availability of fresh Papaya on the UK market during 2005. It also indicates the source of supply/exporting country. The exporters with the major market share in the UK generally supply fruits throughout the year. These include Brazil, Belize, Bangladesh, Cote d’Ivoire, Ghana, Hawaii and Barbados. Regularity of supply is therefore an important factor for entering the market and maintaining market share.

Table 5.10: Availability of Fresh Papaya at various Terminal Markets in the UK

Sources of Supply	Monthly Availability: January – December 2005												Pack Wts		
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec			
Bangladesh	[Green]												5 kg		
Barbados	[Yellow]												4 kg		
Belize	[Yellow]												4.5/14.5 kg		
Brazil	[Cyan]												4/5 kg ct 8/12		
Canary Islands	[Green]												5 kg		
Chile	[Yellow]												Various		
Colombia		[Yellow]						[Yellow]					¾ kg		
Costa Rica				[Green]									4.5 kg ct 9/14		
Cote D'ivoire	[Magenta]												4 kg		
Dominican Republic	[Yellow]		[Yellow]									[Yellow]	[Yellow]	Various	
Fiji	[Yellow]	[Yellow]										[Yellow]	[Yellow]	various	
Gambia	[Cyan]												5 kg		
Ghana	[Yellow]												4 kg		
Hawaii		[Magenta]											5 kg		
Jamaica	[Green]												5.5 kg		
Kenya	[Yellow]												4 kg		
Malaysia	[Cyan]												5 kg		
Mexico									[Yellow]	[Yellow]				4 kg	
Nigeria	[Green]										[Green]	[Green]			10 kg
Senegal	R	R	R	R	R	R	R	R	R	R	R	R	Various		
South Africa	[Cyan]									[Cyan]			4 kg ct 6/10		
Spain							[Yellow]						4 kg		
Thailand	[Yellow]												10/12 kg		
Uganda	T	T	T	T	T	T	T	T	T	T	T	T	Various		
Venezuela	[Magenta]								[Magenta]				4/4.5 kg ct 6/14		

(Source: *re:fresh* Directory: 2005 pp 92)

SECTION 6

MARKET ACCESS: REGULATORY REQUIREMENTS FOR PAPAYA EXPORTS

6.0 INTRODUCTION

In this Section of the report, we present the main requirements for market entry into the three major markets for Caribbean papaya exports: the USA, Canada and the EU markets. We are of the view that the Region may wish to consider the adoption of some of these measures immediately since they could contribute to further development of the industry.

6.1 Regulatory Market Access Requirements in the USA

6.1.1 Pesticides: Restricted and Canceled Uses

Environmental Protection Agency (EPA) of the USA registers pesticides and their use on specific pests and under explicit circumstances. For example, "Pesticide A," registered for use on papaya, may not be used legally on another fruit crop. The EPA has the responsibility to inform other governments about unregistered pesticides exported from the USA and the pesticide regulatory actions taken in the country that may have significance for other countries¹⁶.

The special Annex to this Study provides a list of severely hazardous pesticides. In this regard, CARICOM countries should update their restrictions and regulations on the use of these products in order to gain/retain market share.

Further, the use of persistent organic pollutants such as **DDT, chlordane, and lindane** is not approved for agriculture and as such should not be used in papaya production.

¹⁶ Reference Source: U.S. Environmental Protection Agency. Pesticides, Regulating Pesticides. UN PIC & U.S. PIC-Nominated Pesticides List. Available on the Internet. <http://www.epa.gov/oppfead1/international/piclist.htm>. October 6, 2004.

6.1.2 Phytosanitary Requirements

The inspection procedures employed at the USA ports of entry are published in the **USDA/APHIS Fruits and Vegetables Manual Regulating the Import of Fresh Fruits and Vegetables**. Further, based on phytosanitary parameters, the USDA has developed a list of approved fruits and vegetables that are allowed entry into USA ports from various countries. Within CARICOM, Papaya is allowed entry from Barbados, Jamaica, St Lucia, St Vincent and Trinidad and Tobago into all ports of the USA except Hawaii. In the case of Belize, fruits are allowed entry into all ports with limitations (All Ports - fruit, solo type only..., **“Not for importation into HI.”**) (See Table 6.1). In the case of Guyana, papaya is not allowed entry into the USA¹⁷.

Table 6.1: List of Approved Fruits and Vegetables for Entry into the United States of America from selected CARICOM countries

Commodities	Source						
	Barbados	Belize	Guyana	Jamaica	St Lucia	St Vincent	Trinidad & Tobago
Papaya	All Ports (Prohibited into Hawaii)	All Ports ¹ (fruit, solo type only; prohibited into Hawaii)	Prohibited	All Ports (Prohibited into Hawaii) ²	All Ports (Prohibited into Hawaii)	All Ports (Prohibited into Hawaii)	All Ports (Prohibited into Hawaii)

(1) The cartons of Papaya must be stamped, **“Not for importation into HI.”**

(2) Shipments may or may not be precleared. If they are precleared, the shipment must be accompanied by a PPQ Form 203 signed by APHIS Inspector on site in Jamaica to validate foreign site pre-clearance. If the shipment was not pre-cleared, it is inspected at port of entry.

Reference Source: **Regulating the Import of Fresh Fruits and Vegetables** located at <http://www.agribusinessonline.com/regulations/phyto/fruitsveg.pdf>. Available on the Internet. October 5, 2004.

6.1.3 Bioterrorism Act

Compliance to the regulations under the Bioterrorism Act of the USA became mandatory from December 12, 2003. Under this regulation, exporters, suppliers, importers and agents are

¹⁷ Our investigations indicate that Guyana may need to conduct a pest risk analysis and apply to the USDA for entry.

required to: (i) register food facilities; (ii) give prior notice of food to be imported into the USA; and (iii) establish and maintain records to allow for traceability¹⁸.

6.1.4 Tariffs and Charges

Under the CBI/CBERA arrangement, CARICOM countries qualify for duty-free entry of most exports (including papaya) into the USA market. Our review of the database observed an increase in the list of countries benefiting from special treatment. For example, in the case of HS 0807.20.00 Papayas (pawpaw), duty free entry was granted to A, CA, E, IL, J, MX¹⁹ in 2003. However, in 2005, this duty free list was extended to include CL and JO (JO was 1.3% in 2003) and SG and AU duties were reduced from the MFN rate of 35% to 2.7% and 4.0% respectively (Table 6.2). Further, the U.S.-Central America Free Trade Agreement (CAFTA) approved by the US Congress on July 27, 2005 promotes trade liberalization between the USA and five Central American countries: Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua and the Dominican Republic²⁰. In this regard, CARICOM countries will face increasing competition as the margin of preference is reduced / as more countries benefit from duty free entry.

¹⁸ New Zealand Food Safety Authority. For Your Information: F4-04 USA Bioterrorism Act. Date Posted: 04 March 2004. <http://www.nzfsa.govt.nz/animalproducts/publications/for-your-info/f4-04.htm>

¹⁹ (A – Beneficiary developing country; A+ LDC beneficiary country; , CA – Goods of Canada; D – African Growth and Opportunity Act; E- CBERA eligibility , IL – US/Israel Free Trade Area; J – Andean Trade Preference Act; MX – Goods of Mexico; JO – USA/Jordan Free Trade Area Implementation Act; AU – US/Australia Free trade Agreement; US/Chile Free Trade Agreement, SG – US Singapore Free Trade Agreement)

²⁰ CAFTA: Part of the FTAA Puzzle. Global Trade Watch. < <http://www.citizen.org/trade/cafta/>>

Table 6.2: Harmonized Tariff Schedule of the USA (2005) (Selected Extracts)

Chapter Heading/ Sub Heading	Article Description	Rates Of Duty		
		1		2
		General	Special	
0807.20.00	Papayas (papaws)	5.4%	Free (A, CA, E, IL, J, JO, MX), 2.7% (SG) 4% (AU)	35%
0811.90.40	Fruit and Nuts, uncooked or cooked by steaming or boiling in water, frozen, whether or not containing added sugar or other sweetening matter: Papayas	11.2%	Free (A+, CA,D,E,IL,J,JO,MX) 8.4% (CL,SG) 10% (AU)	35%
0812.90.90	Fruit and Nuts, provisionally preserved (for example, by sulphur dioxide gas, in brine, in sulphur water or in other preservative solutions), but unsuitable in that state for immediate consumption: Other	0.1 cent / kg	Free (A+, AU, CA,CL,D,E,IL,J,JO,MX,SG)	1.1 cent/kg
0813.40.10	Fruit dried, other than by headings 0801 to 0806; mixtures of nuts or dried nuts of this chapter Other Fruit: Papaya	1.8%	Free (A,AU,CA,CL,E,IL,JO,MX,SG)	35%
2007.99.55	Jams, jellies, marmalades, fruit or nut puree and paste obtained by cooking, whether or not containing added sugar or other sweetening matter: Other: Paste and puree: Papaya	14%	Free (A+, CA, D, E, IL, J,JO, MX), 10.5% (CL,SG) 12.6% (AU)	35%
2008.99.45	Papayas: Pulp	14%.	Free (A*, CA, CL, E, IL, J, JO, MX), 10.5%(SG) 12.6%(AU)	35%

(Source: **Harmonized Tariff Schedule of the United States (2005)** <http://www.usitc.gov/tata/hts/bychapter/index.htm>
 (*) (A – Beneficiary developing country; A*, A – GSP beneficiary country; A+ LDC beneficiary country; , CA – Goods of Canada; D – African Growth and Opportunity Act; E- CBERA eligibility , IL – US/Israel Free Trade Area; J – Andean Trade Preference Act; MX – Goods of Mexico; JO – USA/Jordan Free Trade Area Implementation Act; AU – US/Australia Free Trade Agreement; CL - US/Chile Free Trade Agreement, SG – US Singapore Free Trade Agreement)

6.2 REGULATORY MARKET ACCESS REQUIREMENTS - CANADA

6.2.1 Canadian Import Requirements

Canadian importers of fresh fruits and vegetables as well as processed foods are required to be licensed with the Canadian Food Inspection Agency and /or be a member of the Dispute

Resolution Council (DRC)²¹, a measure which also serves to protect the interest of exporters. An **Inspection Certificate** is also necessary for certain products indicating that products meet the minimum import requirements for quality, labeling, and packaging. Where the commodity is packaged into consumer-sized products (prepackaged), these must be labeled with the information required under the Consumer Packaging and Labeling Regulations for labels on prepackaged and shipping containers.

6.2.2 Market Access Health and Safety / Standard

The Canadian Food Inspection Agency is responsible for the administration and enforcement of the **Canada Agricultural Products Act: Fresh Fruit and Vegetable Regulations (C.R.C., c. 285)**. The regulations with respect to the grading, packing and marketing of fresh fruit and vegetables apply to all products supplied fresh to the consumer or those for food processing. It applies to all produce that is marketed from import and interprovincial trade.

The regulations do not apply to single aggregate shipments (mixed products) of less than 15 containers and / or 250 kg. It is illegal to import, export or participate in interprovincial trade unless it meets the requirements of one of the grades established in the Regulations (SOR/95-475, s. 2).

6.2.3 Health and Food Safety and Environmental Concerns

Fresh fruits and vegetables, including root crops imported into Canada must comply with the health and safety requirements of the Food and Drug Regulations (ex. maximum chemical residue levels). Plant protection requirements such as a phytosanitary certificate or an import permit is also required from certain countries. In other cases, the product may simply be refused entry into Canada until a pest risk assessment has been completed.

²¹ To determine if an importer is licensed, a foreign shipper may contact any of the Canadian Food Inspection Agency's regional offices, or the Blue Book, or the Red Book or the DRC office at (613) 234-0982. If the Canadian receiver is not licensed or a member of the DRC, the foreign shipper will not have access to the service of the Board of Arbitration, which offers a valuable dispute settling service. A shipper may contact the Blue Book or the Red Book on credit ratings of potential receivers: Blue Book, tel. (630) 668-3500; Red Book, tel. (913) 451-6605.

The use of persistent organic pollutants (POP) also creates concern for the environment. **DDT, chlordane and lindane** are also listed in Canada as Persistent Organic Pollutants (POP). These chemicals are not approved for agricultural use.

Pesticide Residue: In order to prevent residues in or on the imported food from posing an unacceptable health risk, Maximum Residue Levels (MRLs) are also established for pesticides not registered for use in Canada and for Canadian registered pesticides with respect to uses that are not authorized in Canada. If residues exceeding the MRL are found, the food is considered adulterated and is prohibited under the FDA from sale in Canada.

Under the *Food and Drugs Act*, it is prohibited to sell food containing residues of pest control products at a level greater than 0.1 ppm unless a higher MRL has been established in Table II, Division 15, of the *Food and Drug Regulations*. Also, under the *Food and Drugs Act*, the sale of food containing residues of pest control products at a level less than or equal to 0.1 ppm is permitted unless a lower MRL has been established in Table II, Division 15, of the *Food and Drug Regulations* (see Table 6.3 below)²².

Table 6.3: List of Agricultural Chemicals where specific mention was made of Papaya

Item	Common Chemical	Chemical Name	Maximum Residue Limit	Commodities
C.11	copper compounds	copper compounds (inorganic) including copper oxychloride, copper oxychloride-sulphate, copper sulphate, copper sulphate monohydrate, tribasic copper sulphate	50.0 (Calculated as copper)	Fresh fruits and vegetables
F.1.1	ferbam	ferric dimethyldithiocarbamate	7 (Calculated as zineb)	guavas, mangoes, melons, papayas, peppers, pumpkins
M.1	malathion	diethyl mercaptosuccinate S-(O,O-dimethyl phosphorodithioate)	8	avocados, , papayas, pineapples,

(Source: Maximum Residue Limits for Pesticides < <http://www.pmra-arla.gc.ca/english/legis/maxres-e.html> >)

The **Pest Management Regulatory Agency (PMRA)** of Health, Canada, has the responsibility to protect human health and the environment by minimizing the risks associated with pest control

²² (Source: Maximum Residue Limits for Pesticides < <http://www.pmra-arla.gc.ca/english/legis/maxres-e.html> >)

products. Enabling access to pest management tools such as approved pesticides and sustainable pest management strategies also falls within their mandate.

The *Food Residue Exposure Assessment Section (FREAS)* evaluates every submission where a product could come in contact with food, including field crops, meat and dairy products and processed foods. These evaluations are conducted to set the maximum residue limits for pesticides on food, both domestic and imported, under the FDA²³.

Given the list of agricultural pesticides named above, we recommend that these should be used as a positive listing. Further, where no mention is made of other chemicals, the guide above should be adopted.

6.2.4 Packaging

The following packaging guidelines for market entry into Canada are currently in force, and as such, exporters from the Region are expected to comply:

- (a) Packages should not be greater than 50 kg net weight
- (b) Label must not misrepresent the quality, quantity, composition, nature, safety, value, origin or variety of the contents
- (c) Prepackaged produce that is visible and identifiable should be packaged in a manner that indicates the nature and quality of the contents.
- (d) Package containers should not be so stained, soiled, warped, broken or damaged as to affect the shipping quality or saleability of the produce.

Other regulations apply to accepted construction materials for the food handling area which seeks to guard against volatile constituents which may contaminate the foods, thereby endangering human health. There are also restrictions to avert possible adverse organoleptic effects of the packaging material, the use of water for washing as well as Modified Atmosphere Packaging (MAP) which are used to eliminate or reduce commodity damage or deterioration. These are further detailed in the special annex to this document.

²³ The Agency's web site at www.hc-sc.gc.ca/pmra-arla/ contains all of the publications issued by the PMRA, and a wide range of information and data useful to the general public and industry. The PMRA also operates a toll-free information line to answer pest management related inquiries. The MRL is listed at <http://www.pmra-arla.gc.ca/english/legis/maxres-e.html>

6.2.5 Tariffs and Charges

Under the Caribbean trade arrangement, CARICOM exporters receive duty-free access to the Canadian market for its primary and value added papaya exports.

6.3 Regulatory Market Access Requirements – The EU

6.3.1 Market Access Health and Safety / Standard

In this section, selected health, food safety and other regulations such as those related to packaging, waste, recycling and labour laws for the EU are briefly highlighted. The regulations for the importation into the EU are further detailed in the special annex.

- (i) The European Union's Council Directive 79/117/EEC dated 21 December 1978 prohibits the placing on the market and the use of plant protection products containing certain active substances which, even if applied in an approved manner, could give rise to harmful effects on human health or the environment²⁴. The EU has published a list of active substances that are banned. These include a range of heavy metal compounds and pesticides.
- (ii) The EU is also coordinating a programme to set Maximum Residue Levels (MRLs) for an estimated 600 active substances and many crops/foodstuffs. The EU MRLs apply if there are no UK temporary national MRLs or import tolerances. They take precedence over any UK national or Codex MRLs. Many MRL's have been reduced to effective zero. This decision will definitely lead to agronomic challenges. The exact position, however, with respect to approval and MRL's continues to be fluid and changes quite regularly.
- (iii) **Invasive Species:** The EU regulations require phytosanitary procedures and formalities to ensure invasive alien species are not introduced into the trading block.
- (iv) The application of Hazard Analysis and Critical Control Point (HACCP) principles to primary production is not yet generally feasible. However, guides to good practice

²⁴ Banned and Non-Authorized Pesticides in the United Kingdom Pesticide Source: Safety Directorate <http://www.pesticides.gov.uk/approvals.asp?id=55> (The Pesticides Safety Directorate (PSD) is an Executive Agency of the Department for Environment, Food and Rural Affairs (Defra) of the UK)

such as Good Agricultural Practices (GAP) and Good Agricultural Management Practices (GAMP) should be used to encourage the use of appropriate hygiene practices at the farm level.

- (v) There are concerns that **Active and Intelligent packaging and materials** do not cause unacceptable changes in the composition of the food or in its organoleptic characteristics²⁵.
- (vi) The EU has developed a **positive list** of substances authorized for food contact. Specifically, it deals with inertness of the packaging materials and migration of substances from the packaging material into the food. In this regard, there are also regulations being drafted which addresses traceability of the packaging material as well as notification of its use on the label to inform consumers.
- (vii) Further to active and intelligent materials and articles, three more groups of materials, i.e. ion-exchange resins, adhesives and printing inks are being examined for inclusion on the list of groups of materials that may be regulated by specific measures.
- (viii) The EU has also been further examining the management of packaging and packaging waste as it relates to environmental protection. In this regard, countries are required to take measures to prevent the formation of packaging waste and also encourage reuse/recycling of packaging²⁶.

It is clear that waste generation is becoming a serious problem throughout the world and moreso in the developed countries. Therefore, exporters must take cognizance of this and observe the legislative guidelines of countries as they relate to waste management. While it was not mandated

²⁵ **Materials and Articles Intended to come into contact with Food**

Reference Source: Proposal for a **REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on materials and articles intended to come into contact with food** Brussels, 7.11.2003. COM(2003) 689 final 2003/0272 (COD). <http://www.freshquality.org/files/Active%20packaging.pdf>

²⁶ **Targets:**

- no later than 30 June 2001 between 50 and 65 % by weight of packaging waste will be recovered or incinerated at waste incineration plants with energy recovery;
- no later than 31 December 2008 60 % as a minimum by weight of packaging waste will be recovered or incinerated at waste incineration plants with energy recovery;
- no later than 30 June 2001 between 25 and 45 % by weight of the totality of packaging materials contained in packaging waste will be recycled (with a minimum of 15 % by weight for each packaging material);
- no later than 31 December 2008 between 55 and 80 % by weight of packaging waste will be recycled;
- no later than 31 December 2008 the following recycling targets for materials contained in packaging waste must be attained: 60 % by weight for glass, 60 % by weight for paper and board, 50 % by weight for metals, 22.5 % by weight for plastics and 15 % by weight for wood.

No later than 31 December 2007, the European Parliament and the Council, acting on a proposal from the Commission, will fix targets for 2009--2014.

Source: **DIRECTIVE 2004/12/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 11 February 2004**

that export packaging must be recyclable or biodegradable, developed countries have been creating legislation to handle the ever-burgeoning problem of packaging waste.

It is also important to note that disposal of packaging waste has been seen as part of the transaction cost of doing business. Failure to address the waste disposal issues can lead to difficulties in entering new markets as well as inability to sustain existing market share. The legislative framework governing packaging waste in the EU must therefore serve as a minimum standard for exporters of fresh agricultural produce as well as value added products from CARICOM countries.

6.3.2 Traceability

The new EU General Food Law, which became effective on January 1 2005, made it mandatory that businesses have a system of traceability in place. The system extends to wholesalers and salesmen in the wholesale-retail chain. Businesses are required to keep records of their purchases and to whom they have sold the commodity²⁷

6.3.3 Genetically Modified Food

Concerns have been raised about the potential dangers of consuming Genetically Modified Food. This may mean that food operators would have to trace and label all product ingredients and retain such documentation for a period of five years. Although still at the proposal stage, this requirement may however prove restrictive and inconsistent with the WTO TBT Agreement. Article 2.2 of the TBT Agreement states that technical regulations “*shall not be more trade-restrictive than necessary*” to fulfill their legitimate objective. The technical requirements associated with complying to these proposals, as well as with the current labeling regime, can be considered onerous and may be technical barriers to trade; sometimes far more restrictive than necessary. If enacted, this measure may require substantial cost outlays as well as efforts that may be difficult to implement.

amending Directive 94/62/EC on packaging and packaging waste <http://europa.eu.int/scadplus/leg/en/lvb/l21207.htm>

²⁷ Source re; Fresh Directory 2005, p56.

While GM labeling was still not a mandatory requirement at the time of this study, we have discussed it above so that stakeholders will become aware of new issues or “barriers to trade” that may arise in the future²⁸.

6.3.4 Tariffs and Charges

Tariffs and quota: Imports of papayas originating in CARICOM countries as well as other developing countries are exempted from EU import tariffs under the EU-ACP, GSP and EBA agreements / arrangements / initiatives. Further, there are no quota restrictions on papaya imports and the so-called “entry price system” which establishes a minimum import price for a number of fruit and vegetables during certain periods does not apply to the imports of papayas²⁹.

Taxes: The countries of the EU apply reduced VAT rates ranging from zero to 18% in various countries, and on many products including basic necessities such as foodstuffs. The VAT is based on CIF value plus duty rate³⁰.

The ACP countries including CARICOM member states receive duty free entry for primary commodities exported into the EU under the Cotonou Agreement. Manufactured and processed products from ACP countries are also exempted from customs duties, as well as from certain restrictions (non-tariff barriers) on their entry into the single European market once they conform to the rules of origin³¹. However, these countries’ margin of preference is increasingly being eroded due to reduction of the MFN rates. Further, new countries are benefiting from preferential trade agreements with the EU. The main beneficiaries are other developing countries such as South East Asia, which enjoy a level of preferential access to the EU (the Generalized System of Preferences) which is less favourable than under Lomé, including new aid initiatives such as the

²⁸ Reference Source: GMA Public Policy < <http://www.gmabrands.com/publicpolicy/docs/comment.cfm?DocID=877> >

²⁹ Source: CBI market survey “Fresh fruit and vegetables”, September 2004
http://www.cbi.nl/show.php?file=show_summary.html&id=719 pp 10. Additional EU legislation on fruit (including papayas) and vegetables is available at www.europa.eu.int/eur-lex/en/lif/reg/en_register_036054.html

³⁰ **Tariff and Tax Information**
European Value Added Tax (VAT) Rates http://www.ita.doc.gov/td/tic/tariff/eu_vat.htm

³¹ ECDPM. 2001. *Cotonou Infokit: From Lomé to Cotonou (13)*. Maastricht: ECDPM.
http://www.ecdpm.org/Web_ECDPM/Web/Content/Navigation.nsf/index2?readform&http://www.ecdpm.org/Web_ECDPM/Web/Content/Content.nsf/0/1942EFAB4C863CFDC1256E97004D1C78?OpenDocument

EBA. Other “obstacles” being developed include quality standards, anti-dumping measures and distortions caused by national legislation.

In this regard, CARICOM countries will have to become more competitive in order to retain market share. Further, concerns about tariff escalation for value added products have also been expressed as these can serve to discourage further processing initiatives in the ACP countries. Table 6.4 lists the relevant Conventional Rate of Duty of the European Union published in January 2004.

Table 6.4: The Conventional Rate of Duty of the European Union (2004)

Chapter	Article Description	Conventional Rate of Duty /MFN Rate (%)
0807	Melons (including watermelons) and papaws (papayas), fresh	
0807.20.00	Papaws (papayas)	Free
0812	Fruit and Nuts, provisionally preserved (for example, by sulphur dioxide gas, in brine, in sulphur water or in other preservative solutions), but unsuitable in that state for immediate consumption: Papaws (papayas)	2.3%
0813.40.50	Fruit, dried, other than that of heading 0801 to 0806; Mixtures of nuts or dried fruits of this Chapter Papaws (papayas)	2%
0813.50.12	Mixtures of nuts or dried fruits of this Chapter; Mixtures of dried fruits other than that of heading 0801 to 0806 Of papaws (papayas)	4%
2008.99	Other, whether or not containing added spirit, sugars etc in packs of less than 1 kg.....	
2008.99.33	Papaws (papaya)	16+ €2.6/100 kg/net
2008.99.47	Papaws (papaya)	11%
2008.99.62	Papaws (papaya)	13%

Source: Bureau International des tarifs Douaniers. International Customs Tariffs Bureau. European Union. Journal No. 14 (26th Edition), January 2004. The International Customs Journal. Organ of the International Union for the Publication of Customs Tariffs. Bulletin International Des Douanes. ISSN: 1378-4048. Available on the Internet.
<http://www.ita.doc.gov/td/tic/tariff/EuropeanUnion.pdf>

6.3.5 Other Non-Trade Barriers / Measures

There has been growing public awareness of environmental, organic and social issues in agricultural production and trade. These consumers’ concerns lead to a number of standard-setting, certification and/or labeling initiatives, some led by NGOs and other stakeholders in the

business sector³². Social and environmental certification and labeling use market incentives or causes market segmentation to encourage management improvements, influence legislative reform, and may use international treaties and conventions in support of the initiative. The success of these labeling initiatives is often reflected in increased market share.

Although these initiatives may lead to better prices to suppliers, it does not allow easier entry into markets and may be in conflict to the Agreement on Technical Barriers to Trade (TBT) which is the most relevant agreement for standards and certification programmes.

Fair Trade Labels: Fair trade labels for consumer products guarantee a price that covers the cost of production, a social premium for development purposes, partial payment in advance to avoid small producer organizations falling into debt, contracts that allow long term production planning, and long term trade relations that allow proper planning and sustainable production practices³³. Fairtrade Labeling Organizations International (FLO) www.fairtrade.net is an umbrella organization that co-ordinates national initiatives and audits labeled products from producer to supermarket shelves.

Private labels: Although private labels are usually sold at a lower price (10-18% cheaper) than the brand leader, it accounts for an estimated 45 % of the products sold in the EU retail sector³⁴. This mechanism may offer benefits to exporters in developing countries, since it avoids the introduction and maintenance of a brand name in Europe, which can require a physical presence, as well as high marketing expenses in the target market. This initiative is also beneficial from the advantage of facing less competition by having a secondary / substitute product and can lead to the building of strategic partnerships with selected retailers.

Despite the disadvantages of lower profit margins and the risk of other cheaper private labels entering the market, private labeling is expected to continue to grow in Europe. In this regard,

³² Reference source: **The WTO and environmental and social standards, certification and labelling in agriculture**

Cora Dankers <http://www.isealalliance.org/documents/pdf/dankers03.pdf> March 2003.

³³ Source: **Corporate Social Responsibility:**

<http://www.csrcampaign.org/publications/Excellencereport2002/EuropeanCSROverview/Sociallabels/>

³⁴ **EXPORTING TO THE EUROPEAN UNION. YOUR GUIDE TO TRADE-RELATED INFORMATION ON THE EU MARKET CENTRE FOR THE PROMOTION OF IMPORTS FROM DEVELOPING COUNTRIES**

< http://www.euroitx.com/download/CBI_exporting_to_the_eu.pdf > pg 82.

given the advantages of social labeling, the Region may also wish to examine the benefits of private labeling, especially in those communities where consumer loyalty can be exploited.

Environmental and Organic Production: The trend of the European consumers have been towards a healthier life and consequently in healthy food as well as in organic and exotic products over the last decade. Many people have been shifting towards “functional foods” (healthy food that is low in fat and sugar, and contains vitamins and minerals or bacteria supporting the intestinal function)³⁵.

Consumers have also demonstrated greater concern for food safety as well as the effects of intensive farming on the environment and socioeconomic issues such as preservation of the countryside. Organic farming which has certain attributes, although still accounting for a small share of the total food market, has been flourishing in many European countries, especially in France, Denmark and the UK where annual growth rates have reportedly exceeded 20% per year.

³⁵ **EXPORTING TO THE EUROPEAN UNION. YOUR GUIDE TO TRADE-RELATED INFORMATION ON THE EU MARKET CENTRE FOR THE PROMOTION OF IMPORTS FROM DEVELOPING COUNTRIES**
http://www.euroitx.com/download/CBI_exporting_to_the_eu.pdf

SECTION 7

SUMMARY, MAJOR FINDINGS AND CONCLUSIONS

7.0 Introduction

Production and export of papaya has attracted high levels of interest from Caribbean entrepreneurs in the agricultural sector over the last 20 years. But despite this level of enthusiasm, Caribbean producers have only achieved moderate success at increasing their market share in the metropolitan centres of North America, Canada and the United Kingdom. The crop represents one of the emerging non-traditionals identified to play a greater role in the new agricultural thrust. This is based on the fact that the commodity is increasingly being accepted globally and perhaps more importantly, it can be easily industrialized given the right model of development.

The analysis of the global market for papaya is not only to identify the competitive forces that already exist in the global marketplace but to determine the trends in the major consuming centres and detect signals that they provide to local producers of papaya.

In this final section of the review, we highlight the major findings of the analysis of existing data trends from both secondary desk research as well as supporting information gathered during field visits to the major centres of production in the Region.

Production and Trade – Global Level

Globally, production of papaya has been showing increasing levels of production, shifting from 5,304 million tonnes in 1999 to 6,342 million tonnes in 2003. Brazil is the leading global producer of papaya (27%) followed by Mexico (15%), Nigeria (12%), India (11%) and Indonesia (8%).

Global trade was estimated at USD 181 mn or 237 thousand tonnes in 2003. The major importers during that year were the USA accounting for 38% of world trade, followed by the EU at approximately 33%. The other major market of interest to the Region -- Canada, accounted for 5% of global imports. The preferred varieties in the major markets were Solo, Solo Sunrise and Maridol.

The leading world exporters were Mexico (29%), Brazil (18%) and Malaysia (16%). Mexico recorded a 21% increase in export value from 1999 – 2003.

Major Markets and Trends

The USA Market: In 2002, the USA's consumption was estimated at 109,429 tonnes satisfied by 20% domestic production (Hawaii) and 80% imports. The imports of papaya in 2002 were valued at USD 58.3 million. The data on the volume of papaya imports into the USA indicate an increasing trend; growth was estimated at about 85% between 1998 and 2002.

Mexico was the major source of imports into the USA estimated at 72%, Belize accounted for 12% and Brazil 9%. Jamaica also benefited from a 6% share of this market and the Dominican Republic 2%.

The Canadian Market: The country imported 5,500 tonnes of papaya in 2001 valued at USD 8.9 mn. Over the 1999 - 2001 period, imports of papaya have been increasing, both in volume (37%) and value terms (31%).

The major suppliers to the Canadian market in 2001 were Hawaii with 43% market share, followed by Brazil with 34% market share. Belize, Jamaica, Ecuador and Mexico each accounted for less than 10% of this market.

Over the period 1999 - 2001, Hawaii, Brazil, Belize and Ecuador have all increased their market share while Jamaica and Mexico experienced a loss.

The EU Market

In 2002, total imports reached €56 million for 33,000 tonnes. EU production is relatively small, and concentrated mainly in the Canary Islands.

The largest EU importers of papaya were the United Kingdom, The Netherlands, Germany, Portugal, France and Spain. In 2002, the UK was the leading EU papaya importer, accounting for 24% of the total imported value, followed by the Netherlands (23%), Germany (20%), Portugal (10%) and France (6%). Together these countries account for 75% to 90% of the total EU import / consumption.

The highest growth in imports of papaya was observed with the UK (86%), followed by the Netherlands (50%) and France (31%). The average EU growth was 28%. In the case of Germany, growth was observed in 2000-2001 to have increased by 36%, and Portugal 11%.

Re-exports of papaya are an important part of the EU trade. In 2002, this represented an estimated 20% of papaya imports, re-exported to countries within the EU group. The Netherlands re-exported 64% of total imports (value terms) in 2002, followed by France at 18%. This also presents serious challenges to Caribbean exporters who would want to seek to develop trade with individual countries within the EU.

Market Shares for Major Exporters of Papaya to the EU: Brazil is the leading papaya exporter to the EU market, accounting for 76 % or USD 31.5 mn of the USD 41.9 mn market in 2002. Other major exporters include Ghana, Pakistan, India, Thailand, Cote d'Ivoire and Jamaica.

Standards in the EU Market include grading according to quality, size and ripeness. Size grades are expressed in the number of fruits per box, which may vary from 6 to 16.

Prices and Trends

The USA Market: An analysis of average annual wholesale prices for papaya indicates a general upward movement over the 2003 – 2005 three-year period.

The New York Terminal unweighted prices were the highest at USD 2.68 / kg and the lowest average price of USD 1.65 / kg was observed at the Miami Terminal market. Based on the average annual price at each of the Terminal markets, the revealed preference pattern at the various markets is as follows:

- ***Miami Terminal Market:*** *Golden and Solo Sunrise varieties.*
- ***New York:*** *Solo and Red Flesh.*

The Canadian Market: The market for Papaya in Eastern Canada is dominated by two exporters, Belize and Brazil and an upward trend has been observed in prices in this market. In this market, the average prices during the summer were marginally higher than for the rest of the year. Varietal preference in this market is for Solo Sunrise and Red Flesh.

The UK Market: Both the Glasgow and Liverpool markets showed a relatively constant price throughout the year, with slight fluctuations around the USD 2.50/kg level. The average monthly price at Birmingham was significantly lower. The much lower annual average price of USD 1.50/kg at Birmingham is assumed to reflect the trade in much larger fruits, which command the lowest prices in the market. Prices at Western International market averaged USD 2.25/kg and exhibited wide fluctuations reflecting a situation where there is a mix of both high-end and low-end produce being traded.

The prices of Papaya exported to the UK from the Caribbean as well as Brazil suggest the supply of individual-serve fruits of preferred varieties.

Conclusion

In conclusion we highlight the following:

- (i) The market has been showing positive signals for producers to expand their production.
- (ii) Growth was most significant in the EU, which ranged from 14% to 83% in various member countries.
- (iii) In both North American markets especially New York / Miami and the Toronto / Montréal, the product seems to be having increasing acceptance, especially for the Solo varieties. The presence of exporters has been sustained with marginal fluctuations in market share. But the growth in demand in both North American and EU Markets could signal to entrepreneurs of the existence of market opportunities for papaya.
- (iv) The production system observed in Jamaica and Belize we believe could lend themselves as models for the development of an industry. The major producers have adopted the market protocols of the international market and production has been of high quality. Exploitation of the market opportunities by the large-scale producers seem to be on a sustained basis.
- (v) Given the size of the global papaya market, there appears significant scope for growth.
- (vi) Solo and Red Flesh dominate the market and relative prices have been increasing.
- (vii) The open entry conditions of all three markets provide another incentive to producers, together with the use of private labels such as Fair Trade. These incentives

can serve to minimize the risk to regional producers and open further opportunities for exploitation.

- (viii) Caribbean exporters to the major markets are likely to face stiff competition from Brazil and Mexico, the dominant suppliers to the North American market. Notwithstanding, Jamaica and Belize already have a sustained presence. Opportunities also exist in the EU, however Brazil's dominance in this market is expected to pose serious challenges to Regional producers.
- (ix) Under-exploitation of other industrial opportunities for the commodity has been observed.
- (x) Limitations or challenges to producers include sustaining market share, MRL's, identification of preferred varieties based on volumes, diseases in crop agronomy, inadequate freight space, shelf life, post harvest handling, and storage.

REFERENCES

Additional EU Legislation on Fruit (Including Papayas) and Vegetables. Available on the Internet: www.europa.eu.int/eur-lex/en/lif/reg/en_register_036054.html. Cited: 19/01/05

Amending Directive 94/62/EC on Packaging and Packaging Waste. Available on the Internet: <http://europa.eu.int/scadplus/leg/en/lvb/l21207.htm>. Cited: 10/02/05

Bureau International des tarifs Douaniers. International Customs Tariffs Bureau. European Union. Journal No. 14 (26th Edition), January 2004. The International Customs Journal. Organ of the International Union for the Publication of Customs Tariffs. Bulletin International Des Douanes. ISSN: 1378-4048. Available on the Internet: <http://www.ita.doc.gov/td/tic/tariff/EuropeanUnion.pdf>. Cited: 17/01/05

CBI market survey “**Fresh fruit and vegetables**”. September 2004. Available on the Internet: http://www.cbi.nl/show.php?file=show_summary.html&id=719 pp 10. Cited:

CBI market survey “**Fresh fruit and vegetables**”. September 2004. Available on the Internet: http://www.cbi.nl/show.php?file=show_summary.html&id=719. Cited from ITC Market News Service, Issue 41, December 2003.

Cora Dankers. Available on the Internet: <http://www.isealalliance.org/documents/pdf/dankers03.pdf>. Cited: March 2003.

Corporate Social Responsibility. Available on the Internet: <http://www.csrcampaign.org/publications/Excellencereport2002/EuropeanCSRoverview/Sociallabels/>. Cited:

EU Market Brief Papayas 2003. Available on the Internet: http://www.cbi.nl/show.php?file=show_summary.html&id=2314. Cited:

ECDPM. 2001. **Cotonou Infokit: From Lomé to Cotonou (13)**. Maastricht: ECDPM. Available on the Internet: http://www.ecdpm.org/Web_ECDPM/Web/Content/Navigation.nsf/index2?readform&http://www.ecdpm.org/Web_ECDPM/Web/Content/Content.nsf/0/1942EFAB4C863CFDC1256E97004D1C78?OpenDocument. Cited:

Exporting to the European Union: Your Guide to Trade-Related Information on the EU Market Centre for the Promotion of Imports from Developing Countries

FAOStat Database.

Fintrac Inc. Available on the Internet: <http://www.tradewindsfruit.com/order.htm>; and <http://www.alohaseed.com/papaya.html>. Cited:

FreshInfo Prices Databases. Available on the Internet: . Cited:

Freshinfo News. Available on the Internet: <http://64.4.22.250/cgi-bin/linkrd?lang=EN&lah=aee8890a60d01292b857f600d5ee50c1&lat=1098104565&hmon=http%3a%2f%2fwww%2efreshinfo%2ecom%2findex%2ephp%3fs%3dn%26ss%3dnd%26sid%3d34884>. Cited:

FTAA Hemispheric Database

GMA Public Policy. Available on the Internet:

<http://www.gmabrands.com/publicpolicy/docs/comment.cfm?DocID=877> >DIRECTIVE 2004/12/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL. Cited: 11/02/04

Guidelines for Exporters of Fruit and Vegetables to the European Markets. Commonwealth Secretariat, 2001.Pp 112.

Harmonized Tariff Schedule of the United States (2005). Available on the Internet:

<http://www.usitc.gov/tata/hts/bychapter/index.htm>. Cited: 16/01/05

ITC's Market Analysis Services (MAS). Available on the Internet:

<http://www.intracen.org/mas/welcome.htm>. Cited:

New Zealand Food Safety Authority. For Your Information: F4-04 USA Bioterrorism Act.

Available on the Internet: <http://www.nzfsa.govt.nz/animalproducts/publications/for-your-info/f4-04.htm>. Cited: 04/03/04.

Packaging research highlights consumer split From Tommy Leighton in California

Papaya: A Potential Annual Crop Under Middle Georgia Conditions. U.L. Yadava, Janice A.

Burris, and D. McCrary <http://www.hort.purdue.edu/newcrop/proceedings1990/v1-364.html> Safety Directorate <http://www.pesticides.gov.uk/approvals.asp?id=55> (The Pesticides Safety Directorate (PSD) is an Executive Agency of the Department for Environment, Food and Rural Affairs (Defra) of the UK) Regulating the Import of Fresh Fruits and Vegetables located at <http://www.agribusinessonline.com/regulations/phyto/fruitsveg.pdf> Available on the Internet. October 5, 2004.

Papaya Crop Knowledge Master. Available on the Internet:

http://www.extento.hawaii.edu/kbase/crop/crops/i_papa.htm. Cited:

Proposal for a Regulation of the European Parliament and of the Council on materials and Articles Intended to come into Contact with Food. Brussels, 7.11.2003. COM (2003) 689 final 2003/0272 (COD). Available on the Internet:

<http://www.freshquality.org/files/Active%20packaging.pdf>. Cited: 10/02/05

Tariff and Tax Information. **European Value Added Tax (VAT) Rates.** Available on the Internet: http://www.ita.doc.gov/td/tic/tariff/eu_vat.htm. Cited:

The WTO and Environmental and Social Standards, Certification and Labelling in Agriculture. Available on the Internet:

http://www.euroitx.com/download/CBI_exporting_to_the_eu.pdf. Cited: 04/04/05

Today's Market Prices Databases.

USDA Market Prices Databases.

ANNEXES

Table A1.1: World Papaya Production: 1999-2003 (1000 tonnes)

Rank No.	Country	1999	2001	2003
1	Brazil	1,402	1,489	1,600
2	Mexico	569	873	955
3	Nigeria	748	748	755,
4	India	660	700	700
5	Indonesia	449	500	491
6	Ethiopia	0	223	230
7	Congo, Dem Republic of	220	206	210
8	Peru	170	158	170
9	China	175	159	164
10	Venezuela, Boliv Rep of	98	130	175
11	Thailand	119	120	125
12	Cuba	61	135	120
13	Colombia	115	110	105
14	Philippines	71	77	79
15	Yemen	66	70	72
16	Malaysia	56	65	65
17	Bangladesh	40	44	48
18	Mozambique	46	31	31
19	Costa Rica	33	27	26
20	Guatemala	23	25	25
21	Dominican Republic	20	24	25
22	Other Countries	155	157	167
	World Total	5,303	6,076	6,342

Data Source: FAOStat

Table A1.2: Papaya Imports into the EU Import: Volumes, Values and Trends

Importers	Value imported in 2003, in US\$ thousand	Quantity imported in 2003	Quantity unit	Unit value (US\$/unit)	Annual growth in value between 1999-2003, %	Annual growth in quantity between 1999-2003, %	Annual growth in value between 2002-2003, %	Share in world imports, %
World estimation	181,368	227,412	Tons	798	8	9	11	100
United States of America	68,790	101,868	Tons	675	9	12	2	38
European Union	59,130	41,534	Tons					
United Kingdom	17,535	11,405	Tons	1,537	34	37	37	10
Hong Kong (SARC)	16,222	28,649	Tons	566	1	13	0	9
Germany	15,424	9,140	Tons	1,688	18	28	49	9
Japan	11,378	3,986	Tons	2,854	-7	-4	-25	6
Netherlands	10,153	7,785	Tons	1,304	11	19	67	6
Canada	9,699	6,013	Tons	1,613	7	10	18	5
Singapore	4,646	27,536	Tons	169	4	2	5	3
France	4,262	1,990	Tons	2,142	14	14	29	2
Spain	3,791	2,631	Tons	1,441	21	29	76	2
Portugal	3,033	5,389	Tons	563	6	23	10	2
China	2,928	3,978	Tons	736	48	30	15	2
Switzerland	2,741	1,300	Tons	2,108	11	12	22	2
Italy	2,304	1,238	Tons	1,861	11	18	32	1
Belgium	991	742	Tons	1,336	-3	-2	-30	1
Luxembourg	880	871	Tons	1,010	83	149	131	0
Sweden	757	343	Tons	2,207	-10	-7	67	0

Source: ITC's Market Analysis Services (MAS) < <http://www.intracen.org/mas/welcome.htm>, > ITC calculations based on COMTRADE statistics

Table A2.1: Value of Papaya HS Code 080720 Imported into the USA for Consumption by Major Source (USD 1,000)

Country	1996	1997	1998	1999	2000	2001	2002
Mexico	23,617	16,190	16,607	33,703	32,620	40,743	40,487
Belize	1,037	2,848	3,272	3,661	5,889	4,777	7,822
Brazil	0	11	541	2,397	3,864	4,727	5,235
Jamaica	3,703	3,080	3,283	3,359	2,685	2,721	3,375
Dominican Rep	304	581	255	461	1,056	1,495	1,175
Total	29,910	24,719	25,007	44,463	46,614	54,623	58,337

(Source: Fintrac Inc)

Table A2.2: Volume of Papaya HS Code 080720 Imported into the USA by Major Sources (Tonnes)

Country	1996	1997	1998	1999	2000	2001	2002
Mexico	50,195	40,022	39,661	55,931	55,124	68,891	66,965
Belize	2,425	3,616	4,263	3,849	5,565	5,837	11,021
Brazil	0	8	500	2,825	4,672	5,089	5,808
Jamaica	2,378	2,078	2,069	1,902	1,547	1,539	1,940
Dominican Rep	1,142	962	523	1,183	2,531	2,877	2,414
Total	57,196	48,201	47,908	66,479	69,887	84,401	88,559

(Source: Fintrac Inc)