The CARICOM

Regional Transformation Programme for Agriculture

DRAFT

The Global Market for Sweet Potato:

Sources of Supply and Competitiveness for the CARICOM Industry

SWEET POTATO

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December 2006

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ACKNOWLEDGEMENTS

The core team takes the opportunity to express its appreciation to all those who provided logistical and technical support for the completion of this exercise. We firstly like to thank the RTP Coordinator / Agricultural Advisor, Mr. Sam Lawrence as well as the country officers for their logistical and other support in the completion of this exercise. Field visits allowed us to verify and update the information base on sweet potato. Sweet potato investors particularly in the case of Jamaica and St Vincent provided valuable information in shaping the review of the Regional Sweet Potato industry. The database on sweet potato worldwide as well as in the Caribbean contains significant gaps and took considerable time in their verification and validation.

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 Theophile, Rebecca Gookool, Jai Rampersad and David Hanson, to which the Core Team also express support. To Ms. Martha Jeminez-Spence and Indira Ousman-Buchoon, 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 root crop sector in the Caribbean is just emerging and systems of data recording for this commodity have not yet entered the mainstream databases. This gap we recommend should be addressed with urgency.

Singh, R.H. (Ph.D)

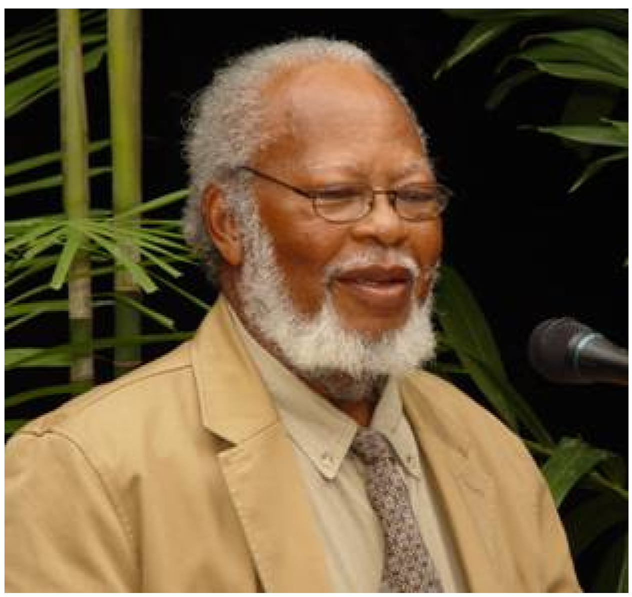
Seepersad, G. (Ph.D)

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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GLOSSARY OF TERMS

Ipomea batatas	Sweet Potato
Convolvulaceae	Botanical family to which Sweet Potato belongs

LIST OF ACRONYMS AND ABBREVIATIONS

Kg	Kilogramme
mn	Million
SHU	Scoville Heat Units
USA	United States of America
UK	United Kingdom
EU	European Union (15)
USD	United States Dollar
Euro	European currency of exchange
HS6	Six Digit Harmonized System of Classification

EXECUTIVE SUMMARY

EVALUATION OF THE MARKET FOR SWEET POTATO

1. BACKGROUND: The CARICOM Regional Transformation Studies on Competitiveness

This Report constitutes the results of a review of the Markets for Sweet Potato 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: sweet potato, hot pepper, papaya, coconuts and small ruminants.

The market evaluation focuses on those global 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.

Development of the Sweet Potato industry may require exploiting all available market opportunities. In this regard, we are of the view that the markets of potential interest to CARICOM include both the domestic and the extra-regional markets. Given transportation logistics and shipping costs, extra-regional markets are restricted to Eastern USA, the Eastern Provinces of Canada and Western Europe, mainly the UK and The Netherlands. Additionally, both the market for the primary commodity as well as value added are of interest.

1.2 Market Features

Domestic consumption of Sweet Potato is widespread among countries with per capita consumption being higher in the major producing countries. As a result, the volume of exports as a percent of total production is generally small; a feature that is common for many commonly produced commodities.

With respect to the CARICOM market, only a limited volume of sweet potato is currently traded regionally. We are of the view that this market is grossly underexploited since per capita consumption of the fresh tuber in a number of countries is low to very low and also the production of value-added is almost non-existent.

For each of the markets of interest, it is important to fully understand the structure and functioning as well as to identify the key drivers of competition including consumer preference patterns, trends in consumer demand, who (which countries/suppliers) are the main participants in these markets, what are 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. Such an analysis assists in developing market entry strategies.

1.3 Varieties

Generally, there are two basic types of sweet potato on the market: firstly, the 'moist-flesh' type which is sweet, orange, soft with a moist flesh when cooked; and secondly, the 'dry-flesh' type which is dry and starchy with a firm flesh when cooked. The moist-flesh types are also known as dessert-types and account for most of the output in the USA. Varieties produced in the Caribbean are the 'dry-flesh' types which may be yellow or white in flesh colour and are most often used as a source of carbohydrate. The commodity in the retail market includes USA Sweet Yam (red flesh colour), Red China Yam (white flesh colour) and the Caribbean Sweet Potato (yellow flesh colour). These are illustrated in Pictures 1 and 2.

2. THE GLOBAL SITUATION

Sweet potato as a commodity is widely grown throughout the world. However, only about one percent of production enters world trade with Canada, the United Kingdom, France and the Netherlands being the major importing countries. The USA is the largest exporter of Sweet Potato accounting for 35 % of world trade. Other exporters are China (12%), Israel (9%), France (7%), Indonesia (6%) and Netherlands France (5%). The latter two are also involved in re-exporting. Most of the product is used for table consumption with a small percentage going into industry uses and animal feed.

Picture 1

Picture 2

3. THE CARIBBEAN - REGIONAL SITUATION

3.1 Industry Profile

Key features of the Caribbean Sweet Potato industry are as follows:

- The largest Caribbean producers of Sweet Potato (Cuba, Haiti, the Dominican Republic) together account for 93 % of total production in 2004 (Figure 6.1 and Table 6.1).
- Amongst CARICOM countries, Jamaica is the largest producer accounting for 68% of the Region's production.
- Other significant CARICOM producers are Guyana, Barbados, St Vincent and the Grenadines and St Lucia, together accounting for 27% of CARICOM's production.
- The remaining CARICOM countries produce only negligible quantities of Sweet Potato, together accounting for 5 % of the Region's output.
- Only 6.7 % of CARICOM's production are exported – Jamaica and St Vincent and the Grenadines being the major exporters.
- Jamaica exported 1,442 tonnes or 6.3 % of production (2000–'03): 55 % to the UK - accounting for 8 % of that country's imports; and 45 % to Canada.
- St Vincent & the Grenadines exports 734 tonnes (2000-'03): intra-Caribbean destinations with Trinidad and Tobago being the major market.
- Only small quantities of Sweet Potato are imported – Trinidad and Tobago and The Bahamas being the major importers with the former importing 477 tonnes from St Vincent & the Grenadines and the latter 252 tonnes from the USA (2000-03).
- There is no evidence of significant commercial value added production of food or non food products.

Figure 6.1: Major Sweet Potato Producers in the Caribbean Region - 000 Tonnes (2000/03 av)
(Data Source: FAO Stat Database)

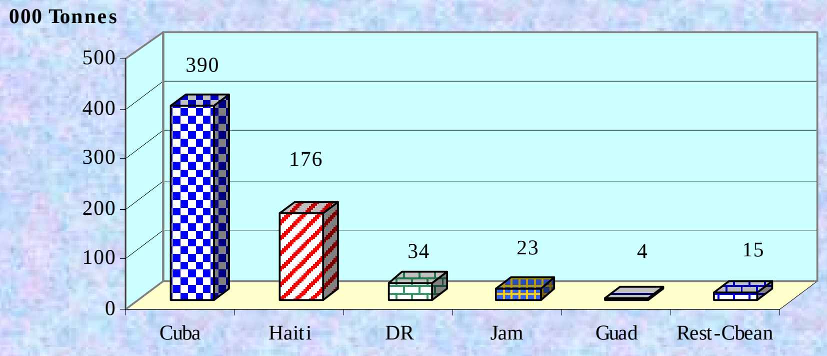

Table 6.1: Sweet Potato Production and Trade for CARICOM Countries (2000-2003 Average) Tonnes

Countries	Production	Imports	Exports
Antigua	156	37	-
Bahamas	762	252	-
Barbados	2,345	27	1.7
Belize	223	-	-
Dominica	1,850	-	60
Grenada	284	16	-
Guyana	2,265	-	-
Jamaica	22,727	-	1442
Montserrat	20	-	-
St Kitts Nevis	150	9	-
St Lucia	804	-	-
St Vincent	1,525	-	734
Trinidad & Tobago	220	477	-
Total	**33,331**	**818**	**2237.7**

Data Source: FAOStat Database

3.2 Consumption

Based on the FAO Statistics, the total consumption of sweet potato in CARICOM was estimated at about 31,000 tonnes, estimated from production values *less* extra-regional exports The major consuming countries were Jamaica (20,379 tonnes) and Barbados (2,369 tonnes).

In the non-CARICOM countries, an estimated 599,379 tonnes were consumed annually. Cuba and Haiti represented the largest market in the Caribbean at a consumption of 389,613 tonnes and 176,000 tonnes respectively.

The per capita consumption estimates suggest five levels of consumption for the Caribbean as indicated in Figure 6.2 below:

- Level I - Very High Consumption (greater than 20 kg per capita): Includes Cuba, Haiti and Dominica. This group also comprises countries with relatively low per capita income.
- Level II: High Consumption (10 – 20 kg per capita): There were no countries falling in this consumption range.
- Level III – Medium Consumption (5-10 kg./capita): Consumption in this group of countries was significantly lower than the first and included Guadeloupe, Barbados, Jamaica, St Vincent and the Grenadines, St Lucia and Montserrat.
- Level IV – Low Consumption (2-5 kg /capita): There were seven countries in this group which included St Kitts, Grenada, Bahamas, Guyana, Martinique, the Dominican Republic and Antigua
- Level V – Very Low Consumption level (less than 2 kg./capita): Trinidad and Tobago, Puerto Rico and Belize.

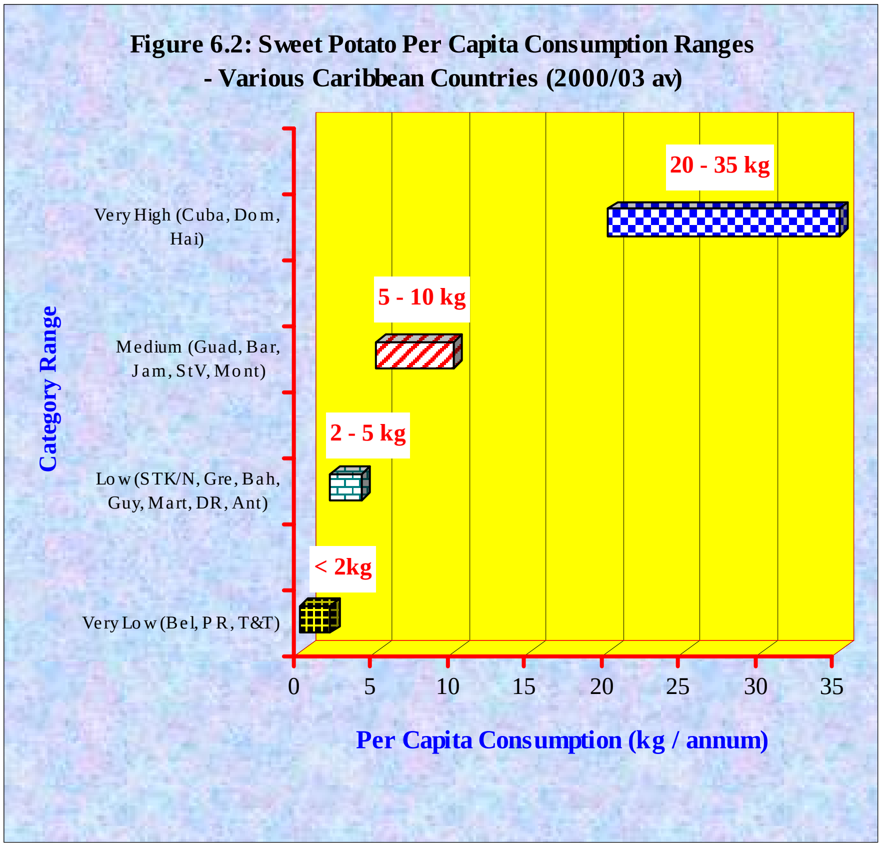

Figure 6.2: Sweet Potato Per Capita Consumption Ranges - Various Caribbean Countries (2000/03 av)

4. OVERVIEW OF EXTRA-REGIONAL MARKETS

4.1 The USA Market

We note that the USA has an embargo against all imports of Sweet Potato to the mainland from CARICOM countries on account of SPS concerns. Nonetheless we review the USA situation to get an insight into that market given that it is an exporter of Sweet Potato and therefore could potentially enter the CARICOM market as a competitor.

Sweet potato is commonly referred to as yams in the USA[1]. The USA produces an estimated 687,273 tonnes of Sweet Potato annually (1999/2001) of which about 97% are utilized within the country. Export in 2002 was USD 15.0 million whereas imports were negligible and primarily restricted to Puerto Rico and the US Virgin Islands. Canada remains the major export market for U.S. sweet potatoes, but substantial inroads have been made in the United Kingdom.

[1] This has created problems in the databases and treatment of the commodity.

Consumption Patterns & Preferences: Sweet potato consumption in the USA appears to be concentrated during the fall months (October – December) where about 39% of production in consumed. Holiday occasions are also noted for increased demand. However, sweet potatoes have had limited success in the food-service industry.

Market research on Sweet Potato consumption patterns in the USA indicates as follows:

- Per capita consumption is highest among many ethnic groups, particularly those with a Caribbean or Latin American background.
- Within the above market segments, the "dry-flesh" varieties of sweet potato from the Caribbean are strongly preferred over the moist/sweet variety.
- A trend of increasing consumption.

4.2 The Canadian Market

Canada's production of sweet potato is relatively insignificant. Consumption level in 2001 was entirely from imports, valued at USD 11.6 mn. The major suppliers to the Canadian market are the USA, supplying 85% of total imports and Jamaica, supplying 7% (2001).

4.3 The EU Market

The EU imports of sweet potato average about USD 20 mn annually over the period 2002-2004 (Eurostat Comext). The major sources of imports are the USA (36%), Israel (32%), South Africa (12%), Egypt (8%) and Jamaica (5%). The largest importers were the UK (39%), France (20%), Italy (16%), Netherlands (13%) and Portugal (4%).

5. MARKET OPPORTUNITIES

5.1 Extra-regional Markets

The above reviews suggest a niche for Caribbean exports of quality sweet potato to both the Canadian and the UK markets. We have added The Netherlands as a market to be investigated and exploited given its location (close to the UK) and the fact that it is not only a major importer, but also an important re-exporter within the EU. **However, we are of the view that the absorptive capacity of the extra-regional markets is likely to remain relatively small for some time.**

We now provide further elucidation to the above. Firstly, with respect to the Canadian market, although the USA currently supplies over 90% of the requirements for this market, the current presence of Jamaican sweet potato in this market and the strong preference and growth in consumption among the ethnic West Indian population suggest an edge for Caribbean exporters. With respect to the UK market, Jamaica currently supplies 8% of this market, and Barbados a relatively small amount. Again, the USA is dominant in this market with a market- share of 52%. However, given an annual growth in consumption of about 22%, the opportunity exists for Caribbean exporters to capture a significant share of this by exploiting the segments of the market characterized by the ethnic immigrant population and with re-exporting nations – France and The Netherlands.

5.2 The Caribbean Market

Given the current low levels of per capita consumption in some countries of the Region, we are of the view that opportunities also exist to expand the Caribbean market. However, we expect growth in consumption is likely to be slow given the need to influence consumer preference. The latter we think would depend to a large extent on effective promotion as well as the development of various Sweet Potato based food products to meet the peculiar needs of the Caribbean consumer as well as the food service industry.

6. POTENTIAL FOR THE DEVELOPMENT OF THE CARICOM INDUSTRY

A number of factors suggest a good potential for the development of a viable sweet potato industry in CARICOM. Some of these include:

- Sweet potato represents a crop with high versatility with respect to growing conditions and low susceptibility to natural disasters such as hurricanes. It is also amenable to the typical small scale farming systems that characterize the Region.

- As an exportable crop, sweet potato generally has excellent shelf life and good transportability/ handling characteristics.

- Sweet potato productivity in the Region is well below the plants agronomic potential. Problems of heavy and persistent attacks from the sweet potato weevil and the sweet potato stem borer together have resulted in significant losses of marketable yield; ranging as high as 40% in some countries. To the above, we may add losses due to nematodes, viruses and other non detecting yield reducing factors. Diligent application of R&D could make a significant contribution here, thus improving the profitability and competitiveness of the crop.

- The trend in the extra-regional market suggests growth as discussed above. We anticipate that this trend will continue given the documented health benefits of sweet potato consumption.

- ❖ Opportunities exist to exploit the market preferences: firstly, in terms of the preference among the ethnic West Indian populations for the “dry type” of sweet potato -- characteristic of the varieties produced in the Region and secondly, the higher consumption levels among the above group.

- ❖ Opportunities in the longer term are associated with the application of S&T/R&D aimed at the development of high-valued products that exploit the health benefits of sweet potato.

7. THE WAY FORWARD

The development of the sweet potato industry in CARICOM calls for intervention in four key areas: pest control, quality assurance, value-added product development, and marketing and promotion. Specifically, we recommend the following strategies:

(i) Pest/Disease Control

- Development of a Regional action plan for R&D to develop technology for controlling the common pests and diseases in a sustainable manner.
- Implement a system of quality assurance/regulations to ensure the use of disease free planting material. Towards this end, we recommend the adoption of protocols to enhance quality assurance in the industry, in particular focusing on the quality of planting material, the use of agro-chemicals and the quality of the final product with respect to food safety.

(ii) Quality Assurance

In addition to (ii) above, we recommend immediate adoption of the USA’s grades and standards as a strategy to enhance competitiveness and exploit the various market segments.

(iii) Value-added Product Development

Most of the sweet potato produced is marketed in the fresh form. Value added products remain largely unexploited. We therefore recommend the commissioning of R&D work in product development by relevant institutions in the Region. In this regard, we suggest a focus on high valued products that exploit the health benefits of the sweet potato.

(iv) Marketing & Promotion

While opportunities exist in the market place, without a strong presence and active development, these opportunities would not be realized. Product promotion is also critical and in this regard we suggest the development of Caribbean product labels.

SECTION 1

BACKGROUND & PURPOSE OF THE MARKET INTELLIGENCE STUDY ON SWEET POTATO

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 Sweet Potato 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: sweet potato, hot pepper, papaya, 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 focuses on those global 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 Market Features

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For each of the markets of interest, it is important to fully understand the structure and functioning as well as to identify the key drivers of competition including, consumer preference patterns, trends in consumer demand, who (which countries/suppliers) are the main participants in these markets, what are 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. Such an analysis assists in developing market entry strategies.

1.3 Report Structure

This report on the Global Market Intelligence for sweet potato is an attempt to determine the above parameters of market competitiveness. It provides the basis for analyzing the potential for the industry in CARICOM. The report begins with an overview of the Global situation, followed by an analysis/profile of each of the selected extra-regional markets. This discussion is inclusive of the Regional market in Section 6. An analysis of prices is given in Section 7 and market access issues and regulations are presented in the final section.

SECTION 2

SWEET POTATO: GLOBAL PRODUCTION & EXPORTS

2.0 Introduction

Sweet potato (*Ipomoea batatas)* is a perennial herbaceous dicotyledonous species of the family Convolvulaceae. It is cropped as an annual in many countries. The plant produces primary fibrous, pencil and storage roots. Primarily, the storage roots (tubers) are eaten, but in parts of Asia and Oceania the leaves are consumed as a green vegetable. The skin colour of the tubers ranges from white to brown to red-orange. The flesh of the tubers is either soft or firm and the colour ranges from red-orange, orange to yellow or white. Propagation is done by stem cuttings and the crop grows best at an average temperature of 24°C. Depending on variety and conditions, tubers mature in 2 to 9 months and can store well for six months under optimal conditions[2].

2.1 World Production

Sweet potato is cultivated in over 100 developing countries and ranks among the five most important food crops produced in over 50 of these countries. World production of sweet potato was estimated at 121.8 million tonnes in 2003 (see Annex Table A1).

The major producing regions in terms of volume were Asia followed by Africa, South America, the Caribbean and North America. The Asian region alone accounted for 87% of global production, of which China's production was 95%. Next in order of importance were Oceania, European Union (EU) and Central America (Figure 2.1). A declining trend is observed at the global level for all producing countries except in the case of the Caribbean, North America and Oceania. Data recorded for the 'Rest of the World' remains stable.

In the case of producers in the western hemisphere, leading producers were the USA (722,160 tonnes), Cuba (503,400 tonnes), Brazil (495,000 tonnes), Argentina (315,000 tonnes) and Peru (225,000 tonnes) as shown in Figure 2.2.

[2] Store at 85% to 90% RH and 13 degrees to 16 degrees C.

Although the Caribbean produces just about 1% of the global production, the bulk is concentrated in just a few countries. The top five producers in the Commonwealth Caribbean in 2003 were Jamaica, Barbados and Guyana (Figure 2.3). Dominica's production was just about 1,850 tonnes followed by St Vincent at 1,136 tonnes.

Much smaller amounts were produced by St Lucia, Grenada and Trinidad and Tobago. Recorded production was less than 800 tonnes each in 2003.

Figure 2.1: World Production of Sweet Potato by Major Producing Regions - 2003
(Data Source: Comtrade Database)

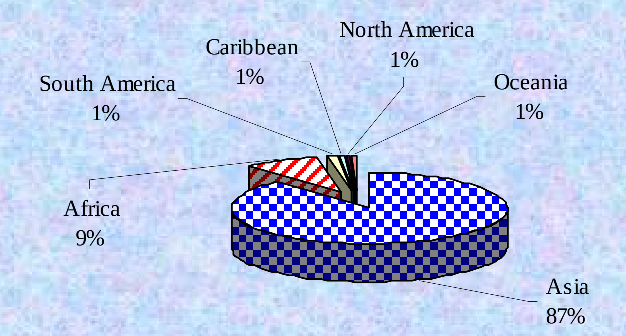
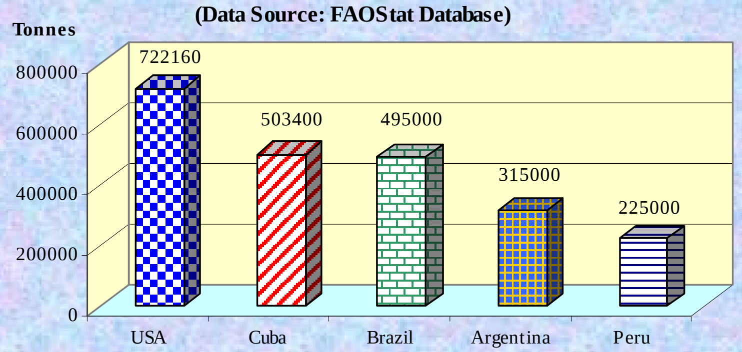
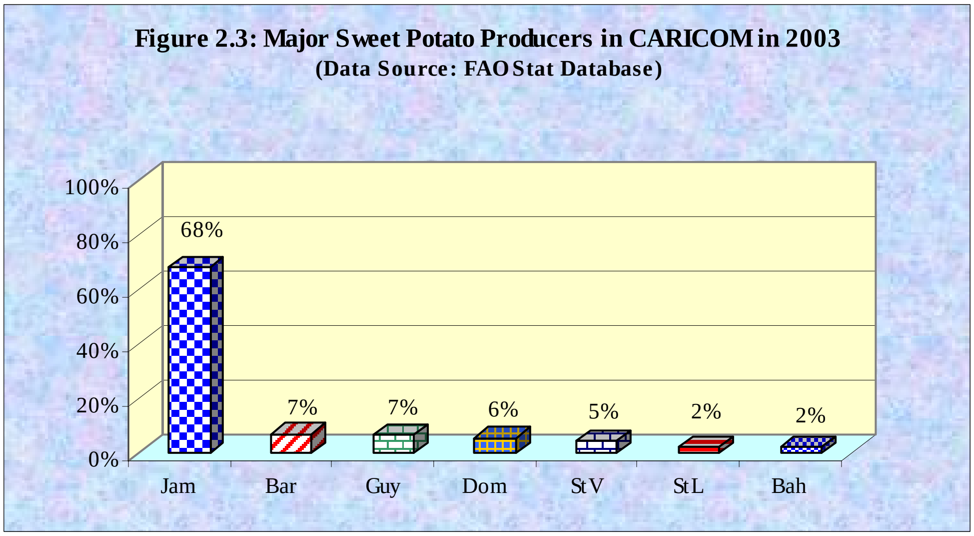


Figure 2.2: Top Five Producers of Sweet Potato in the Western Hemisphere in 2003
(Data Source: FAOStat Database)





2.2 World Trade

Of importance is the amount of sweet potato produced entering world trade. Our examination of the database show an estimated 84,763 tonnes of sweet potato was exported in 2003, that is, less than 1% of global production. World export trade was dominated by the USA (35%) followed by China (12%), Israel (9%), France (7%), Indonesia (6%), The Netherlands (5%) and Egypt (5%). Exports from Jamaica were estimated at 4% and St. Vincent less than 1% of world trade (Comtrade database). A profile of world exporters is summarized in Figure 2.4.

The major importing countries in 2003 were Canada (24%), followed by the United Kingdom (14%), France (12%) and The Netherlands (5%) (Figure 2.5). Trinidad and Tobago was listed as the sixteenth highest importer of sweet potato in the world in value terms and eleventh in volume terms in 2003.

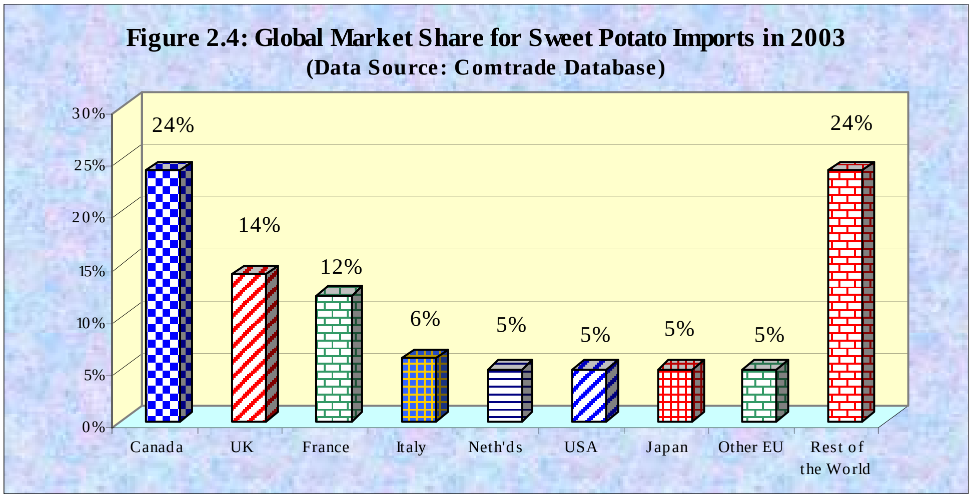


Figure 2.4: Global Market Share for Sweet Potato Imports in 2003
(Data Source: Comtrade Database)
30%
25%
20%
15%
10%
5%
0%
24%
14%
12%
6%
5%
5%
5%
5%
24%
Canada
UK
France
Italy
Neth'ds
USA
Japan
Other EU
Rest of the World

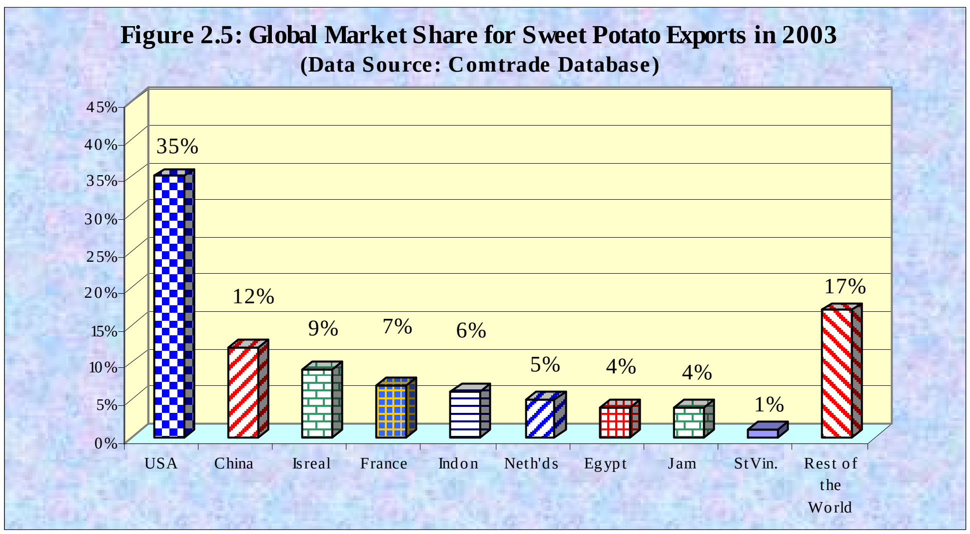


Figure 2.5: Global Market Share for Sweet Potato Exports in 2003
(Data Source: Comtrade Database)
45%
40%
35%
30%
25%
20%
15%
10%
5%
0%
35%
12%
9%
7%
6%
5%
4%
4%
1%
17%
USA
China
Isreal
France
Indon
Neth'ds
Egypt
Jam
StVin.
Rest of the World

SECTION 3

A PROFILE OF THE USA MARKET FOR SWEET POTATO

3.0 Introduction

In this section and the three that follow, we examine the major markets for Sweet Potato that is of interest to CARICOM producers. These are:

(i) North America – principally the eastern USA
(ii) Canada – mainly the Eastern Provinces
(iii) The EU – mainly the UK and The Netherlands
(iv) The Caribbean Region, inclusive of CARICOM

We examine these with a view to determination of the characteristics of these markets, trends and whether there are opportunities for CARICOM producers. Also of concern is the relationship of production and the percent that goes into world trade. We also examine the prevailing prices in these markets, demand and supply characteristics as well as regulations which impact on market entry. However these are treated separately – firstly, prices are presented in Section 7 and the regulatory environment in these markets in Section 8.

In this section, we begin with the US situation. We start by noting that the USA has an embargo against all imports of Sweet Potato to the mainland from CARICOM countries on account of SPS concerns. Nonetheless, we review the USA situation to get an insight into that market given that it is an exporter of Sweet Potato and therefore could potentially enter the CARICOM market as a competitor.

3.1 The USA Consumption and Trade

The USA produces an estimated 687,273 tonnes annually (1999/2001), of which about 97% is utilized within the country. Export quantities and values have been increasing from 17,141 tonnes in 1998 valued at USD 10.8 mn to 23,764 tonnes in 2002 valued at USD 15.0 million.

Imports have been negligible accounting for about 1% of consumption in 2001. These imports originated mostly from the Dominican Republic into Puerto Rico. Smaller quantities were also imported from China, Taiwan, India, Colombia, Peru, Hong Kong, The Philippines and Costa Rica.

Canada remains the major export market for U.S. sweet potatoes, but substantial inroads have been made in the United Kingdom.

3.2 Varieties

Sweet potato is commonly referred to as yams in the USA[3]. Two basic types of sweet potatoes are available on the US market - the 'moist-flesh' types which are sweet, orange, soft and the flesh is moist when cooked and 'dry-flesh' types which are dry, starchy and have a firm flesh when cooked. The moist-flesh types are also known as dessert-types or soft-fleshed varieties and account for most of the output in the USA. Varieties produced in the Caribbean are referred to as the 'dry-flesh' types which may be yellow or white in flesh colour[4].

The varieties marketed in the USA include CA Oriental Type, Yellow Jersey, Japanese Type, One Beauregard, White Type, Okinawan Type, and Beauregard White Type.

3.3 Demand Characteristics

Sweet potato consumption in the USA appears to be concentrated during the fall months (October – December) where about 39% of production in consumed. Holiday occasions are also noted for increased demand. Sweet potatoes have had limited success in the food-service industry, where much of the growth in USA's food consumption has taken place since the 1960s (ibid).

Demographically, the per capita consumption of sweet potatoes was found to be highest among Puerto Ricans, African-Americans and Caribbean and Latin American ethnic communities. Many

[3] This nomenclature has created some difficulties in its classification and treatment.

[4] Reference Source: USDA. Commodity spotlight http://www.ers.usda.gov/publications/agoutlook/Nov2002/ao296e.pdf

of the last-mentioned prefer the dry-flesh varieties common to their homelands. The low average daily consumption likely reflects the seasonal nature of sweet potato demand and the relatively low adoption rates by the food-service and industrial foods industries. Few ethnic restaurants (e.g., Italian, Chinese, Lebanese, Korean, and Indian) use sweet potatoes in their cuisine. Sweet potato is reportedly favoured most by the middle-income consumers (ibid).

An estimated 60-70% of the USA's sweet potato crop is consumed in the fresh-roots form, or as canned, frozen or dehydrated foods and is used in a variety of products such as pie fillings, purees, candied pieces, souffles, baby foods (ibid).

3.4 Supply Characteristics and Trade Flows

During 1999-2001, North Carolina accounted for about 37 % of the U.S. sweet potato crop, of which more than 75% is sold in the fresh market and the rest sold for processing or used for seed stock. North Carolina markets fresh sweet potatoes year-round throughout the country, with substantial volume moving to New York, Baltimore, and Chicago. Louisiana, the second leading sweet potato producer, accounted for about 24 % of the U.S. crop during 1999-2001 valued at USD 46 mn. The majority of its output is used for processing (largely canning). Fresh markets for Louisiana include Chicago and Detroit (ibid).

California, with one-fourth the acreage of North Carolina and the highest yields in the industry, is the third leading producer of sweet potatoes, accounting for 18 percent of the U.S. crop during 1999-2001, and valued at USD 63 mn. Production has been increasing slowly over the past 8-10 years. More than 75 percent of the crop is reportedly sold in the fresh market annually. Major fresh markets for California growers include Los Angeles, San Francisco, and Seattle (ibid).

3.5 Product Availability

From the available price database, only the Beauregard variety was available on the Miami market and was found throughout the year (see Table 3.1). The majority of supply for this market came from North Carolina and Louisiana growers. However, in the case of the New York Terminal Market, the Beauregard White Type, Beauregard and Oriental Type are available on the market throughout the year. North Carolina supplies all three varieties to this market, Louisiana supplies the Beauregard and California supplies the Oriental Type. Mississippi, New Jersey and Alabama supply this market for just about the last three months of the year.

Table 3.1: Sources of Supply and Availability of Sweet Potato in the USA (2001-05)

Sources of Supply	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	Varietal Availability on the Miami Terminal Market											
North Carolina	B	B	B	B	B	B	B	B	B	B	B	B
Louisiana					B	B	B					
Alabama		B							B	B		
	Varietal Availability on the New York Terminal Market											
North Carolina	BW B O	BW B O	BW B O	BW B O	BW B O	BW B O	BW B O	BW B O	BW B O	BW B O	BW B O	BW B O
Louisiana	B	B	B	B	B	B	B	B	B	B	B	B
Mississippi										B	B	B
New Jersey										B	B	B
	B									O	O	O
California	O	O	O	O	O	O	O		B O	O	O	O
Alabama										B		

Key: BW – Beauregard White Type; B – Beauregard; O – Oriental Type

Data Source: Today's Market Prices & USDA.

3.6 Prices and Regulations

As noted earlier, discussion on prevailing prices and regulations in this market are presented in Sections 7 and 8.

SECTION 4

A PROFILE OF THE CANADIAN MARKET FOR SWEET POTATO

Canada's production of sweet potato is relatively insignificant. Consumption level in 2001 was entirely from imports, valued at USD 11.6 mn (2001).

The major suppliers to the Canadian market are the USA, supplying 85% of total imports, followed by Jamaica, supplying at just about 7% in 2001. Imports from the 'Rest of the World' including Brazil, Colombia, Sri Lanka, Costa Rica, Japan and Mexico among others, totals less than 2% (Figure 4.1).

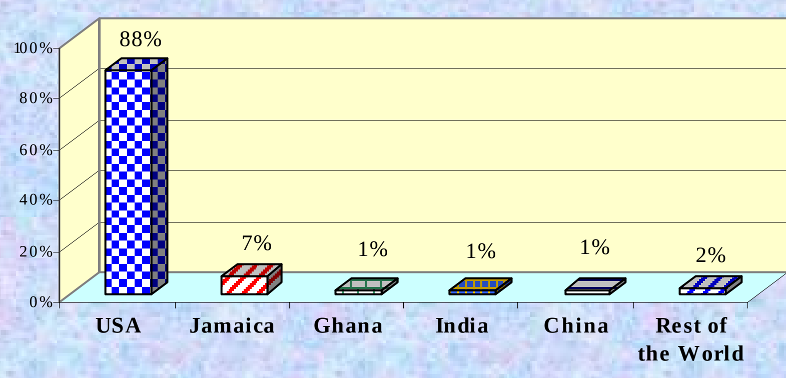


Figure 4.1: Top Five Sources of Sweet Potato Imports into Canada in 2001 (Data Source: Hemispheric Database)

Sweet potato imported into Canada is made available through two major marketing channels: (i) the terminal markets; and (ii) the distributors' warehouses. At the retail level, consumers have access to this product through the green grocers, supermarkets and hypermarkets.

The commodity in the retail market includes USA Sweet Yam (red flesh colour), Red China Yam (white flesh colour) and the Caribbean Sweet Potato (yellow flesh colour). These are illustrated in Pictures 4.1 and 4.2.

Picture 4.1: Skin Colour and Shape of Sweet Potatoes in the Canadian Market
L-R Caribbean Sweet Potato, Red China Yam and USA Yam respectively

Picture 4.2: Pulp Colour of Sweet Potatoes in the Canadian Market
L-R Caribbean Sweet Potato, Red China Yam and USA Yam respectively

California supplies the Toronto Terminal Market from July to October and the Montreal Market from March to October (Table 4.1). Other suppliers also have a presence in these markets and supplies are available throughout the year.

Table 4.1: Sources of Supply and Availability of Sweet Potato in the Canadian Market (Year 2005)

Sources of Supply	Varietal Availability on the Toronto Terminal Market											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
California							G	G	G	G		
	Varietal Availability on the Montreal Terminal Market											
California			G	G	G	G	G	G	G	G		

Key: G - Garnet

SECTION 5

A PROFILE OF THE EU MARKET FOR SWEET POTATO

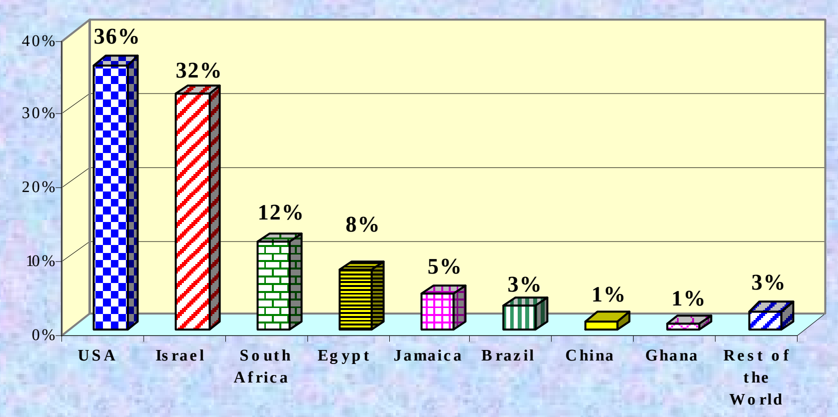
5.1 Production

The EU produced an estimated 54,760 tonnes of sweet potato in 2005, decreasing from 71,817 tonnes in 2001; a decline of 20,057 tonnes or 28%. The major producing countries in the EU in 2004 were Portugal (22,000 tonnes), Italy (21,260 tonnes), Spain (9,500 tonnes) and Greece (2,000 tonnes). Between 2001 and 2004, Italy’s production increased by 12% while Spain’s production declined by 37% and Greece’s 55% (FAOStat Database).

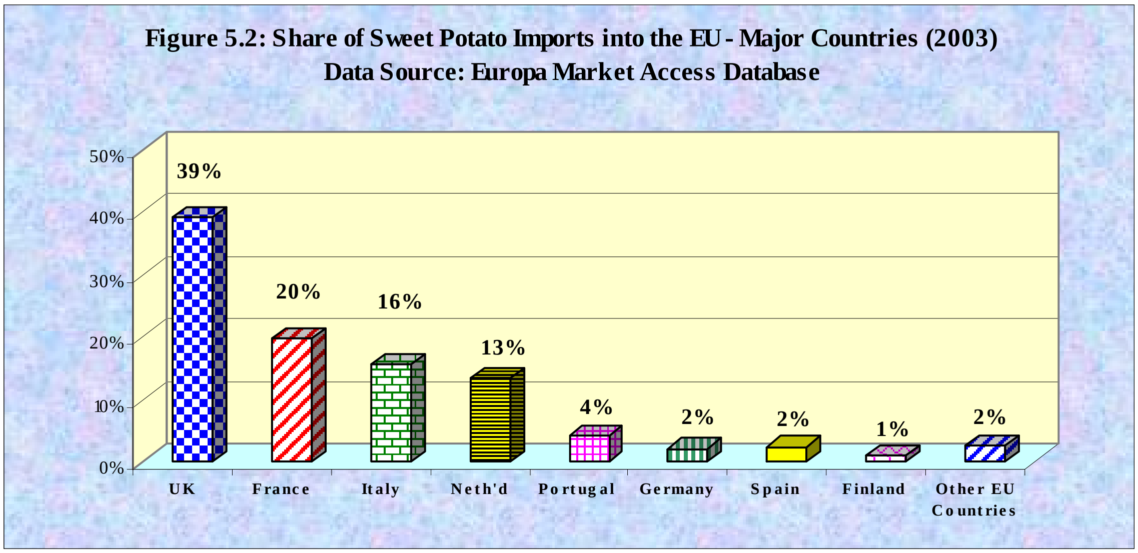
5.2 Imports

The EU imports of sweet potato average about USD 20 mn annually over the period 2002-2004 (Eurostat Comext). The major sources of imports are the USA (36%), Israel (32%), South Africa (12%) and Egypt (8%) and Jamaica (5%) as shown in Figure 5.1. Other countries with significant market share included Brazil, China, and Ghana.

Figure 5.1: Sources of Imports of Sweet Potato into the EU (2002/04 av)
Data Source: Eurostat Comext



Sweet potato imports into the EU increased by 42% from 2001 to 2004, from 19,174 tonnes valued at USD 16.8 mn to 27,305 tonnes valued at USD 25.7 mn. The largest importers were the UK (39%), France (20%), Italy (16%), Netherlands (13%) and Portugal (4%) (Figure 5.2).



Highest annual growth rate of import volume between 1999 – 2003 was recorded for Portugal (55%), Ireland (34%), Finland (31%), the UK (22%), the Netherlands (21%) and France (9%). Declines were recorded for Italy (21%), Belgium (16%) and Spain (9%). Portugal, although having a small market share compared to the UK and France exhibited a faster rate of growth over the period.

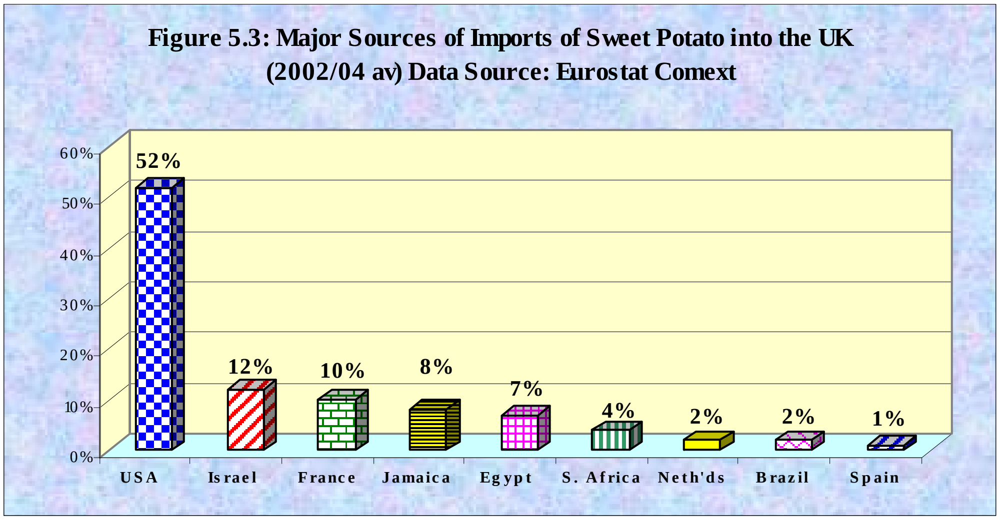
5.3 Imports into the United Kingdom

The UK imported an estimated 11,766 tonnes of sweet potato valued at USD 11.4 mn (2002/04 avg.) from non-EU countries. In addition, an estimated 1,664 tonnes valued at USD 1.8 mn was imported over the same period from within the EU-15: mainly France, The Netherlands and Spain (Eurostat Comext database).

The USA accounted for USD 6.9 mn (7,127 tonnes) or 52% of the total sweet potato import value into the UK over the period. Imports from Jamaica accounted for USD 1.0 mn (562 tonnes) or 8% of the market. The sources of imports into the UK by market share are presented in Figure 5.3.

5.4 Exports

Although major importers of sweet potatoes, France and the Netherlands are also engaged in re-exports, mainly within the EU.



5.5 Availability

The UK market was supplied with sweet potato throughout the year by the Cameroon, Cote D'Ivoire, Fiji, Jamaica, Madagascar, Mexico, South Africa, Suriname, Departments of the UK and the USA (Table 6.1). Israel, a major supplier to the UK, supplied for 10 months and within the CARICOM Region, Barbados supplied the market from November to June.

Table 5.1: Sources of Supply and Availability of Sweet Potato in the United Kingdom

Sources of Supply	Availability on the UK Market – New Covenant											
	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
Barbados	●	●	●	●	●	●					●	●
Cameroon	T	T	T	T	T	T	T	T	T	T	T	T
Canary Islands	●	●	●	●	●	●				●	●	●
Costa Rica	●								●	●	●	●
Cote D'Ivoire	S	S	S	S	S	S	S	S	S	S	S	S
Dominican Republic	●	●	●	●	●	●	●	●	●	●	●	●
Egypt								●	●	●	●	●
Fiji	●	●	●	●	●	●	●	●	●	●	●	●
Israel	●	●	●			●	●	●	●	●	●	●
Jamaica	●	●	●	●	●	●	●	●	●	●	●	●
Madagascar	●	●	●	●	●	●	●	●	●	●	●	●
Mexico	R	R	R	R	R	R	R	R	R	R	R	R
South Africa	●	●	●	●	●	●	●	●	●	●	●	●
Spain	●	●	●	●					●	●	●	●
Suriname	●	●	●	●	●	●	●	●	●	●	●	●
Uganda	●	●	●	●	●	●	●	●				
United Kingdom	T	T	T	T	T	T	T	T	T	T	T	T
United States of America	●	●	●	●	●	●	●	●	●	●	●	●
Zimbabwe	●	●	●	●	●	●	●					

Source: re:fresh Directory: 2005.

SECTION 6

A PROFILE OF THE CARIBBEAN REGION MARKET FOR SWEET POTATO

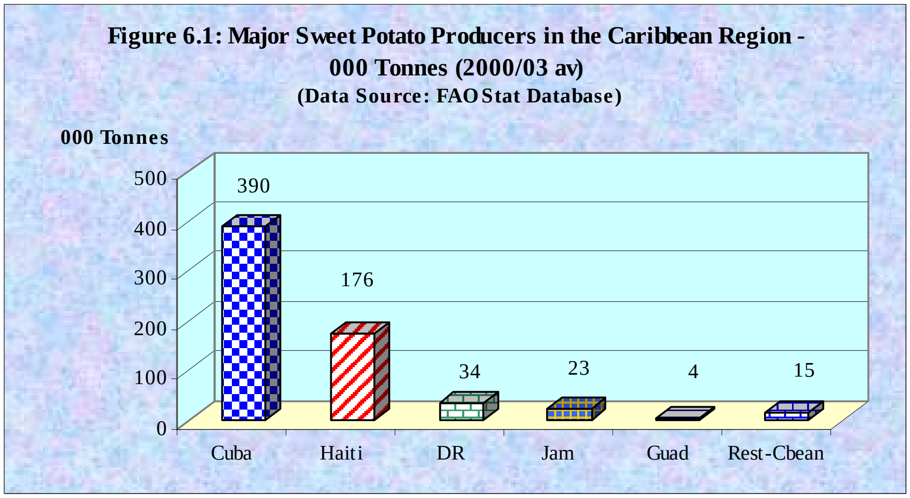
6.0 Introduction

In this Section of the Report we examine the status of the sweet potato industry in the wider Caribbean Region. We review the production, trade and consumption situations. The analysis attempts to determine the Regional market potential for the commodity as well as opportunities for exports and trade. Since sweet potato is widely produced in many countries of the Caribbean Region and given the potential for trade, this assessment of the market potential includes other major Caribbean producers along with CARICOM countries.

6.1 Production

Caribbean sweet potato production has shown increases in recent years, from 528,077 in 1999 to 730,513 tonnes in 2004 (FAOStat database). Cuba, with an annual average production of 389,626 tonnes is the largest producer, accounting for 60% of the Caribbean Region's total. Other major sources of production are Haiti 176,000 tonnes (28%), the Dominican Republic 33,846 tonnes (5%), Jamaica 22,727 tonnes (4%), and St Vincent and the Grenadines and Guadeloupe producing approximately 1% of the Caribbean's total (Figure 6.1).

According to the FAO Statistics, over the period 2000-2003 CARICOM countries produced an average of 33,331 tonnes of sweet potato annually. Jamaica, the largest grower, produced 68% of CARICOM's total (Figure 6.2 and Table 6.1). The other major producers were Guyana 7% (2,365 tonnes), Barbados 7% (2,345 tonnes), Dominica 6% (1,850 tonnes), St Vincent and the Grenadines 5% (1,525 tonnes) and St Lucia 2% (804 tonnes). The production volumes for the non-CARICOM countries are presented in Table 6.2.



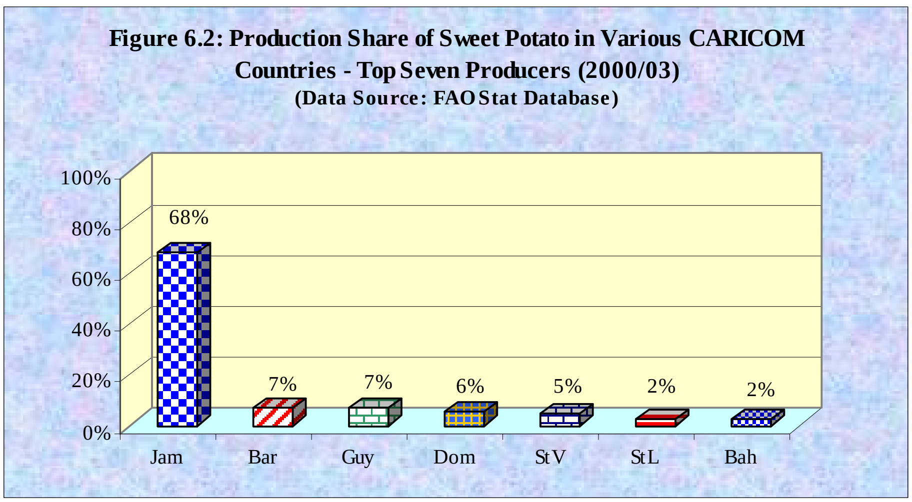


Table 6.1: Sweet Potato Production and Trade for CARICOM Countries (2000-2003 Average) Tonnes

Countries	Production	Imports	Exports
Antigua	156	37	-
Bahamas	762	252	-
Barbados	2,345	27	1.7
Belize	223	-	-
Dominica	1,850	-	60
Grenada	284	16	-
Guyana	2,265	-	-
Jamaica	22,727	-	1442
Montserrat	20	-	-
St Kitts Nevis	150	9	-
St Lucia	804	-	-
St Vincent	1,525	-	734
Trinidad & Tobago	220	477	-
Total	**33,331**	**818**	**2237.7**

Data Source: FAOStat Database

Table 6.2: Sweet Potato Production and Trade:
Non-CARICOM Caribbean Countries: (2000-2003 Avg) Tonnes

Countries	Production	Imports	Exports
Aruba	-	9	-
Cayman Islands	7	-	-
Cuba	389,626	-	-
Dominican Republic	33,846	-	8,446
Guadeloupe	4,210	-	-
Haiti	176,000	-	-
Martinique	1,185	-	-
Puerto Rico	2,956	-	-
Total	**607,830**	**9**	**8,446**

Data Source: FAOStat Database

6.2 Imports

Within CARICOM only two countries, Trinidad and Tobago and The Bahamas imported significant quantities of sweet potato. Trinidad and Tobago was the largest importer, representing 58% of total CARICOM imports. Over the period 2000/2003, the country imported an average of 477 tonnes annually, all of which was supplied by St Vincent and the Grenadines. The Bahamas annual imports averaged 252 tonnes over the period 2000/2003, all of which came from the USA (Table 6.1).

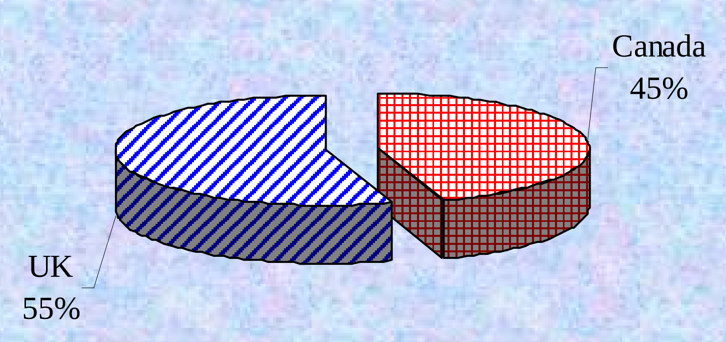
6.3 Exports

The major Caribbean exporters of sweet potato were the Dominican Republic, Jamaica and St Vincent and the Grenadines, with annual export volumes averaging 8,446 tonnes, 1,442 tonnes and 734 tonnes respectively (2000-2003). Smaller volumes were exported out of Dominica and Barbados.

Exports from the Dominican Republic represented approximately 25% of the country's production. Puerto Rico was the major market for exports from the DR, absorbing approximately 89% of total exports. Smaller amounts (7%) were exported to the US Virgin Islands.

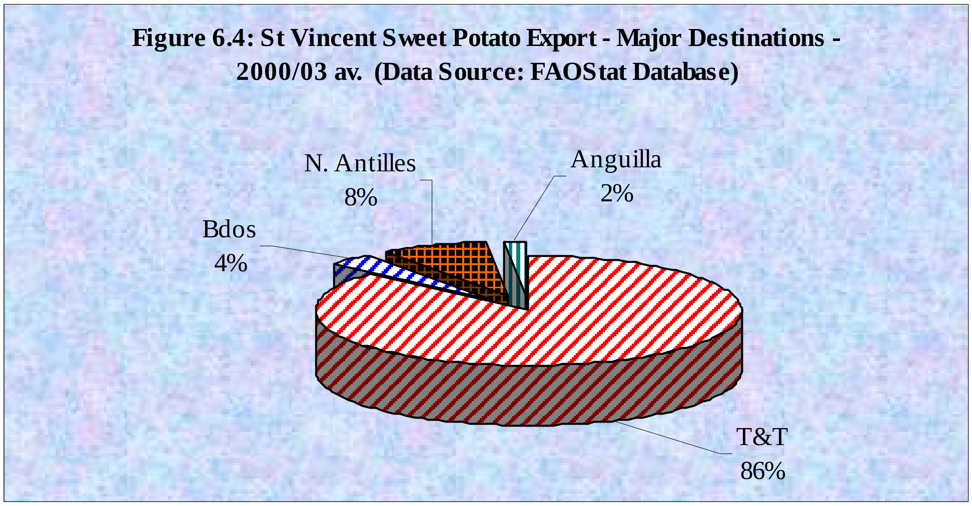
Jamaica's export of sweet potato averaged 1,442 tonnes over the period 2001-2003, representing about 6.3 % of production. The major export markets were the United Kingdom, accounting for approximately 55 % of total exports from Jamaica (or 8% of the UK's total import volume), and Canada 40-45 % of the export volume (Figure 6.3). Only small quantities were exported intra-regionally, mainly to the Cayman Islands.

Figure 6.3: Jamaica Sweet Potato Export - Major Destinations - 2000/03 av. (Data Source: FAOStat Database)



The other significant CARICOM exporter of sweet potato was St. Vincent and the Grenadines. Unlike Jamaica, most of the island's exports were to Caribbean destinations. Trinidad and Tobago was the major market, accounting for 80-90 % of exports (Figure 6.4). St Vincent exported smaller quantities to the Netherlands Antilles, averaging 8% of exports over the period 2002-2004; Barbados (3.7%) and Anguilla (1.6%).

Exports of sweet potato from St Vincent declined drastically in 2001, from an average of 1,406 tonnes over the period 1995-2001, to less than one half or an average of 594 tonnes over the period 2001 -2003.



Export of sweet potato from Dominica was relatively small, averaging 60 tonnes over the period 2000 – 2003. Most of the exports were to nearby Caribbean Islands. Barbados recorded small amounts of exports of sweet potato, declining from 3.4 tonnes in 2002 to 1.5 tonnes in 2003. The country also imported sweet potato from St Vincent, except for 2001 when 50% of its imports came from the USA.

Table 6.3: Main Caribbean Exporters of Sweet Potato:
Volume of Exports: 2000- 2003 (tonnes)

Exporting Country	2000	2001	2002	2003
Dominica*	68	79	46	47
Dominican Republic*	9,766	9,627	7,238	7,154
Jamaica**	1377	1506	1473	1346*
St Vincent***	1423	627	730	426
Barbados****	-	0.2	3.4	1.5

Sources: * = FAOStat Database; **= Ministry of Agriculture, "Sweet Potato Export Feasibility Study";
*** = CARICOM Trade Stats, **** Comtrade Database

6.4 Consumption

Based on the FAO Statistics, the total consumption of sweet potato in CARICOM was estimated at about 31,000 tonnes, estimated from production values *less* extra-regional exports The major consuming countries were Jamaica (20,379 tonnes) and Barbados (2,369 tonnes).

In the non-CARICOM countries, an estimated 599,379 tonnes were consumed annually. Cuba and Haiti represented the largest market in the Caribbean at a consumption of 389,613 tonnes and 176,000 tonnes respectively.

The per capita consumption of sweet potato was calculated for most of the countries in the Caribbean. The data suggests five levels of consumption as indicated in Figure 6.5 and Table 6.4. Very high consumption levels (Level I: greater than 20 kg per capita) were noted for Cuba, Haiti and Dominica. This group also comprises countries with relatively low per capita income. There were no countries falling in the Level II consumption category: 10 – 20 kg / capita. Level III consumption category was significantly lower than the first with per capita consumption ranging from 5-10 kg, with Guadeloupe, Barbados, Jamaica, St Vincent and the Grenadines, St Lucia and Montserrat belonging to this group. Low levels of consumption, 2-5 kg per capita, were noted for seven countries and very low levels, less than 2 kg per capita, for Trinidad and Tobago, Puerto Rico and Belize.

Figure 6.5: Sweet Potato Per Capita Consumption Ranges - Various Caribbean Countries (2000/03 av)

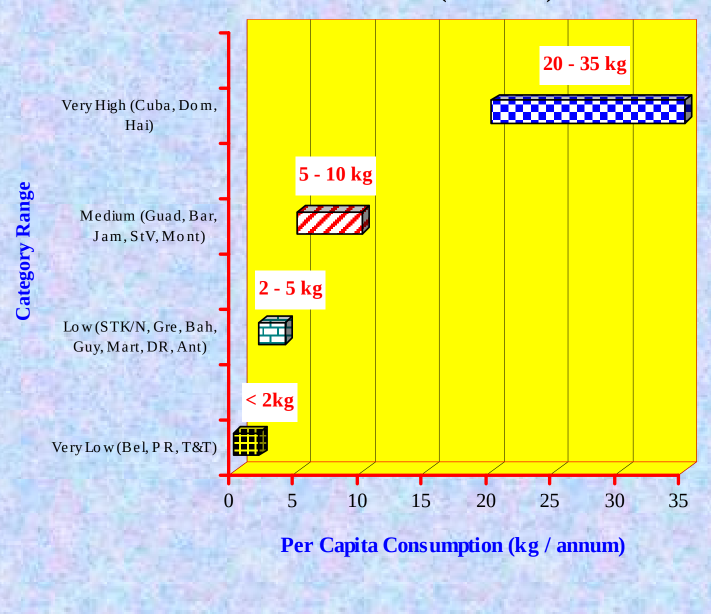


Table 6.4: Per Capita Consumption of Sweet Potato (avg. 2000-03)

Consumption Level Category	Countries	Total Consumption (tonnes)	Population (1,000)	Per capita consumption (kg)
I: Very High (>20 kg)	Cuba	389,612	11,253	34.62
	Dominica	1790	78	22.95
	Haiti	176,000	8,165	21.56
II: Medium (5-10 kg)	Guadeloupe	4,210	434	9.70
	Barbados	2,369	269	8.81
	Jamaica	21,285	2,615	8.14
	St Vincent & the Grenadines	791	119	6.65
	St Lucia	801	148	5.41
	Montserrat	20	4	5.00
III: Low (2-5 kg)	St Kitts & Nevis	157	42	3.74
	Grenada	300	81	3.70
	Bahamas	1,014	309	3.28
	Guyana	2,347	763	3.08
	Martinique	1,185	389	3.05
	Dominican Republic	25,400	8,550	2.97
	Antigua	193	72	2.68
IV: Very Low (< 2 kg)	Belize	237	248	0.96
	Puerto Rico	2,956	3,848	0.77
	Trinidad & Tobago	687	1,296	0.53

6.5 Conclusion

The market review reveals the following characteristics:

(i) The largest Caribbean producers of Sweet Potato (Cuba, Haiti, the Dominican Republic) together account for 93 % of total production in 2004.

(ii) Amongst CARICOM countries, Jamaica is the largest producer accounting for 68% of the region’s production.

(iii) Other significant CARICOM producers are Guyana, Barbados, St Vincent and the Grenadines and St Lucia, together accounting for 27% of CARICOM’s production.

(iv) The remaining CARICOM countries produce only negligible quantities of Sweet Potato, together accounting for 5 % of the region’s output.

(v) Only 6.7 % of CARICOM’s production are exported – Jamaica and St Vincent and the Grenadines being the major exporters.

(vi) Jamaica exported 1,442 tonnes or 6.3 % of production (2000 – ‘03): 55 % to the UK - accounting for 8 % of that country’s imports; and 45 % to Canada.

(vii) St Vincent & the Grenadines exports 734 tonnes (2000 - '03): intra-Caribbean destinations with Trinidad and Tobago being the major market.

(viii) Only small quantities of Sweet Potato are imported – Trinidad and Tobago and The Bahamas being the major importers with the former importing 477 tonnes from St Vincent & the Grenadines and the latter 252 tonnes from the USA (2000-03).

(ix) There is no evidence of significant commercial value added production of food or non food products.

Consumption: The data suggest relatively low levels of sweet potato consumption in a number of countries in the Region. Further, most of this consumption is in the fresh form. Recent medical research has recognized the significant health benefits associated with the consumption of sweet potato. Sweet potato is said to be high in dietary fiber and is found to lower the risk of diverticulosis, colon cancer, heart disease and diabetes. Research notes that the commodity possesses a unique root storage protein that is associated with significant antioxidant capacity. Sweet potato has also been labeled as an "Anti-diabetic" food because of its ability to stabilize blood sugar levels and lower insulin resistance.

Given the low levels of sweet potato consumption in the Region, opportunities exist to better exploit the dietary benefits of this food item, thus expanding consumption. Additionally, since most of the consumption of sweet potato is in the fresh form, the potential also exists to expand consumption through value added product development.

SECTION 7

SWEET POTATO PRICE ANALYSIS

7.0 Introduction

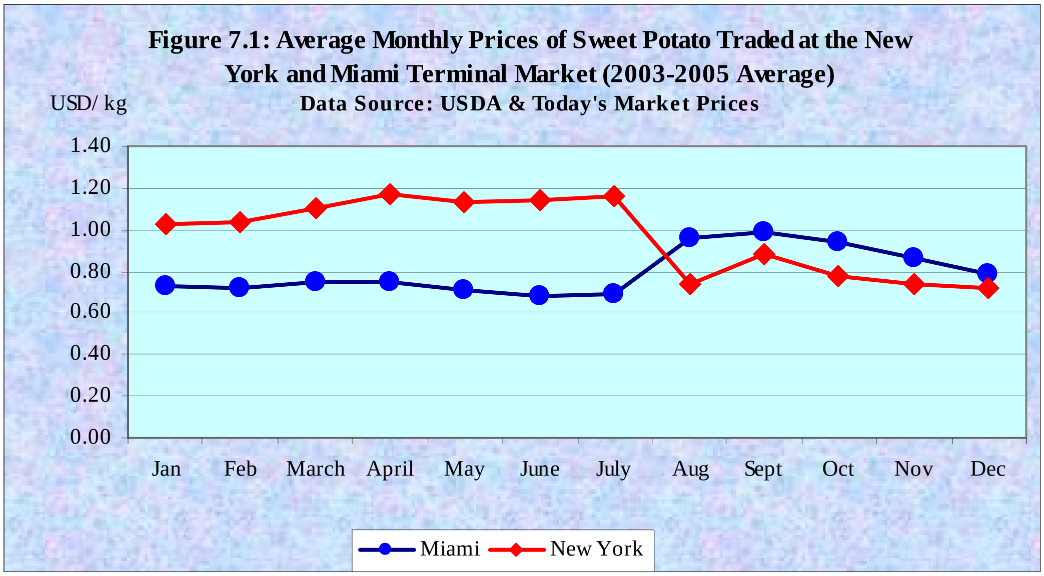
In this Section of the Report we review the prices prevailing in the various markets of interest. We first present the situation in the USA, focusing on the Miami and New York markets. Prices in Canada and the EU are then reviewed, followed by the regional market situation.

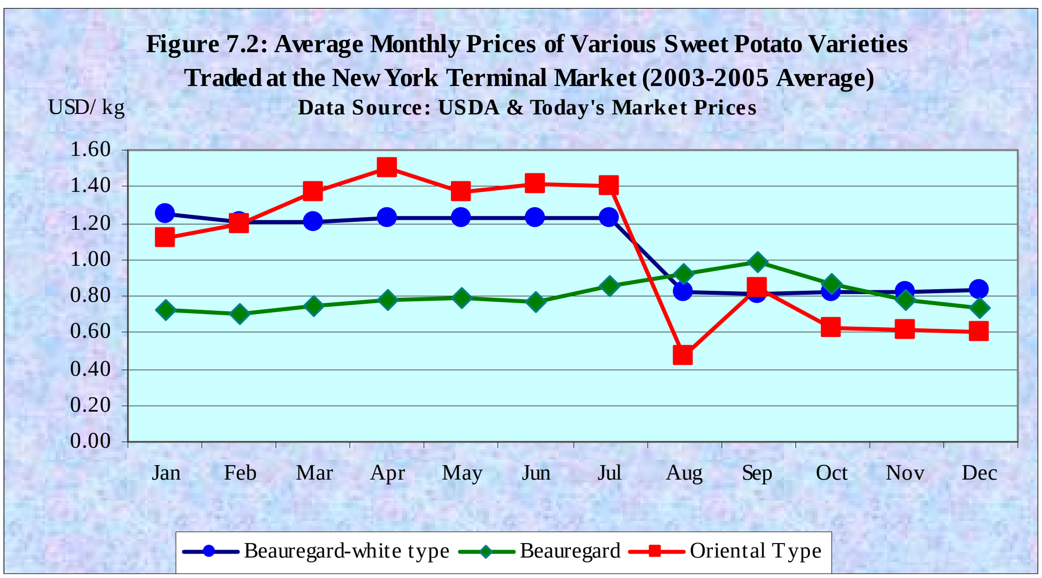
7.1 Prices – The USA Market

The producer price for sweet potatoes averaged USD 0.33 / kg (f.o.b. shipping point) during the 1999-2001 seasons, up 6% from the previous 3 years (1996-98), and 23% above the 1989-91 average (USDA, 2002).

A review of the wholesale prices for sweet potato at the terminal markets during 2003/05 show an average wholesale price of USD 0.97 / kg at New York and USD 0.80/kg at Miami. The data suggests seasonal variability with prices declining during the second half of the year at New York, but increasing in the case of Miami (Figure 7.1, Annex Table A7.1). Also during the first part of the year, sweet potato at the New York market traded at 54% above that for Miami. However, during the latter half of the year, prices at the Miami Terminal were 17% (USD 0.14/kg) above those at New York.

Prices of Various Sweet Potato Varieties: The major varieties of sweet potato traded in the two terminal markets being examined were Oriental Type, Beauregard-White Type and Beauregard. At the New York Terminal market Beauregard-White variety attracted the highest average price of USD 1.06 / kg while the price of the Oriental Type was marginally lower at USD 1.04/kg (Figure 7.2). The Beauregard variety traded at USD 0.80/kg or USD 0.26 / kg below the Beauregard-White Type.





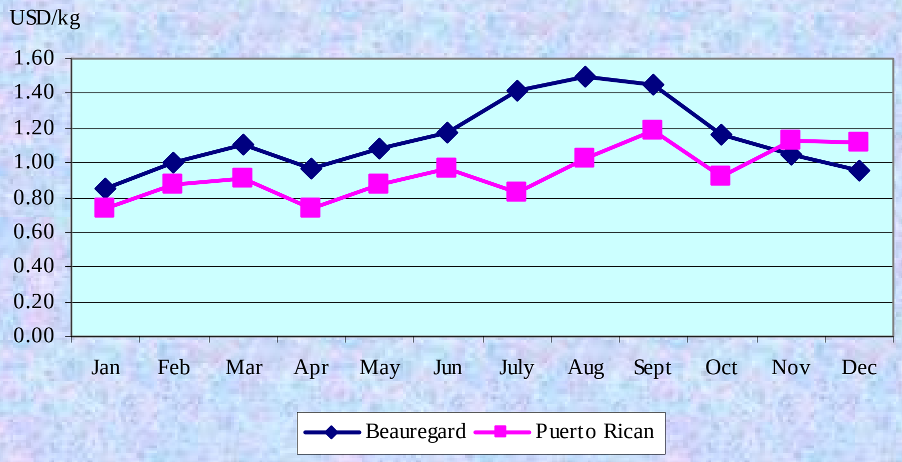
7.2: Prices – The Canadian Market

We examine here the price of sweet potato in the Eastern Provinces of Canada, the relevant shipping destinations for Caribbean exports.

Sweet potato imports into Canadian port of entry in the Toronto region was declared at a c.i.f. price of USD 685.00 / tonne (USD 0.68/kg) in 2003 (Comtrade database). However, at the Ontario Food Terminal, wholesale prices for sweet potato averaged USD1.14/ kg for Beauregard and USD 0.94 / kg for the Puerto Rican type (2002/04 avg.), see Annex Table A7.2. Higher prices were observed during the summer months of June to September (Figure 7.3).

At the retail level, Caribbean sweet potato was priced at approximately three times the price of USA sweet yam (sweet potato). During August 2004, the Caribbean product was retailing for CDN $ 2.99 / kg (USD 2.27/kg) while the USA sweet yam (sweet potato) was priced at Can $ 0.99 / kg (USD 0.75/kg) and the Red China Yam (sweet potato) at Can $ 1.50 / kg (USD 1.14/kg).

Figure 7.3: Average Wholesale Prices for Various Sweet Potato Varieties Traded at the Ontario Food Terminal, Toronto (2002/04 av)
(Data Source: Infohort & Today's Market Prices)



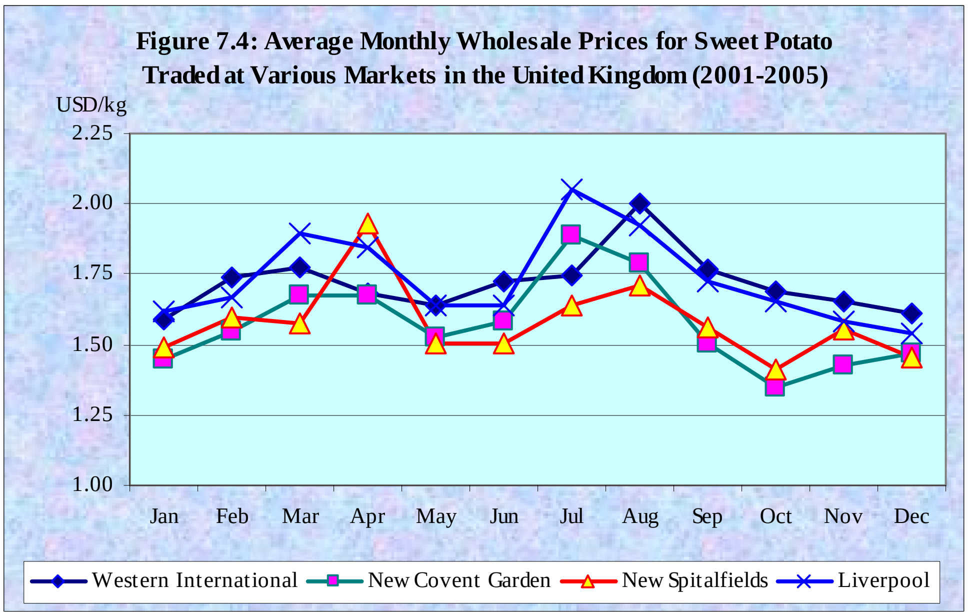
7.3 Prices – The EU Market

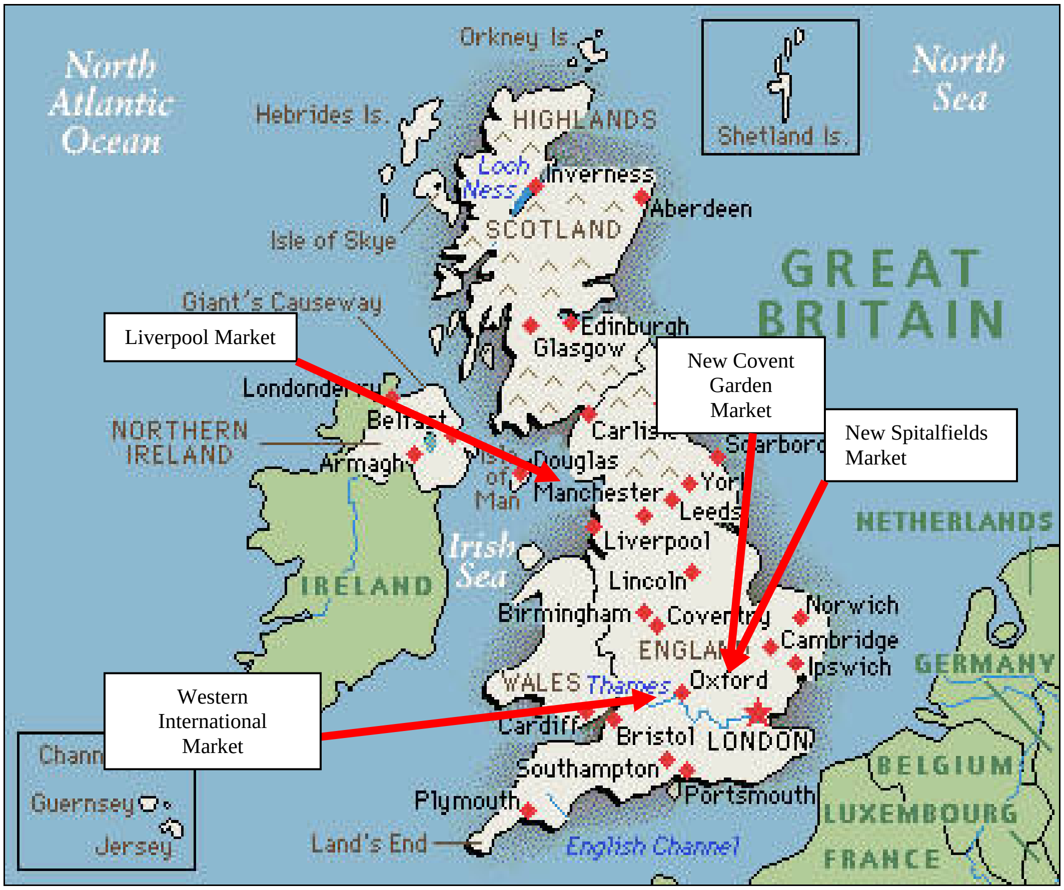
Preliminary review of the databases found two sets of prices (i) border market prices and (ii) wholesale market prices. The c.i.f. price of sweet potato imports into the EU varied across countries, reflecting, in part, internal transport cost. In 2003 most prices were in the range USD 1,000 – 1,300/tonne (USD 1.00 – 1.30 /kg).

Over the period 2001-2005, average wholesale prices of sweet potato in the UK, which is the major market destination for Caribbean exports, were as follows (Figure 7.4, Map 7.1; Annex Table A7.3):

(i) In the case of the New Spitalfields and the New Covent Garden Terminal markets, prices were similar, averaging USD 1.58 / kg

(ii) At the Liverpool and the Western International Terminal markets, prices were also similar, averaging USD 1.73 / kg. The higher prices reflect the additional transportation and handling costs to these markets.





Map 7.1: Map of the UK showing Location of Major Markets

7.4 Prices at Various Regional Wholesale Markets – CARICOM

Sweet potato is consumed in the primary form, boiled and eaten as a vegetable in the CARICOM Region. The crop is largely marketed fresh, within a few days of harvest. A number of varieties are grown, mostly of the white and yellow flesh dry types, with unique names in each country.

Jamaica: The Jamaican domestic market consumes an estimated 21,285 tonnes of sweet potato annually. Marketing is done at the wholesale / farmgate level and the retail level at the Coronation and other municipal markets, in roadside stalls and at supermarkets. Wholesale/ farmgate prices averaged USD 0.47/kg (2000/02 av), representing a market size of about USD 10.00 mn.

Trinidad and Tobago: Wholesale marketing takes place at the country's two wholesale markets, one located at the north of the country in Macoya and the other at the south in the town of Debe. Sweet potato is then redistributed to various municipal and roadside markets across the country. Over the last three years (2004/06), wholesale prices averaged USD 0.76/kg. At an estimated average consumption of 697 tonnes, the size of this market is estimated at USD 0.53mn. The wholesale prices in this market have been showing fluctuating but increasing trend (Table 7.1).

Guyana: Guyana represented the next largest market in CARICOM, consuming about 2,265 tonnes annually (2000/03 av). Trading of sweet potato is done at both the farm gate and the wholesale market levels. At average wholesale (including farmgate) price of USD 0.35/kg (2003/05 av), the market was estimated at USD 0.79mn.

Compared to Jamaica and Trinidad and Tobago, the lowest average prices prevailing at the wholesale level was observed in Guyana. However, this must be treated with some level of caution, given the incompleteness of the database.

Table 7.1: Sweet Potato Prices at Various Regional Wholesale Markets in CARICOM (USD / kg)

Year	Jamaica	Guyana	Trinidad and Tobago
1999	0.37		0.35
2000	0.481		0.46
2001	0.42		0.54
2002	0.53	0.42	0.40
2003	0.65	0.41	0.86
2004	1.01	0.37	0.55
2005	1.22	0.28	1.13
			0.62
Exchange rates Applicable	Jamaica US$ 1= J$ 60	Guyana US$ 1= G$ 180	Trinidad & Tobago US$ 1= TT$ 6.30

Data Sources: (1) Jamaica – Data collection & Stats Branch, data Bank & Evaluation Division, Min Agriculture; (2) Guyana – New GMC; Tdad - NAMDEVCO

7.5 Summary of Average Prices in Various Markets

The average wholesale prices for fresh Sweet Potato tubers for the various extra-regional and CARICOM markets are presented in Table 7.2. As indicated above, data was only available for three CARICOM countries.

Table 7.2: Average Sweet Potato Prices: Extra-regional and CARICOM Markets

(Wholesale Prices in USD/kg)

Market	Country	Average Prices	Comments
Extra- Regional Markets	USA (Miami & New York Terminals)	0.80 – 0.97	1. Seasonally lower prices August – December 2. Avg Miami prices lower than New York
	Canada (Toronto Terminal)	0.94 – 1.14	1. Jamaican Sweet Potato priced above others at the domestic retail level 2. cif price in 2003 = USD 0.68
	UK (New Spitalfields & New Covent Garden)	1.58	1. Cif prices 1.00 – 1.30
CARICOM	Jamaica	0.47	2000/02
	Guyana	0.35	2003/05
	Trinidad and Tobago	0.76	2004/06

SECTION 8

MARKET ACCESS: REGULATORY REQUIREMENTS FOR SWEET POTATO IMPORTS

8.0 Introduction

In this Section of the report we present the major requirements for access to the three major markets for Caribbean sweet potato exports: the USA, Canada and the EU markets. We have included the requirements for the USA market although this market, with the exception of Puerto Rico and the US Virgin Islands, is generally not accessible to Caribbean exporters on account of the stringent SPS measures. We however, are of the view that the Region may wish to consider the adoption of some of these measures since they could contribute to further development of the industry.

8.1 Regulatory Market Access Requirements – The USA

8.1.1 Restricted Pesticides

Environmental Protection Agency (EPA) of the USA registers pesticides and their use on specific pests and under specific circumstances. For example, "Pesticide A," registered for use on sweet potatoes, may not be used legally on another root crop. The EPA has the responsibility to inform other governments about unregistered pesticides exported from the USA and about pesticide regulatory actions taken in the country that may have significance for other countries[5].

The 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.

8.1.2 Pesticide Residue

The US Environmental Protection Agency also establishes tolerance limits as well as maximum residue levels of pesticides allowed for sweet potatoes. Inspectors from the Food and Drug

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5 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.

Administration and the United States Department of Agriculture monitor food imports as well as interstate commerce to ensure that these limits are not exceeded. Annex Tables A8.1 and A8.3 list the names of the pesticides that are allowed to be used on sweet potatoes and their respective tolerance levels for the US and Canadian market respectively[6].

8.1.3 Invasive Species

The USA also uses border control mechanisms to prevent entry of actionable pests. In this regard, imports of sweet potato into the USA have been approved for entry only into the ports of Puerto Rico and the United States Virgin Islands. Further, within the Region, only Barbados, Jamaica, St Lucia and St Vincent are allowed entry into these ports. Distribution of this imported sweet potato to other states and territories of the USA is prohibited. This restriction is based on phytosanitary regulations with specific concerns of the sweet potato weevil.

Shipments of sweet potato are inspected for both internal and actionable pests. Shipments are also inspected for signs of insect boring and surface discolouration, surface blisters, depressions or any irregularity in the case of nematodes. Where actionable pests (and soil) are observed, either treatment will be required, or entry refused.

8.1.4 Tariffs and Charges

Preferential entry of commodities from the CARICOM Region can also serve to improve their competitiveness. As presented for the other commodities, CARICOM member countries are allowed duty-free entry for most commodities into the USA under the CBI / CBERA arrangement.

8.1.5 Standards

Effective July 1, 1963 and reprinted - January 1997, the USDA published the United States Standards for Grades of Sweet Potatoes**.** Although described as voluntary, compliance with the provisions of these standards are expected for marketing sweet potatoes in the USA. It is also expected that in addition to compliance with these standards, the exporter / marketer must also

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6 The internet address is: < http://www.epa.gov/pesticides/regulating/cfr.htm >.

conform to the provisions of the Federal Food, Drug and Cosmetic Act, or with applicable State laws and regulations. The United States Standards for Grades of Sweet potatoes include:

United States Standards for Grades of Sweet Potatoes Grades
51.1600 U.S. Extra No. 1.
51.1601 U.S. No. 1.
51.1602 U.S. Commercial.
51.1603 U.S. No. 2.

These are described in detail in the Annex Table A8.2.

Further, on March 22, 2005, the U.S. Standards for Grades of Sweet Potatoes was revised by the USDA, adding a new grade called U.S. No. 1 Petite, which will allow for the packing and shipping of smaller sized sweet potatoes. The description of the revision was scheduled to appear in the March 22 Federal Register and become effective on April 21, 2005[7]. The description of U.S. No. 1 Petite is of the same requirements as the U.S. No. 1 grade currently in the standard, except for the size requirements. The standard specified for the U.S. No. 1 Petite is as follows:

A minimum diameter of 1\1/2\ inches, a maximum diameter of 2\1/4\ inches, a minimum length of 3 inches and a maximum length of 7 inches.

This new grade is expected to reduce rejects and assist in the marketing of smaller sized sweet potatoes. The previous standards discriminated against the marketing of smaller sized sweet potatoes.

8.2 Regulatory Market Access Requirements – CANADA

8.2.1 Documentation

The Canadian Agricultural Product Act regulates the entry and movement of fresh agricultural produce in Canada. 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)[8]. The regulations with respect to the grading, packing and marketing

[7] USDA Sweet Potato Grade Changed. Statpub.com. http://www.statpub.com/open/136598.phtml
[8] Source: Canada Agricultural Products Act < http://laws.justice.gc.ca/en/C-0.4/C.R.C.-c.285/index.html >

of fresh fruit and vegetables apply to all products supplied fresh to the consumer or those for food processing.

Single aggregate shipments (mixed products) of less than 15 containers and / or 250 kg are not governed under the Act. Further it is unlawful to import, export or participate in interprovincial trade in a commodity unless it meets the requirements of one of the grades established for it in the Regulations. SOR/95-475, s. 2[9]. (In the case of Canada, our review of the database did not locate grades for sweet potato).

Canadian importers of fresh fruits and vegetables (including sweet potato) as well as processed foods are required to be licensed with the Canadian Food Inspection Agency (CFIA) and /or be a member of the Dispute Resolution Council (DRC). An **Inspection Certificate** is necessary for certain products indicating they meet the minimum standards for quality, labeling, and packaging. Where the commodity is packaged into consumer-sized products (prepackaged), these must also be labeled with the information required under the Consumer Packaging and Labeling Regulations.

In an effort to prohibit consignment trading and protect the stability and equity in the Canadian market, a **Confirmation of Sale** (C.O.S.) form in triplicate is required. The form must be completed, signed and presented at time of entry. Information on this form includes product description, details of the sale, names and addresses of buyers and sellers, and evidence that the dealer purchased or agreed to purchase the agricultural product.

8.2.2 Market Access, Health and Safety / Standard

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.

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[9] Source: Canadian Food Inspection Agency, Food of Plant Origin Division. **Canadian Import,** Export and Interprovincial Requirements for Fresh Fruit & Vegetables **http://www.inspection.gc.ca/english/plaveg/fresh/cdnreqe.shtml#pr**

The minimum health and food safety requirements include:

- ✓ Food must not be adulterated or contaminated
- ✓ Food must be edible, free of any live insect, scorpion, snake, spider or other living thing that may be injurious to health.
- ✓ It must be prepared in a sanitary manner and where irradiated, it is done in accordance with Division 26 of Part B of the *Food and Drug Regulations*
- ✓ The food must also meet all other requirements of the *Food and Drugs Act* and the *Food and Drug Regulations* with respect to the produce
- ✓ Meets the requirements of the *Plant Protection Act* and the Regulations made under that Act.
- ✓ The adulterated or contaminated produce shall not be mixed with other fresh produce.
- ✓ No stagnant or polluted water should be used in the washing or fluming of the produce
- ✓ Only potable water should be used in the final rinsing of the produce to remove any surface contaminant before packing.
- ✓ In recycling, the final water can be reused only in the initial washing or fluming of the produce
- ✓ The produce must be handled with equipment that is regularly cleaned.

8.2.3 Packing House Conditions

It is important to ensure that foods do not become contaminated and / or undergoes adverse organoleptic effects when brought into the packing house and processing plant through touching the surfaces or from adsorption of volatile constituents in the atmosphere. Coating for direct food contact[10] as well as for walls and ceilings[11] are included in an approved list of manufacturers for the guidance of packers[12]. This can be located on the CFIA website and further detailed in the Annex to this document[13].

Recommended microbial control agents used in food process and flume water for fruit and vegetable must also be used in keeping with the instructions and levels outlined on the label.

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[10] **Source: http://www.inspection.gc.ca/english/ppc/reference/d6e.shtml**

[11] **Coatings for Construction: Coating for walls and ceilings http://www.inspection.gc.ca/english/ppc/reference/d1-aze.shtml**

[12] Source: Reference Listing of Accepted Construction Materials, Packaging Materials and Non-Food Chemical Products. http://www.inspection.gc.ca/english/ppc/reference/cone.shtml

[13] **Packaging Materials: Food contact http://www.inspection.gc.ca/english/ppc/reference/q1-aze.shtml**

8.2.4 Packaging and Labeling

Listed below is a summary of the packaging and labeling requirements:

Packaging

- ✓ Net weight of packages should not exceed 50 kg.
- ✓ Then information on the label must not misrepresent the quality, quantity, composition, nature, safety, value, origin or variety of the contents
- ✓ Package containers should not be so stained, soiled, warped, broken or damaged as to affect the shipping quality or salability of the produce

Labeling

Every container of prepackaged produce shall be labeled

(a) with the grade name, if any, and clearly indicate the common name of the produce, net quantity, and country of origin/grown[14]

(b) in accordance with the *Consumer Packaging and Labeling Act* and the *Consumer Packaging and Labeling Regulations.*

(c) labeled in one of the official languages

8.2.5 Other Border Control Regulations and Measures

Custom Inspection[15]: Request for inspection should be made at least 24 hours in advance to avoid delay and importers should make shipment readily accessible for inspection all produce from which samples can be drawn.

8.2.6 Plant Protection Regulations[16]

We have highlighted below, general plant protection regulations that govern the importation of fresh commodities into Canada. These are intended to protect the border from entry of invasive alien species.

[14] labelled to show on the principal display panel and in close proximity to the declaration of net quantity or the grade name, the words "Product of", "Produce of", "Grown in" or "Country of Origin", followed by the name of the country of origin of the produce

[15] Reference source: Canadian Food Inspection Agency Website http://www.inspection.gc.ca/english/toce.shtml

[16] **http://laws.justice.gc.ca./en/P-14.8/SOR-95-212/166770.html#rid-166866 Plant Protection Regulations Plant Protection Regulations.** SOR/95-212. Registration 28 April, 1995. PLANT PROTECTION ACT

- ✓ The foreign Phytosanitary Certificate must be issued within 14 days before the product is shipped to Canada, and
- ✓ Imports are allowed without a permit where a pest risk assessment is conducted and is not included *List of Pests Regulated by Canada*[17],
- ✓ All imports must be declared to an inspector or customs officer at the designated ports of entry[18].

8.2.7 Food and Drug Regulations

Below in Box 8.1 we list the Food and Drug Regulations for fresh fruits and vegetables as listed in the Canadian *Food and Drug Regulations*[19].

Box 8.1
Food and Drugs Regulations: Fruits, Vegetables, their Products and Substitutes
[SOR/78-478, s. 1]

B.11.001.1. No person shall sell any fresh fruit or vegetable that is intended to be consumed raw, except grapes, if sulphurous acid or any salt thereof has been added thereto. SOR/87-374, s. 1.

Consolidated Statutes and Regulations. Enabling statute: Food and Drugs Act. Food and Drug Regulations . PART 2 BILINGUAL AGGREGATE FORMAT -- DIFFERENT AMOUNTS OF FOOD -- CHILDREN UNDER TWO YEARS OF AGE
Source: http://laws.justice.gc.ca/en/F-27/C.R.C.-c.870/127348.html. Updated to April 30, 2004

8.2.8 Pesticide Residue

In order to prevent residues in or on the imported food from posing an unacceptable health risk, MRLs are also established for pesticides not registered for use in Canada. Annex Table A8.3 lists the chemicals recommended for use on sweet potatoes. If residues exceeding MRL's are found, the food is prohibited for entry under the FDA. Under the *Food and Drugs Act*, sale of food

[17] *In addition, the list of pests found in Sweet Potato in the countries of the study but not Canada is presented in Annex C1.*

[18] ***Places of Entry**: The Canadian customs offices and Agency offices in Ontario designated as places of entry are Brampton,Cornwall,Fort Erie,Fort Frances,Hamilton, Lansdowne,London,Niagara Falls, Ottawa (including Macdonald-Cartier International Airport),Prescott,Rainy River, Sarnia, Sault Ste. Marie, Thunder Bay (Pigeon River), Toronto (Front Street, Interport Sufferance Warehouse, Midcontinent Truck Terminal, Lester B. Pearson International Airport and Sufferance Truck Terminal), Welland, and Windsor (Ambassador Bridge and Detroit/Windsor Tunnel);*

[19] Canadian *Food and Drug Regulations*[19]. **http://laws.justice.gc.ca./en/F-27/C.R.C.-c.870/127348.html**

containing residues of pest control products at a level greater than 0.1 ppm (unless a higher MRL has been established) is prohibited under 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*[20].

8.2.9 Tariffs and Charges

Under the CARIBCAN trade arrangement, CARICOM countries receive duty-free access to the Canadian market for their exports. This includes the export of fresh agricultural produce as well as their value added products satisfying the 60% origin criterion.

8.3 Regulatory Market Access Requirements – The EU

8.3.1 Market Access Health and Safety / Standard

In this section, selected health, food safety and other regulations are highlighted. The Annex to this Study provides the EU Regulations in greater detail.

(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 environment[21]. The EU has published a list of active substances which 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.

[20] (Source: **Maximum Residue Limits for Pesticides** http://www.pmra-arla.gc.ca/english/legis/maxres-e.html)

[21] **Banned and Non-Authorised 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)**

(iii) **Invasive Species:** The EU regulations require phytosanitary procedures and formalities to ensure invasive species are not introduced into countries of the trading block.

(iv) The application of hazard analysis and critical control point (HACCP) principles to primary production is not yet generally feasible in primary production. However, guides to good practice such as Good Agricultural Practices (GAP) and Good Agricultural Management Practices (GAMP) are being encouraged.

(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 characteristics[22].

(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 which are being examined for inclusion on the list of groups of materials which may be regulated by specific measures.

(viii) The EU has also been examining the management of packaging and packaging waste as it relate 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 packaging[23].

[22] 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

[23] 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;

It is clear that waste generation is becoming a serious problem throughout the world and moreso in the developed countries and therefore exporters must take cognizance of this and observe the legislative guidelines of countries as it relates to waste management. While it was not mandated 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 be seen as part of the transaction cost of doing business. Failure to address the waste disposal issues can lead difficulties in entering new markets as well as inability to sustain ones market share.

The draft Regulation also requires all food contact material businesses to have in place systems to identify at every given stage of production and trade, their supplier(s) and to whom materials and articles are supplied, whereby at least one step "above" and one "below" must be identifiable, unless specific provisions require further traceability.

8.3.2 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 with 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 effort and may be difficult to implement.

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

While GM labeling was still not mandatory 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 future[24].

8.3.3 Standards

Food standards give precise criteria to ensure that products are fit for their stated purposes and provide common frames of reference for defining the product. Standards provide consumers with information about the product, to maintain product quality uniformity, to establish market value, and to prevent economic fraud. Without standards, different foods could have the same names or the same foods could have different names (FDA, 2000)[25].

Under the EU Commission Regulation (EC) 1148/2001, all import consignments of fresh fruit and vegetables from countries outside the EU which are subject to the EC Marketing Standards require a recognized Certificate of Conformity before they are allowed to enter the EU market[26].Quality conditions to be satisfied by each product as required by the Certificate of Conformity for fresh agricultural produce, for which there is no Community marketing standard, (includes sweet potato) is listed in the Official Journal of the European Communities, EC Marketing Standards for Fresh Produce. The requirements listed under this regulation are detailed in the Annex to this Study.

8.3.4 Other Non-Trade Barriers / Measures

There has been growing public awareness of environmental, organic and social issues in agricultural production and trade. Although these initiatives may lead to better prices to suppliers, they do 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.

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

[25] *Improving the Safety and Quality of Fresh Fruits and Vegetables: A Training Manual for Trainers* **FOOD SAFETY AND QUALITY ASSURANCE ISSUES. http://www.jifsan.umd.edu/PDFs/GAPS_English/V__Safety_&_Quality_Assurra.pdf** University of Maryland, Symons Hall, College Park, MD 20742

[26] Source: 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

Fair Trade Labels: Fair trade labels for consumer products guarantee a price that covers the cost of production and a social premium for development purposes. It also includes a partial advance payment and encourages long term trade relations that allow proper planning and sustainable production practices[27].

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 sector[28]. 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.

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, 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.

8.3.5 Tariffs and Charges

Taxes: The countries of the EU apply a Standard VAT rate on most products and Reduced VAT rates are applied on certain products, often basic necessities such as foodstuffs. VAT are based on CIF value plus duty rate[29]. The Reduced VAT rates ranges from a low of 0-5% in the UK to maximum of 12% in Belgium.

Tariffs: 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 origin[30].

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[27] Source: Corporate Social Responsibility:
http://www.csrcampaign.org/publications/Excellencereport2002/EuropeanCSRoverview/Sociallabels/

[28] 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.

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

[30] *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

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ANNEXES

Annex Table A 1.1: Sweet Potato Production (Mt) – Major Producing Regions

Production (Mt)	**1999**	**2000**	**2001**	**2002**	**2003**
World	146,696,854	139,212,785	135,353,265	130,265,160	121,852,841
Asia	133,850,988	125,690,095	120,908,364	115,605,591	107,582,611
Africa	9,932,888	10,435,507	11,156,847	11,468,129	10,787,127
South America	1,137,574	1,199,130	1,279,441	1,256,907	1,261,517
Caribbean	525,777	555,758	606,438	634,177	751,301
North America	554,900	625,690	663,920	583,550	722,160
Oceania	589,884	598,267	606,780	610,350	641,050
European Union (15)	54,595	53,072	68,724	53,953	54,255
Central America	50,158	55,176	62,661	52,413	52,730
Rest of the World	90	90	90	90	90

Data Source: FAOStat Database

Annex Table A7.1: Average monthly prices for sweet potato traded at the Miami and New York Terminal Markets - 2003/05 (USD/kg)

Months	**Miami Terminal Market USD/kg**	**New York Terminal Market USD/kg**
January	0.73	1.03
February	0.72	1.03
March	0.75	1.11
April	0.75	1.17
May	0.71	1.13
June	0.69	1.14
July	0.69	1.16
August	0.96	0.74
September	0.98	0.88
October	0.94	0.77
November	0.86	0.74
December	0.78	0.72
Average	**0.80**	**0.97**
Std Dev	**0.11**	**0.18**

Data Source: Today's Market Prices and USDA Prices Database

Annex Table A7.2: Average monthly prices for sweet potato traded at the Ontario Food Terminal for the period 2003/05 (USD/kg)

Months	Prices		
	Beauregard USD/kg	Puerto Rican Type USD/kg	Average Price (USD/kg)
January	0.85	0.73	0.79
February	1.00	0.88	0.94
March	1.10	0.91	1.00
April	0.97	0.73	0.85
May	1.08	0.87	0.98
June	1.18	0.97	1.07
July	1.42	0.82	1.12
August	1.49	1.03	1.26
September	1.45	1.18	1.31
October	1.16	0.93	1.04
November	1.05	1.13	1.09
December	0.96	1.12	1.12
Average	**1.14**	**0.94**	**1.05**
Std dev	**0.21**	**0.15**	**0.15**

Annex Table A7.3: Average monthly prices for Sweet Potato Traded at the various United Kingdom Market Terminals for the period 2001/05 (USD/kg)

Month	Terminal Market			
	Western International	New Covent Garden	New Spitalfields	Liverpool
January	1.59	1.45	1.49	1.62
February	1.74	1.55	1.59	1.67
March	1.78	1.68	1.57	1.90
April	1.68	1.67	1.93	1.85
May	1.64	1.53	1.50	1.64
June	1.72	1.58	1.50	1.64
July	1.74	1.89	1.64	2.05
August	2.00	1.79	1.71	1.92
September	1.77	1.51	1.56	1.73
October	1.69	1.35	1.41	1.65
November	1.65	1.42	1.55	1.59
December	1.61	1.47	1.46	1.54
Average	**1.72**	**1.57**	**1.58**	**1.73**
Std Dev	**0.11**	**0.16**	**0.14**	**0.16**

Note: 100 pence = 1 GBP ; Average Exchange Rate: 1 pound = 1.64 US

Annex Table A8.1: MRL's for Sweet Potato USA EPA Pesticides

Chemical Name	Crop	PPM	CFR[31]
Acetamide	Sweet Potato, Roots	0.2	180.368
Aldicarb	Sweet Potato	0.1	180.269
Allethrin	Sweet Potato	-	180.1002
Benomyl	Sweet Potato	0.2	180.294
Bifenthrin	Sweet Potato, Roots	0.05	180.442B
Bifenthrin	Sweet Potato, Roots	0.05	180.442B
Carbaryl	Sweet Potato	0.2	180.169
Chlorpyrifos	Sweet Potato	0.05	180.342
Clomazone	Sweet Potato	0.05	180.425
DCPA (or chlorthal-dimethyl?)	Sweet Potato	2	180.185
Diazinon	Sweet Potato	0.1	180.153
Diazinon	Sweet Potato	0.1	180.153
Diazinon	Sweet Potato	0.1	180.153
Dicloran	Sweet Potato, Roots(Post Harvest)	10	180.2
Endosulfan	Sweet Potato	0.2	180.182
Ethoprop	Sweet Potato	0.02	180.262
Ethylene	Sweet Potato	-	180.1016
Fluazifop	Sweet Potato	0.5	180.411
Flumioxazin	Sweet Potato, Roots	0.02	180.568
Flumioxazin	Sweet Potato, Roots	0.02	180.568
Malathion	Sweet Potato	1	180.111
Methyl bromide	Sweet Potato, Roots (Post Harvest)	75	180.123
Methyl parathion	Sweet Potato	0.1	180.121
Napropamide	Sweet Potato	0.1	180.328
Parathion	Sweet Potato	0.1	180.121
Phosmet	Sweet Potato, Roots (Post Harvest)	10	180.261
Phosphine	Sweet Potato	0.01	180.225
Piperonyl butoxide	Sweet Potato, Roots (Post Harvest)	0.25	180.127
Propionic acid	Sweet Potato, Roots	-	180.1023
Pyrethrins	Sweet Potato, Roots (Post Harvest)	0.05	180.128
Tebufenozide	Sweet Potato	0.25	180.482
Thiabendazole	Sweet Potato, Roots (Post Harvest)	0.02	180.242
o-Phenylphenol	Sweet Potato, Roots (Post Harvest)	15	180.129

Source Fintrac(2003) Inc http://www.epa.gov/cgi-bin/oppsrch at US EPA Pesticides health and safety

[31] US Code of Federal Regulations (CFR).

Annex Table A8.2
United States Department of Agriculture
Agricultural Marketing Service
Fruit and Vegetable Division
Fresh Products Branch
United States Standards for Grades of Sweet potatoes

Effective July 1, 1963
(Reprinted - January 1997)
Compliance with the provisions of these standards shall not excuse failure to comply with the provisions of the Federal Food, Drug and Cosmetic Act, or with applicable State laws and regulations.

United States Standards for Grades of Sweet potatoes
Grades
51.1600 U.S. Extra No. 1.
51.1601 U.S. No. 1.
51.1602 U.S. Commercial.
51.1603 U.S. No. 2.

Unclassified
51.1604 Unclassified.

Tolerances
51.1605 Tolerances.

Application of Tolerances
51.1606 Application of tolerances.

Definitions
51.1607 Similar varietal characteristics.
51.1608 Firm.
51.1609 Smooth.
51.1610 Fairly clean.
51.1611 Fairly well shaped.
51.1612 Damage.
51.1613 Length.
51.1614 Diameter.
51.1615 One type.
51.1616 Fairly smooth.
51.1617 Serious damage.

Grades
§51.1600 U.S. Extra No. 1.
"U.S. Extra No. 1" consists of sweet potatoes of similar varietal characteristics which are firm, smooth, fairly clean, fairly well shaped, which are free from freezing injury, internal breakdown, Black Rot, other decay or wet breakdown, and free from damage caused by secondary rootlets, sprouts, cuts, bruises, scars, growth cracks, scurf, Pox (Soil Rot), or other diseases, wireworms, weevils, or other insects, or other means. (See §51.1605.)
(a) **Size –**
(1) Length shall be not less than 3 inches or more than 9 inches.
(2) Maximum weight shall be not more than 18 ounces.
(3) Maximum diameter shall be not more than 3-1/4 inches.
(4) Minimum diameter, unless otherwise specified, shall be not less than 1-3/4 inches. (See §51.1605.)

§51.1601 U.S. No. 1.
"U.S. No. 1" consists of sweet potatoes of one type which are firm, fairly smooth, fairly clean, fairly well shaped, which are free from freezing injury, internal breakdown, Black Rot, other decay or wet breakdown, and free from damage caused by secondary rootlets, sprouts, cuts, bruises, scars, growth cracks, scurf, Pox (Soil Rot), or other diseases, wireworms, weevils or other insects, or other means. (See §51.1605.)
(a) **Size –**
(1) Maximum diameter shall be not more than 3-1/2 inches.
(2) Maximum weight shall not be more than 20 ounces.
(3) Length, unless otherwise specified, shall be not less than 3 inches or more than 9 inches.
(4) Minimum diameter, unless otherwise specified, shall be not less than 1-3/4 inches. (See §51.1605.)

Annex Table A8.2
United States Department of Agriculture
Agricultural Marketing Service
Fruit and Vegetable Division
Fresh Products Branch
United States Standards for Grades of Sweet potatoes
cont'd

§51.1602 U.S. Commercial.
"U.S. Commercial" consists of sweetpotatoes which meet all the requirements of the U.S. No. 1 grade except that an increased tolerance for defects is allowed. (See §51.1605.)

§51.1603 U.S. No. 2.
"U.S. No. 2" consists of sweetpotatoes of one type which are firm and which are free from freezing injury, internal breakdown, Black Rot, other decay or wet breakdown, and free from serious damage, caused by dirt or other foreign materials, cuts, bruises, scars, growth cracks, Pox (Soil Rot), or other diseases, wireworms, weevils or other insects, or other means. (See §51.1605.)
(a) **Size.** Unless otherwise specified the minimum diameter shall be not less than 1-1/2 inches and the maximum weight not more than 36 ounces. (See §51.1605.)
Unclassified

§51.1604 Unclassified.
"Unclassified" consists of sweetpotatoes which have not been classified in accordance with any of the foregoing grades. The term "unclassified" is not a grade within the meaning of these standards but is provided as a designation to show that no grade has been applied to the lot.

Tolerances
§51.1605 Tolerances.
In order to allow for variations incident to proper grading and handling in each of the foregoing grades the following tolerances, by weight, are provided as specified:

(a) **Defects** –
(1) **U.S. Extra No. 1 and U.S. No. 1 grades.** 10 percent of the sweetpotatoes in any lot may fail to meet the requirements of these grades, but not more than one-half of this amount, or 5 percent, shall be allowed for sweetpotatoes which are seriously damaged, including therein not more than 2 percent for sweetpotatoes affected by soft rot or wet breakdown (see §51.1606);

(2) **U.S. Commercial.** 25 percent of the sweetpotatoes in any lot may fail to meet the requirements of this grade, but not more than one-fifth of this amount, or 5 percent, shall be allowed for sweetpotatoes which are seriously damaged, including therein not more than 2 percent for sweetpotatoes affected by soft rot or wet breakdown (see §51.1606); and,

(3) **U.S. No. 2.** 10 percent of the sweetpotatoes in any lot may fail to meet the requirements of this grade, including therein not more than 2 percent for sweetpotatoes affected by soft rot or wet breakdown. (See §51.1606.)

(b) **Off-size.** 10 percent of the sweetpotatoes in any lot may fail to meet any specified size, but not more than one-half of this amount, or 5 percent, shall be allowed for sweetpotatoes which are below the minimum diameter and minimum length specified. (See §51.1606.)

Application of Tolerances
§51.1606 Application of tolerances.
The contents of individual packages in the lot are subject to the following limitations: **Provided,** That the averages for the entire lot are within the tolerances specified for the grade.

(a) Packages which contain more than 10 pounds shall have not more than one and one-half times a specified tolerance of 10 percent or more, or not more than double a specified tolerance of less than 10 percent, except that at least one defective and one off-size specimen may be permitted in any package; and,

(b) Packages which contain 10 pounds or less shall have not more than four times the tolerance specified or not more than two defective or off-size specimens in any package, whichever is the larger percentage.

Definitions
§51.1607 Similar varietal characteristics.
"Similar varietal characteristics" means that the sweetpotatoes have the same character of flesh and practically the same skin color. For example, dry type shall not be mixed with semi-moist or moist type.

Annex Table A8.2
United States Department of Agriculture
Agricultural Marketing Service
Fruit and Vegetable Division
Fresh Products Branch
United States Standards for Grades of Sweet potatoes
cont'd

§51.1608 Firm.
"Firm" means not more than slightly flabby or shriveled.

§51.1609 Smooth.
"Smooth" means that the sweetpotato is free from veining or other defects causing roughness which more than slightly detract from the appearance of the individual sweet potato or the general appearance of the lot.

§51.1610 Fairly clean.
"Fairly clean" means that the individual sweet potato is not caked with dirt and that dirt or other foreign matter does not materially detract from the general appearance of the lot.

§51.1611 Fairly well shaped.
"Fairly well shaped" means that the sweetpotatoes are not so curved, crooked, constricted or otherwise misshapen as to materially detract from the appearance of the individual sweetpotato or the general appearance of the lot.

§51.1612 Damage.
"Damage" means any specific defect defined in this section; or an equally objectionable variation of any one of these defects, any other defect, or any combination of defects, which materially detracts from the appearance, or the edible or shipping quality of the individual sweetpotato or the lot as a whole; or which cannot be removed without a loss of more than 5 percent of the total weight of the sweetpotato including peel covering the defective area. The following specific defects shall be considered as damage:

(a) Sprouts when more than 10 percent of the sweetpotatoes in the lot have sprouts over three-fourths inch in length;

(b) Growth cracks when unhealed or which detract materially from the appearance of the individual sweetpotato or general appearance of the lot;

(c) Scurf when more than 15 percent of the surface in the aggregate is affected by solid light brown discoloration. Speckled types of scurf, or lighter or darker shades of discoloration may be permitted over a greater or lesser area provided no discoloration detracts from the appearance more than the amount of solid light brown discoloration permitted;

(d) Pox (Soil Rot) when materially detracting from the appearance of the individual sweetpotato; and,

(e) Wireworm, grass root or similar injury when any hole in a sweetpotato ranging in size from 6 to 8 ounces, is more than three-fourths inch long, or when the aggregate length of all holes is more than 1-1/4 inches, or correspondingly shorter or longer holes in smaller or larger sweetpotatoes.

§51.1613 Length.
"Length" means the dimension of the sweetpotato, measured in a straight line between points at or near each end of the sweetpotato where it is at least three-eighths inch in diameter.

§51.1614 Diameter.
"Diameter" means the greatest dimension of the sweetpotato, measured at right angles to the longitudinal axis.

§51.1615 One type.
"One type" means that the sweetpotatoes have the same character of flesh, and do not show an extreme range in skin color. For example, dry type shall not be mixed with semi-moist, or moist type, and deep red or purple skin color shall not be mixed with yellow or reddish copper skin color.

§51.1616 Fairly smooth.
"Fairly smooth" means that the sweetpotato is free from veining or other defects causing roughness which materially detract from the appearance of the individual sweetpotato or the general appearance of the lot.

Annex Table A8.2
United States Department of Agriculture
Agricultural Marketing Service
Fruit and Vegetable Division
Fresh Products Branch
United States Standards for Grades of Sweet potatoes
cont'd

§51.1617 Serious damage.
"Serious damage" means any specific defect defined in this section; or an equally objectionable variation of any one of these defects, any other defect, or any combination of defects, which seriously detracts from the appearance or edible or shipping quality of the individual sweetpotato or the lot as a whole; or which cannot be removed without a loss of more than 10 percent of the total weight of the sweetpotato including peel covering the defective area. The following specific defects shall be considered as serious damage:

(a) Dirt or other foreign matter when the individual sweetpotato is badly caked with dirt, or when seriously detracting from the appearance of the lot;

(b) Growth cracks when unhealed or when seriously detracting from the appearance of the individual sweetpotato or general appearance of the lot;

(c) Pox (Soil Rot) when seriously detracting from the appearance of the individual sweetpotato; and,

(d) Wireworm, grass root or similar injury when any hole in a sweetpotato ranging in size from 6 to 8 ounces, is more than 1-1/4 inches long, or when the aggregate length of all holes is more than 2 inches, or correspondingly shorter or longer holes in smaller or larger sweetpotatoes.

Annex Table A8.3: List of Agricultural Chemicals MRL's Recommended for use on Sweet Potato - Canada

Item	Common Chemical	Chemical Name	Maximum Residue Limit	Commodity
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
S.2	sodium ortho-phenyl phenate	o-phenyl phenol, sodium salt	15*	Sweet potatoes
C.7.1	chlorthal-dimethyl	dimethyl tetra-chloroterephthalate	2	sweet potatoes, yams
D.10	dichloran	2,6-dichloro-4-nitroaniline	5	sweet potatoes
S.2	sodium ortho-phenyl phenate	o-phenyl phenol, sodium salt	15*	Sweet potatoes
T.6	triazolyl alanine plant metabolite from triazole fungicides	triazol-1-yl alanine (TA)	2.0	All food crops

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