Demand Study

FOR YELLOW YAM

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Crop Profile

Yellow Yam (D. cayenensis) is a member of the Dioscoreae family. Two varieties or types of yellow yam can be distinguished in Jamaica, namely the Black Whisp and the Round Leaf. There are roughly eighteen (18) different varieties of yam growing in Jamaica, however, yellow yam is the most popular, boasting approximately 65.82% of the island's total yam production in 2011

Yellow yam is often affected by *Nematode* also referred to as Yam Burn, which can occur either during crop growth or during storage. Infestation during the growing season results in poor plant development and reduced tuber weight. Even more damage is caused when nematode-infested yam tubers are put into storage. Nematodes cause dry rotting or severe galling of yellow yam, which can be exacerbated by secondary infection by fungi and bacteria. More than 80% of stored tubers can be lost this way. One control measure is to immerse yellow yam planting material in warm water, at an optimum temperature of 53°C for approximately 20 minutes. This kills the nematodes in the tissue without affecting the germination of the planting material. Plants cleaned in this way can then be planted in new farmland, or land where secondary crops have been grown for one or two years, ensuring that nematode numbers in the soil are low.

Currently, the Ministry of Agriculture and Fisheries is seeking to increase the use of the mini- sett technology among farmers. In doing this, the Rural Agricultural Development Authority has already provided planting materials and technical assistance some farmers.

Research continues by the Ministry of Agriculture and Fisheries through its research arm as well as the University of the West Indies in the hope of shedding light on specified areas of concerns such as the size of the yam heads versus its yield; the average weight of mature tubers; pest & disease control; along with other areas of concerns. These activities are all in an effort to combat the various challenges our yam industry is presently encountering and to sustain export.

Current Situation in the Local and International Yellow Yam Market

Yellow Yam Production, Export & Local Consumption 2008-2012

Table 1

Year	Production (Kg)	Export (Kg)	Exp. %	Local Consumption (Kg)	L.C. %
2008	64,374,000	6,972,131	10.83	57,401,869	89.17
2009	80,531,000	7,207,800	8.95	73,323,200	91.05
2010	89,944,000	9,032,354	10.04	80,911,646	89.96
2011	88,601,000	8,619,526	9.73	79,981,474	90.27
2012	100,325,000	9,213,851	9.18	91,111,149	90.82
Total/Avg.	**423,776,000**	**41,045,662**	**9.69**	**382,729,338**	**90.31**

Source: Statin

Production

Yellow yam production recorded 55.85% growth over a five (5) year period from 2008 to 2012. Additionally, the highest production of 100,325,000kg was recorded in 2012 while 2008 had the lowest production of 64,374,000kg.

Yellow Yam is commercially grown in ten parishes with the principal growing parishes being Trelawny, Manchester and St. Ann. The tuber's peak production occurs during the period January to May each year.

Export

During the period of 2008-2012, exports averaged 9.69% of production. In 2012, the tuber was exported to nine countries, United States of America, Canada, United Kingdom, Cayman, Curacao, British Virgin Islands, Tortola, Kenya and Japan, with the United States of America being our largest export market.

Yellow Yam Profitability

Table 4

Year	Price ($/kg)		% Difference between C.O.P & Farmgate
	Cost of Prod.	Farmgate	
2009	46.65	131.76	182.44
2010	57.45	94.93	65.24
2011	56.74	119.35	110.35
2012	43.85	100.34	128.83

Source: MOAF, Agricultural Marketing Information Division (AMID)

A profitability table for yellow yam indicates that it was profitable to produce and sell yellow yam at the farmgate for the period 2009 to 2012.

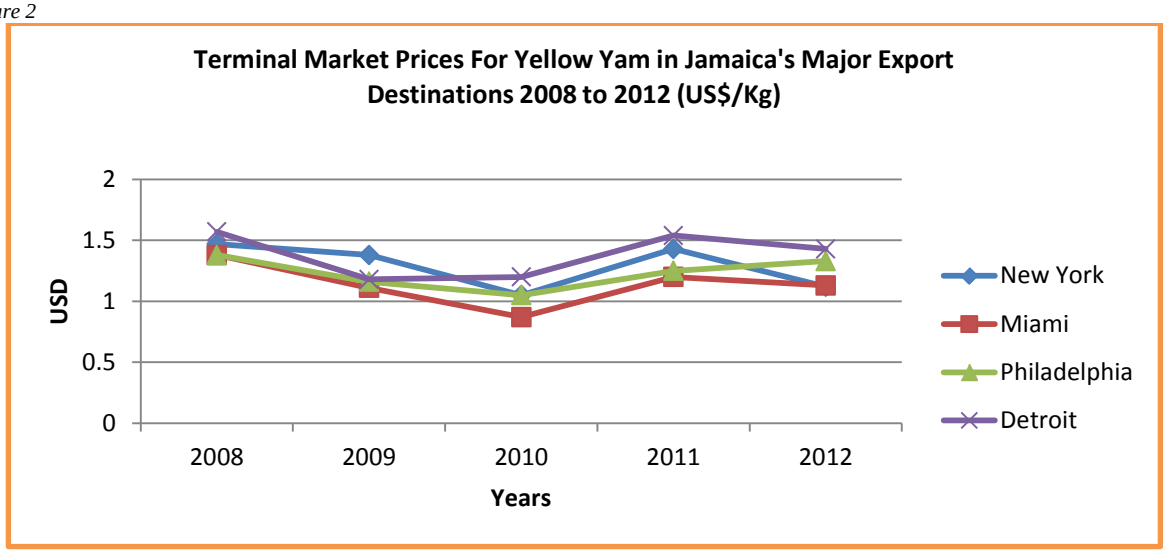
Terminal Prices (US$/Kg) for Yellow Yam in Jamaica's Major Export Destinations in the USA-2008-2012

Table 5

	2008	2009	2010	2011	2012
New York	1.47	1.38	1.05	1.43	1.12
Miami	1.38	1.11	0.87	1.20	1.13
Philadelphia	1.38	1.16	1.05	1.25	1.33
Detroit	1.57	1.18	1.2	1.54	1.43

Source: USDA Fruits & Vegetables Markets News

Figure 2



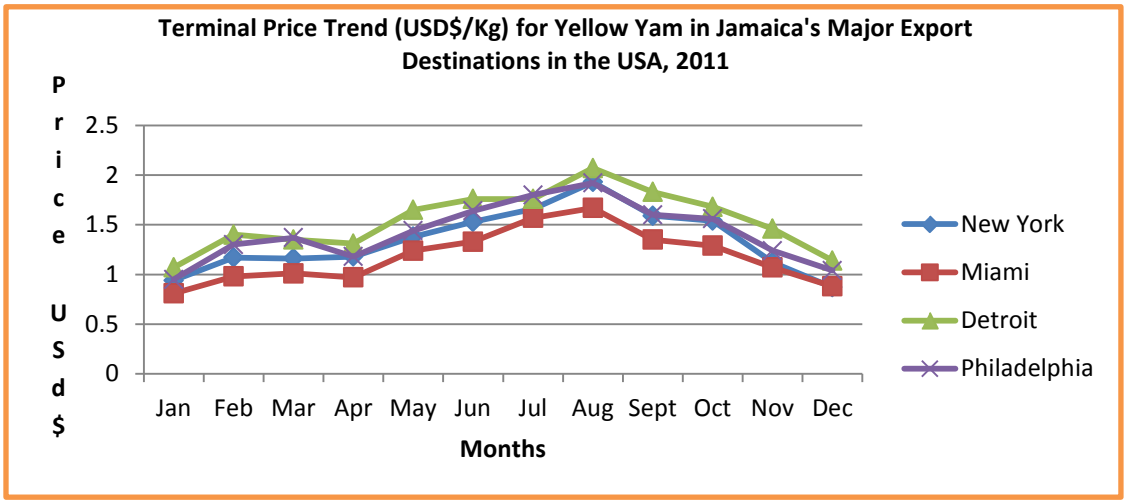
Monthly Terminal Market Price (US/kg) for Yellow Yam in the USA-2011

Table 6

Month	Price (US$/kg)			
	New York	Miami	Detroit	Philadelphia
Jan	0.94	0.81	1.07	0.95
Feb	1.17	0.98	1.40	1.30
Mar	1.16	1.01	1.35	1.37
Apr	1.18	0.97	1.31	1.18
May	1.38	1.24	1.65	1.44
Jun	1.53	1.33	1.76	1.64
Jul	1.66	1.57	1.76	1.80
Aug	1.93	1.67	2.07	1.92
Sept	1.59	1.35	1.83	1.60
Oct	1.54	1.29	1.68	1.56
Nov	1.12	1.07	1.46	1.24
Dec	0.87	0.88	1.14	1.04

Source: USDA Fruits & Vegetables Markets News

Figure 3



Prices for the tuber were higher during May to October of 2011; for the month of August yellow yam prices were at its highest relative to other months for each destination. The price differentials per kilogram within the terminal markets were: New York $USD1.06 (1.93-0.87); Miami $USD0.86 (1.67-0.81); Detroit $USD1.00 (2.07-1.07) and Philadelphia $USD0.97 (1.92-0.95).

An International Overview on Production & Trade of Yam

Yam is second to cassava as the most important and cultivated tropical root crop. It is widely cultivated in Nigeria, and because of its multipurpose uses, it occupies a principal place in the farming systems of the humid tropical region.

Worldwide yam production in 2009 amounted to 47.6 million metric tons, of which Africa produced 45.6 million metric tons (95.8%). Most of the world's production comes from West Africa, representing 43.4 million tons (91.2%), with Nigeria alone producing 64%, equalling more than 29 million metric tons. Yam production in Nigeria is entirely dominated by small-scale farmers.

In 2010, the world produced 53.8 million metric tons of yams, with Nigeria (63.6%), Côte D´Ivoire (10%) and Ghana (11%) being the major producers, Jamaica's production represented 0.25% of world's production in 2010. In 2011, world production stood at 56.6 million metric tons of yams.

The world average annual yield of yams was 11.6 tonnes per hectare in 2011, Jamaica's average annual yield for 2011 was 16.18 tonnes per hectare.

Yam production is declining in some traditional producing areas due to deteriorating soil fertility, increasing pest pressures and the high cost of labour. Therefore, measures need to be put in place to reduce labour cost and improve productivity.

*Data included in "**An International Overview on Production & Trade of Yam** came from Faostat*

Survey Findings:

1. **Kindly indicate if you are satisfied with the quality of Yellow Yam obtained from farmers.**

    - Seventy point five nine percent (70.59%) of respondents stated that they were satisfied with the quality of yellow yam obtained from farmers throughout all four quarters of 2012. Those exporters, who expressed dissatisfaction in the quality of yellow yam, reiterated that the tubers received from farmers particularly in the second and third quarters are usually immature.

2. **Are there challenges encountered at the various stages of exporting Yellow Yam?**

    - Fumigation represented an issue for five (5) respondents; accounting for 14.71%. They indicated that they experienced fumigation issues locally in the form of yams being burnt after the fumigation process was completed. Conversely, 85.29% of respondents did not encounter any challenges.

3. **Do you encounter any challenges in trading with overseas importers?**

    - Fifty five point eight eight percent (55.88%) said they did not experience any challenges with their overseas buyers. Those exporters who claimed they had or are having issues with their overseas buyers accounted for 44.12% of respondents, all of whom declared that a lack of or late payment being the main issue.

4. **Do you require any assistance to enhance your business operations?**

    - Those exporters who do not require any assistance accounted for 41.18% of respondents while 58.82% said they would need help. For those exporters requiring assistance, the three most re-occurring supports were financial, technical and marketing (help in acquiring more overseas buyers; whether in new or existing markets).

5. **Please indicate if you are satisfied with the farmgate prices Paid for Yellow Yam.**

   - Forty one point one eight percent (41.18%) of respondents said they were satisfied with the farmgate prices for yellow yam throughout the year. Exporters that were dissatisfied with the prices at the farmgate level highlighted the second, third and fourth quarters as the quarters for high yellow yam prices.

6. **Kindly indicate if your company has issues acquiring the desired quantity of Yellow Yam from farmers.**

   - In regards to, the issue of acquiring the desired quantity of yellow yam from farmers, 50% of respondents said they are not getting the desired quantity, particularly in the third and fourth quarters.

7. **Are there any issues that would limit your company's potential to increase export quantities of yellow yam?**

   - Fifty two point nine five percent (52.95%) of respondents stated no. Those who answered yes mainly identified reasons such as farmgate prices being high and the lack of funds to undertake the desired expansions.

Competition

In 2012, yellow yam was exported to nine countries, United States of America, Canada, United Kingdom, Cayman, Curacao, British Virgin Islands, Tortola, Kenya and Japan.

Jamaica's major export markets for yellow yam in order of size were the United States, United Kingdom and Canada, with the United States of America being our largest export market. Jamaica yellow yam was exported to eight (8) cities in the United States of America during 2012.

Other yellow yam exporting countries identified within the United States markets during 2012 were Costa Rica, Dominican Republic and Nicaragua.

Costa Rica

Costa Rica yellow yam was only found in the Chicago terminal market. A total of 34 shipments were made to that said market during 2012, spanning from January to August. Yellow yams are packaged in 45 pounds carton boxes at an average price of US$28.71 per carton box. During the month of August, prices for yellow yam averaged US$35.63 per carton box; this represented the highest price obtained for the tuber throughout 2012.

Nicaragua

Yellow yam from Nicaragua went only to Chicago terminal market. Shipments made were done in the last quarter of 2012, packaged in 40 pounds carton boxes and averaged US$34.50 per carton box. In relation to frequency of shipments made to Chicago, November represented the peak period with four shipments being done.

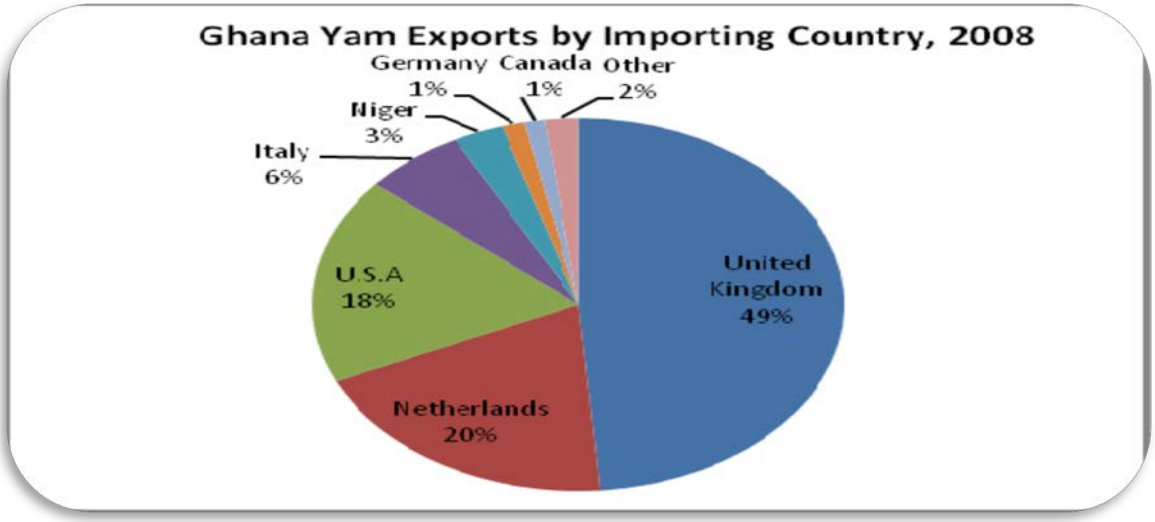
Dominican Republic

One shipment of yellow yam was sent from Dominican Republic to the United States of America. This shipment went to New York in a 40 pound carton box at US$56.00 in January.

Although Ghana is the leading world exporter of yams, Jamaica is the largest exporter of Yellow Yam. Most major yam producing countries do not produce or export yellow yam. Europe represents the largest export market for Ghana's yam (see figure 4), while the USA represents Jamaica's major markets.

The possibility exists for Haiti to export yellow yam, given its similar growing conditions to those in Jamaica, however, Haiti suffers from improper packaging and storage conditions.

Figure 4



Price Comparison for Yellow Yam in USA Terminal Markets

Table 7

Date	Origin	Destination	$USD/kg
2/27/2011	JAMAICA	New York	0.9
12/28/2011	DOMINICAN REPUBLIC	New York	1.4
12/28/2011	JAMAICA	New York	0.94
12/29/2011	DOMINICAN REPUBLIC	New York	1.4
12/29/2011	JAMAICA	New York	0.94
12/30/2011	DOMINICAN REPUBLIC	New York	1.4
12/30/2011	JAMAICA	New York	0.94
7/19/2010	JAMAICA	Philadelphia	1.2
7/20/2010	COSTA RICA	Philadelphia	1.2
7/20/2010	JAMAICA	Philadelphia	1.2
7/21/2010	COSTA RICA	Philadelphia	1.2
7/21/2010	JAMAICA	Philadelphia	1.2
7/22/2010	COSTA RICA	Philadelphia	1.2
7/22/2010	JAMAICA	Philadelphia	1.2
7/23/2010	COSTA RICA	Philadelphia	1.2
7/23/2010	JAMAICA	Philadelphia	1.2

Source: USDA Fruits & Vegetable Market News.

Table 7 shows that on 2/27/2011 and 12/28/2011 through to 12/30/2011 yellow yam originating from Dominican Republic was more expensive within New York than yellow yam coming from Jamaica and destined for the said market.

S.W.O.T Analysis

Strengths, Weaknesses, Opportunities and Threats

The Main Strengths of Jamaican Yellow Yam:

- ***Strategic Location***- Ideal geographical location to supply perishable foods to two of the main markets, United States and Canada, therefore, reducing the cost of goods traveling by ship; this in turn benefits local exporters.

The Main Weaknesses of Jamaican Yellow Yam:

- ***Pesticide Residue-*** given the large size of most mature tubers, they are usually cut into sections thereby necessitating fungicide application which occasionally breaches the minimum residue levels(MRL)
- **Poor post-harvest practices-** have long affected yellow yam yields. The Rural Agricultural Development Authority (RADA) estimates that 10-20% of tuber losses are caused by poor post-harvest practices.

The Main Opportunity of Jamaican Yellow Yam:

- ***Value Added*** -At present, Jamaican yellow yam is basically sold as fresh produce with no noteworthy value added agro-processing. If we were to diversify into other product lines such as yam flour, frozen yams and canned yams this would not only increase market share in our current markets but open doors to enter new markets in North America and Europe.

➢*The Main Threats of Jamaican Yellow Yam:*

- ***The FSMA***-The Food Safety Modernization Act gives the Food and Drug Administration unprecedented authority to better ensure that imported foods meet the United States standards and are safe for their consumers. As a result of the act, export quantity for 2012 and possibly beyond, supplied to the U.S. may decline if farmers and exporters do not pass the various inspections conducted by the FDA.
- ***Pests and Diseases***- As stated earlier, *y*ellow yam is often affected by Nematode also referred to this as yam burn, it can occur either during crop growth or during storage. Infestation during the growing season results in poor plant development and reduced tuber weight.

Conclusion

- Yellow yam production recorded 23.29% growth over a five (5) year period from 2007 to 2011. Moving from 71,863,000kg in 2007 to 88,601,000kg in 2011
- According to the yellow yam export market survey, 58.82% of respondents said they require assistance to enhance their business operations. The three most reoccurring responses were financial, technical and marketing (help in acquiring more overseas buyers; whether in new or existing markets).
- Most exporters (respondents) stated that they were satisfied with the quality of yellow yam obtained from farmers throughout all four quarters of 2012. Those exporters, who expressed dissatisfaction in the quality of yellow yam, reiterated that the tubers received from farmers particularly in the second and third quarters are usually immature.
- Exporters that were dissatisfied with the prices at the farmgate level highlighted the second, third and fourth quarters as the quarters for high yellow yam prices.
- Those exporters who claimed they had or are having issues with their overseas buyers, all stated lack or late payment as the main issue.
- Jamaica is the world's largest exporter of yellow yam.
- The major markets for yellow yams are the United States, United Kingdom and Canada. During the period 2009-2011, United States accounted for 76.24% of total exports.
- Only a small percentage of total production of yellow yam enters the export market 10.41% for the period 2007-2011.
- Direct competition within the United States markets for yellow yam comes from Costa Rica and Dominica Republic.

Recommendations

1) The value added component of Yellow Yam is underexploited, if Jamaica were to invest into other product lines not only would it increase local consumption but also tap into current and new markets overseas.
2) In order to eliminate the risk of pesticide residue on yams, the Mini-Sett technology usage should increase significantly to ensure the production and export of smaller whole yams weighing 0.91 to 2.27kg which require no cutting and fungicide treatment before it reaches the consumer.
3) Based on the yellow yam export market survey, 44.12% of respondents encounter challenges when trading with overseas buyers. In order to ensure fair trade between importers and local exporters, the Jamaica Exporter Association could extend its services overseas to act as a broker.
4) Sensitize farmers and exporters on the grades and standards of yellow yam to ensure the exportation of good quality yams year round.

Appendix 1
Yellow Yam Export Market Survey

Methodology

To acquire information on the yellow yam export market, a list of yellow yam exporters was obtained from the Ministry of Agriculture and Fisheries, Plant Quarantine/Produce Inspection Division. Although 95 companies were identified, only 51 were active/regular exporters. A survey was then conducted to identify the challenges experienced in the yellow yam export markets. Of the 51 active/regular exporters contacted, 34 responded to our questionnaire. However, 17 exporters did not respond

Primary Data Collection

1) A questionnaire was designed. Each exporter received the questionnaire at the Plant Quarantine Offices in Kingston and Montego Bay and the information required was obtained via

i) Telephone

ii) Facsimile

Secondary Data Collection

2) Other information was obtained from the Ministry of Agriculture and Fisheries, Agricultural Marketing and information Division (AMID), Plant Quarantine/Produce inspection Division, Food and Agricultural Organization etc.

Data Processing

The data was eventually tabulated, analysed and a report was compiled. The primary data collection period of this survey was during October to December of 2012

Appendix II

Respondents

Company	Contact Name	Address	Telephone #
McNair Ltd	Mr. R. McNair	188 Spanish town Rd. Kgn 11	(876)923-6576
S & S Exports	Mr. S. Johnson	Splaudings, Manchester	(876)964-5149
ER. Fresh produce Exporters	Mr. E. Reid	76 Marcus Garvey Dr. Kgn 13	(876)757-5422
Tropical Foods	Mrs. P. Duncan	188 Spanish town Rd. Kgn 11	(876)923-0775
Raydon Import Export	Ms. L. Wint	Manchester Porus PO. Jamaica	(876)904-0455
Campbell's Green Inc	Mr. R. Campbell	Top York, Morant Bay	(876)856-7472
Seek and Find	Mr. A. Peters	188 Spanish Town Rd. Kingston	Unavailable
Uter's Import Export	Mr. G. Uters	Coleyville, Manchester	(876)851-4958
Island Fresh Export	Mr. S. Brown	188 Spanish Town Rd. Kingston	(876)758-3971
Sydney McPherson	Mr. S. McPherson	Lot 61 Denham Farm, Manch.	(876)964-9592
Palmetto Exports Ltd	Mr. L. Nicholson	188 Spanish Town Rd. Kingston	(876)322-3607
Edwards Tropical Food	Ms. A. Watson	188 Spanish Town Rd. Kingston	(876)758-8584
Omar Plummer	Mr. O. Plummer	Burnt Ground, Hanover	(876)410-1581
First Choice	Mr. K. Smith	188 Spanish Town Rd. Kingston	(876)368-3865
Neko Imports Export	Ms. M. Williams	Unavailable	(876)844-0936
Belle Tropical Ldt.	Mr. A. Johnson	Coleyville, Manchester	(876)374-6208
Earth Strong Jamaica	Mr. M. Grey	Unavailable	(876)469-3433
Star Produce Ltd.	Mr. P. Richards	Main St. Porus. Manchester	(876)904-0455
Bay Farm	Mr. B. Senior	53 Farmers Flat, St.Catherine	(876)983-8609
Portland Fresh Produce	Mrs. S. Sullivan	5 West Street, Port Antonio	(876)509-6948
Paul Crawford	Mr. P. Crawford	Tank Rd. Montego Bay	(876)386-4521
L Ray fresh Produce	Mr. L. Bonnick	Teller Lane, Yallas	(876)356-0809
Kool Producers	Mr. C. Hanson	Litchfield Dist, Wait-A-Bit	(876)850-0606
Howard Wallace	Mr. H. Wallace	Anchovy, Montego Bay	(876)367-2254
Everton Dale	Mr. E. Dale	9 Rodney Rd, Kingston 13	(876)419-7570
Newton Irwin	Mr. N. Irwin	Unavailable	(876)359-0320
T.G. Import Export Trading	Mr.D. Taylor	76 Marcus Garvey Dr. Kgn 13	(876)757-5422
J.B. & C Camtuan	Ms. A. Faith	Unavailable	(876) 620-9630
Balaclava Traders	Mr. R. Loney	Unavailable	(876)482-8248
Jamaica Export Trading	Mr. H. Hamilton	Bushy Park, St. Catherine	(876)923-9379
Carita(Jamaica) Mrkt Dvlpmt	Ms. T. Dellop	188 Spanish Town Rd. Kingston	(876)923-7050
Wah Gwaan Foods (Yamman)	Ms. S. Thomas	9 Bloomsbury Rd. Kingston	(876)859-1277
V and L Chang Ltd	Mr. L. Chang	130 Dunrobin Sub. Manchester	(876)962-1784
Sunland Dist. Ltd.	Ms. A. Morrison	Unavailable	(876)417-0504

Appendix III

Major Overseas buyers of Yams

YAM: Major Importers			2009
Importers	*Country*	*Quantity*	*Value(US$)*
Golden Crown Produce	USA	976,726.26	$2,415,132.22
Terminal Produce Corp.	USA	845,556.89	$1,736,916.13
EXP Group LLC	USA	771,195.90	$1,706,976.63
El Sol Brands Inc.	USA	618,238.43	$1,343,072.60
J & C Enterprise	USA	513,126.68	$1,203,501.75
Sol-1	USA	580,014.92	$1,178,065.10
DK Import & Export	USA	327,008.65	$759,709.93
USA Tropicals	USA	330,676.11	$720,874.50
Caribbean Fruit Conn.	USA	294,461.46	$601,697.00
Tropical Trading Inc.	Canada	268,643.88	$593,035.70
Sterling's Import/Export	USA	166,978.05	$549,847.00
M&M Farm Inc.	USA	199,852.74	$429,050.69

References

- ✓ Ministry of Agriculture and Fisheries, Agricultural Marketing Information Division (A.M.I.D) Production Quantities
- ✓ Food & Agriculture Organization (FAO) Statistical Database, Export Quantities
- ✓ Ministry of Agriculture and Fisheries, A.M.I.D Agricultural Services Unit, Market Demand Study for Yams
- ✓ United States Department of Agriculture (USDA), Fruit and Vegetables Market News.
- ✓ Jamaica Promotion Corporation (Jampro), Fresh Produce Report 2009.
- ✓ Ministry of Agriculture, Plant Quarantine/ Produce Inspection Division-Export Data