THE WORLD MARKET FOR CARDAMOM

Produced for the USAID ACCESO Project

Market Survey #02

INTRODUCTION

Cardamom is among the world's oldest spices, and is the third most expensive spice following saffron and vanilla. The name cardamom is used for herbs within two genera of the ginger family *Elettaria* (small cardamom) and *Amomum* (large cardamom). Both varieties take the form of a small seedpod, triangular in cross-section and spindle-shaped, with a thin papery outer shell and small black seeds. *Elettaria* pods are light green in color, while *Amomum* pods are larger and dark brown.

Small cardamom, *Elletaria cardamomum*, popularly known as the 'Queen of spices,' is grown extensively in hilly regions of South India, but also in Sri Lanka, Papua New Guinea, Tanzania and Guatemala. It is typically 7 mm in size with green coloration and has a slightly sweeter fragrance than its larger cousin. Large cardamom, *Amomum subulatum*, also known as Nepal cardamom, is a spice cultivated in the sub-Himalaya state of Sikkim and West Bengal, northeastern India. It is typically 20 mm to 50 mm in size with black/brown coloration. Of the two, small cardamom is the more heavily produced globally, at a ratio of 3:2 as of 2006 (Center for Agricultural Policy with Prosperity Initiative, 2009).

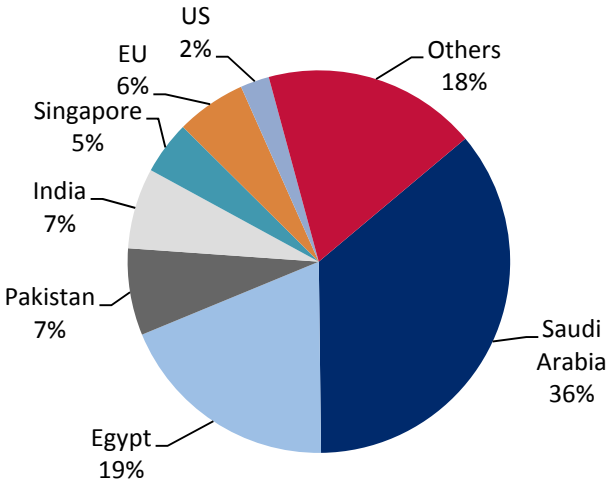
Cardamom is used mainly in the Middle East where *gahwa* is a popular cardamom-coffee combination. It features heavily in curries, pickles, custards and spice blends such as *garam masala* in India, and is also chewed as a nut and used as an aromatic and essential oil in perfumes. Cardamom can be purchased in organic or conventional forms and has a mild, ginger-like, sweet flavor.

GLOBAL PRODUCTION

Cardamom plants take about three years to bear fruit and are commercially productive for four to six years before yields decline. The pods, which grow spaced at intervals along the panicle, contain brown or black seeds so tiny that it takes four pods to fill a quarter-teaspoon, making it one of the worlds' most expensive spices.

According to the most recent available data, global production of small and large cardamom was approximately 70,000 MTs in 2006, with Guatemala and India accounting for 45 percent and 21 percent of total production, respectively. Guatemala only produces small cardamom, while India produces both types. Guatemala and India have dominated cardamom production, but since 2003 Indonesia has emerged as an additional key producer. In 2006, Indonesia was the number three producer accounting for 18 percent of total production. With respect to large cardamom production, Indonesia was the top producer accounting for 45 percent of production, with Nepal (23 percent), India (15 percent) and China (14 percent) accounting for most of the remainder in 2006.

Figure 1: World Imports Of Cardamom by Volume, 2010



Sources: UN Comtrade, USITC and Eurostat

MARKETS

The Middle East, South Asia, South East Asia and Europe are the main markets for cardamom consumption. From 2006 to 2008, global demand for cardamom rose steadily from 31,448 MTs to 37,712 MTs. Following the global financial crisis of 2008, imports dramatically dropped to 25,566 MTs but rebounded slightly to 26,946 MTs in 2009.

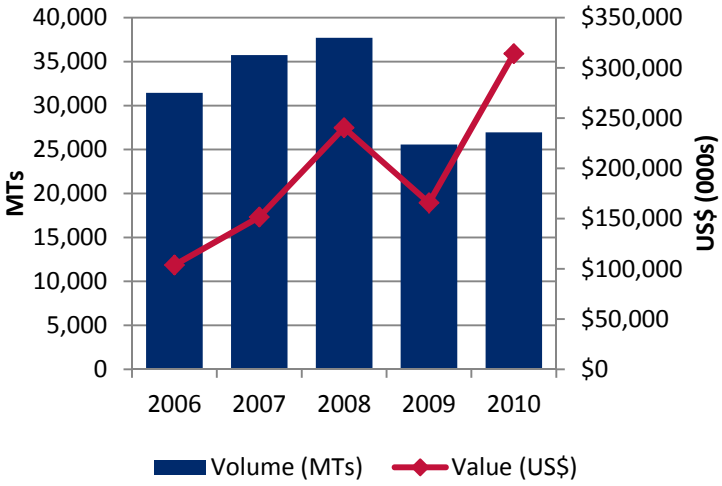
Saudi Arabia is the world's largest import market for cardamom. Coffee consumption appears to be a strong driver of demand for cardamom in Saudi Arabia. Ready-ground cardamom coffee in a retail store in Arabia will typically amount to five or 10 grams of ground spice per 250 grams of coffee. However, for special occasions, or to honor a guest with a particular display of generosity, large quantities of cardamom may be used. During the period between Ramadan (August 2011) and the Hajj (November 2011), the Muslim pilgrimage to Mecca, consumption tends to increase as between one and two million Muslims enter the country during this three-month period.

The vast majority of Saudi Arabian imports come from Guatemala. In 2006, Saudi Arabia received 94 percent of its cardamom shipments by volume from Guatemala, while in 2010 this figure fell to 78 percent. Saudi Arabia imports a smaller percentage from India, although this is increasing with time. In 2006, Saudi Arabia imported 5 percent of its cardamom from India, while in 2010 this figure increased to 18 percent. Overall, Saudi Arabian import volumes fluctuated between 7,188 MTs and 10,300 MTs from 2006 to 2010 while import values rose from US$43.7 million to US$154.1 million over this period.

India is the world's largest consumer market for cardamom, but trails Saudi Arabia in imports. Unlike Saudi Arabia, India produces a substantial amount of cardamom domestically that is consumed at home. Taking into consideration international trade flows (imports and exports) and domestic production, India consumed approximately 18,100 MTs of cardamom in 2009.

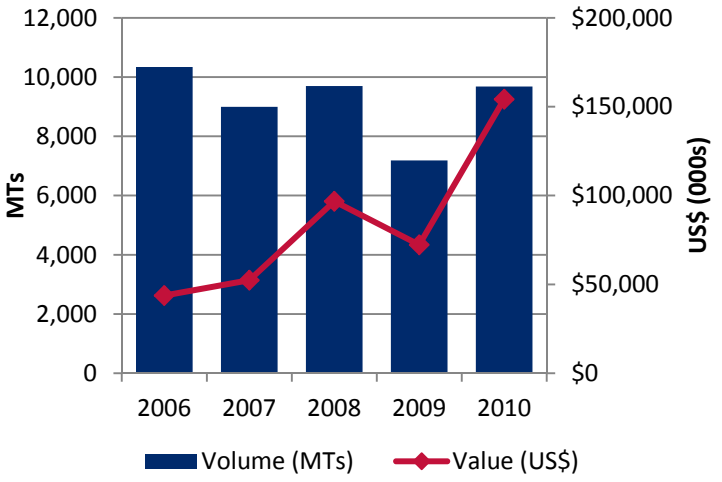
European Union. From 2006 to 2010, EU imports of cardamom decreased from 1,666 MTs to 1,593 MTs. Germany (with imports of 445 MTs), the Netherlands (431 MTs) and the United Kingdom (414 MTs) were the primary EU importers in 2010. Traditionally, the UK has been the largest importer as cardamom enjoys strong demand among the country's large Asian community. On the European continent, it has also become a popular ingredient in bakery and dessert products.

Figure 2: World Imports of Cardamom



Source: UN Comtrade

Figure 3: Saudi Arabia, Imports of Cardamom



Source: UN Comtrade

Like Saudi Arabia, the EU imports the majority of its cardamom from Guatemala. In 2010, the EU imported 1,368 MTs from Guatemala and only 225 MTs from the rest of world, including 159 MTs from India. Although EU import volumes were relatively stable over the period, values increased dramatically from US$5.4 million in 2006 to US$27.7 million in 2010 due in large part to price spikes.

United States. The US remains a minor importer of cardamom. From 2006 to 2010, US imports increased from 512 MTs to 660 MTs. Guatemala is the primary supplier. In 2010, the US imported 458 MTs from Guatemala and 202 MTs from the rest of the world, including 177 MTs from India. Similar to the EU, the US recorded major increases in import values over the period, from US$2 million in 2006 to US$13.4 million in 2010.

Table 1: Saudi Arabian Imports of Cardamom

Suppliers	2006		2007		2008		2009		2010	
	MTs	$000s	MTs	$000s	MTs	$000s	MTs	$000s	MTs	$000s
Guatemala	9,742	$39,840	8,310	$46,770	9,695	$96,799	7,164	$72,014	7,563	$129,392
India	492	$3,572	571	$4,891					1,765	$22,445
Others	107	$354	113	$687			24	$243	353	$2,347
Total	**10,342**	**$43,766**	**8,994**	**$52,349**	**9,695**	**$96,799**	**7,188**	**$72,257**	**9,681**	**$154,184**

Source: UN Comtrade

Harmonized Code: 090830 Cardamoms

Table 2: EU Imports of Cardamom

Suppliers	2006		2007		2008		2009		2010	
	MTs	$000s	MTs	$000s	MTs	$000s	MTs	$000s	MTs	$000s
Guatemala	1,346	$4,012	1,316	$6,025	1,292	$12,543	1,365	$12,944	1,368	$24,234
India	202	$902	220	$1,073	167	$1,024	199	$1,353	159	$2,570
Others	118	$551	106	$596	132	$1,193	57	$607	66	$937
Total	**1,666**	**$5,465**	**1,642**	**$7,694**	**1,591**	**$14,760**	**1,621**	**$14,904**	**1,593**	**$27,741**

Source: Eurostat

Harmonized Code: 09083000 (CN8): Cardamoms

Table 3: US Imports of Cardamom

Suppliers	2006		2007		2008		2009		2010	
	MTs	$000s	MTs	$000s	MTs	$000s	MTs	$000s	MTs	$000s
Guatemala	468	$1,898	512	$2,562	565	$6,172	465	$5,515	458	$11,042
India	38	$151	45	$149	62	$354	56	$545	177	$2,021
Others	5	$29	34	$83	20	$162	18	$161	25	$416
Total	**512**	**$2,078**	**591**	**$2,794**	**647**	**$6,688**	**539**	**$6,221**	**660**	**$13,478**

Source: USITC

Harmonized Code: 0908.30.0000 (HTS10): Cardamoms

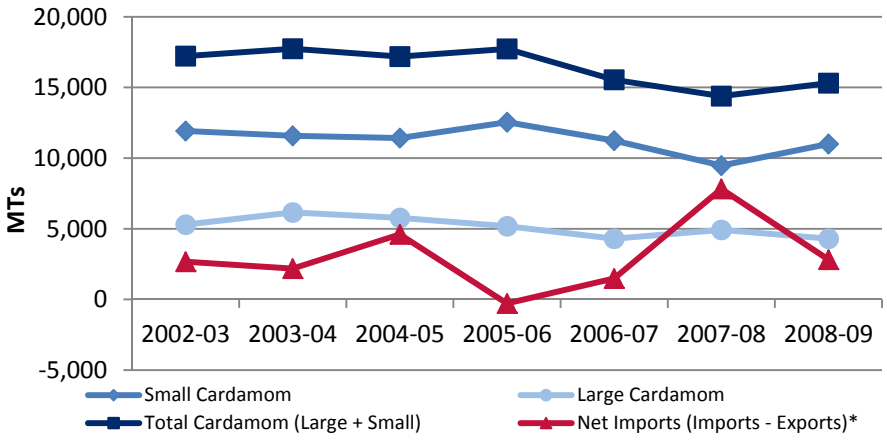
SUPPLIERS

Guatemala is the leading supplier of cardamom in the world, producing approximately 23,000 MTs annually. Guatemala exports the majority of its production to the Middle East, with small amounts to the EU. Due to its place as a market leader, Guatemalan cardamom production strongly impacts global prices. When the quality and/or quantity of the spice from Guatemala drop, global prices climb. In 2007, the export value of Guatemalan cardamom reached an historic high of US$137.2 million. In 2009, this figure was surpassed with exports reaching US$172.3 million. In regards to trade, five to six companies account for 80 percent of exports.

The cardamom cultivated in Guatemala is *Elettaria cardamomum*, a native of India's Malabar coast. It is typically grown at an altitude of 250 to 1,500 meters with an annual rainfall of 1,000 mm to 3,500 mm and temperature of 10°C to 35°C (50°F to 86°F). Unlike in India, where cardamom is cultivated under forest canopy, Guatemalan cultivation is in the open without shade and at higher altitudes where low temperatures are present. Regionally, the Department of Alta Verapaz accounts for approximately 70 percent of Guatemala's production.

India is the second largest producer of cardamom in the world, and was once the world export leader with an estimated 56 percent of the global market in 1970. Guatemala overtook India during the 1979/1980 production season. India's share of the world market has declined due to high domestic prices, high production costs and low yields Cardamom cultivation is labor intensive and account for 60-70 percent of the total cost of production (Center for Agricultural Policy with Prosperity Initiative, 2009).

Figure 4: India, Cardamom Production and Net Imports



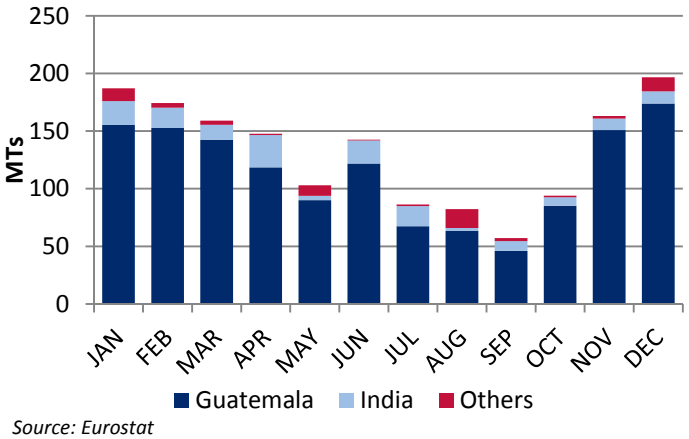
Source: Spice Baord of India, UN Comtrade
**Import and Export data from 2003, 2004, etc.*

In general, India's total cardamom production (i.e. large plus small cardamom) surpassed 15,000 MTs per year from 2003 to 2009. The sole exception occurred during the 2007-08 season when total production equaled 14,390 MTs. India typically imports more cardamom than it exports due to high domestic consumption. An analysis of import data shows that India imported 4,554 MTs in 2003 and 5,846 MTs in 2009, while it exported 1,714 MTs in 2003 and 3,025 MTs in 2009. The difference between imports and exports becomes more pronounced during years of low domestic production. For example, during the low production season of 2007-08, India's net imports (i.e. imports minus exports) were 7,816 MTs of cardamom to supplement production.

SEASONALITY

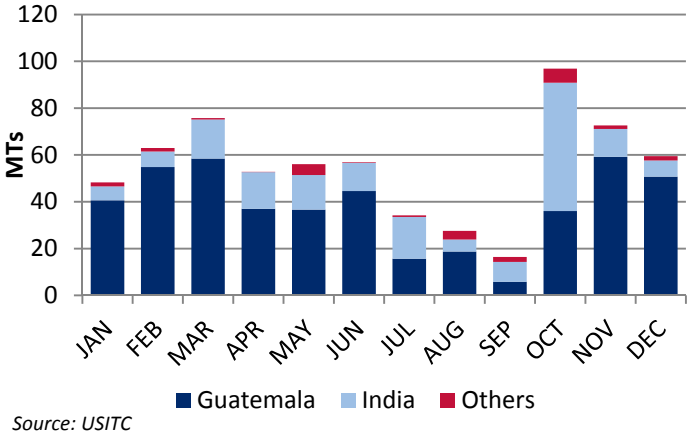
Guatemala's producers harvest year round due to favorable weather conditions, with the main crop being harvested between September and March. This provides the country with substantial advantages during the off-season. In India, the harvest season runs from September to February, with the peak period being October through November, immediately following the rainy season. In general, India's production is seasonal, as growers tend to utilize rain-fed production during the summer monsoon period. The harvest season in Nepal, China and Vietnam is shorter and runs from September to December.

Figure 5: EU Monthly Imports by Volume, 2010



Source: Eurostat

Figure 6: US Monthly Imports by Volume, 2010



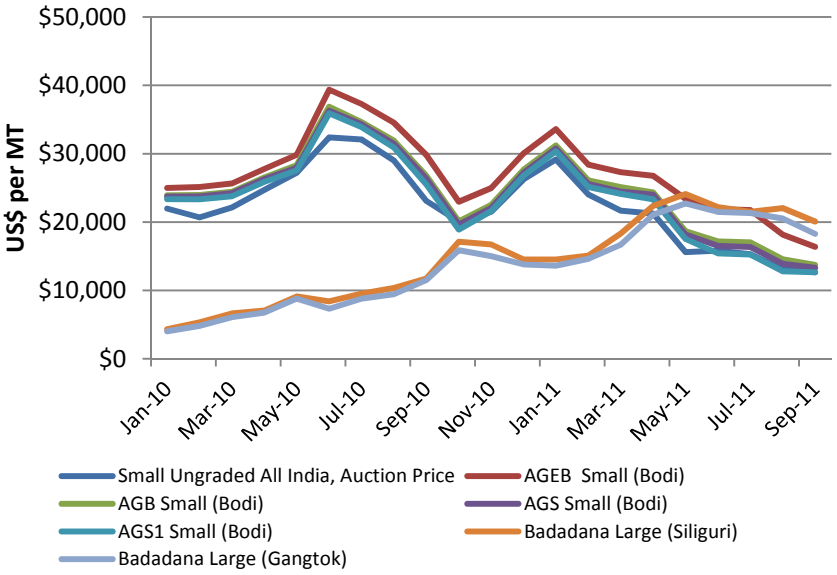
Source: USITC

With respect to the seasonality of Saudi Arabian imports, a Guatemalan small cardamom exporter noted that imports peak from September to January. This time period coincides with the high holidays of Islam (i.e. Ramadan and the Hajj) and the peak harvesting periods of Guatemala.

PRICES

The Spice Board of India provides spot prices at markets in Indian municipalities (i.e. Bodi, Gangtok, Siliguri) for various grades of small and large cardamom. The small cardamom grades are Alleppey Green Extra Bold (AGEB), Alleppey Green Bold (AGB), Alleppey Green Superior (AGS) and AGS1 (lower quality grade of AGS). The large cardamom grades are Badadana, Chottadana, Kanchicut and non-kanchicut. At the beginning of 2010, both small and large cardamom prices rose. Small cardamom prices peaked in July 2010 and January 2011. Since January 2011, small cardamom prices have been declining. Large cardamom prices reached a peak in May 2011, but have since been in steadily declining since then. As of September 2011 (most recent available data), AGEB was approximately US$16,400 per MT, AGB was US$13,700 per MT, AGS was US$13,300 per MT and Badadana approximately US$20,000 per MT.

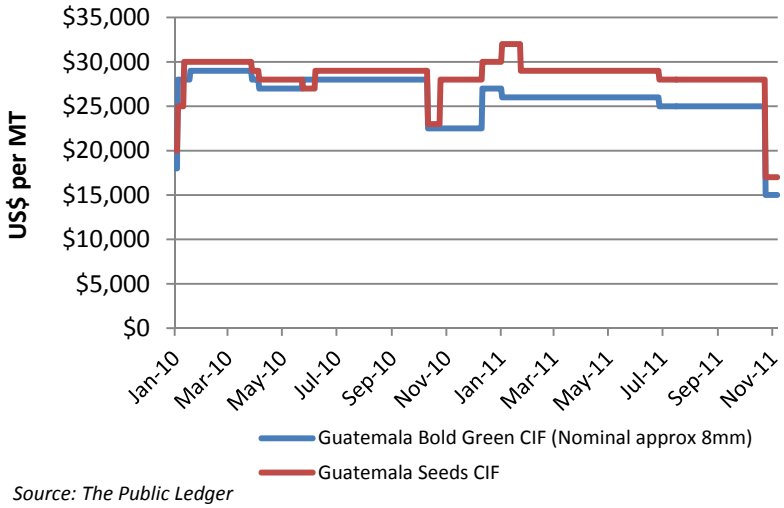
Figure 7: India, Cardamom Monthly Prices, 2010-2011



Source: India Spice Board

The Public Ledger provides Guatemalan CIF (Cost Insurance Freight) prices for the small cardamom varieties of Bold Green and Seeds. At the beginning of 2010, a strong price increase to nearly US$30,000 per MT was recorded for both varieties due to high demand and tight supplies. One EU cardamom trader quoted by the Public Ledger stated that farmers and/or exporters in Guatemala may have been holding on to produce for as long as possible to fuel scarcity fears and lend support to prices. In October 2010 prices declined but rebounded slightly by the end of the year. Prices spiked again in January 2011 due to concerns over a potential crop shortfall and high demand in the Middle East (Ramadan). By the spring of 2011, prices steadily declined as crop output was better than expected. A dramatic drop recorded at the end of October 2011 due to increased crop output. As of November 2011, the Public Ledger quoted Bold Green at US$15,000 per MT and Seeds at US$17,000 per MT.

Figure 8: Guatemalan Small Cardamom Prices



Source: The Public Ledger

According to a Public Ledger article published in November 2011, Indian cardamom prices have decreased in 2011, but are still $1,000 to $2,000 per MT more expensive than Guatemalan small cardamom (varieties not given). Please note that the Guatemalan CIF prices include the shipping costs to the port of destination (i.e. Saudi Arabia, USA, UK, Netherlands, etc.). This is in contrast to the Indian spot prices, which are the immediate price of sale at the regional market and do not include shipping costs.

STANDARDS AND REQUIREMENTS

Tariff and Trade No tariffs or import duties are levied on cardamom imports into the US, EU, Saudi Arabia, Egypt or India.

Grades and Standards. Cardamom is graded on the basis of color, clipping (i.e. pods with the tips trimmed), size, whether bleached or unbleached, the proportion of extraneous matter present, and product origin. Grading is carried out in accordance with a relevant national standard, if available, such as those used by Indian producers. In addition, ISO standard 882-1 provides some general guidelines on the grading, handling and packing of cardamom[1].

In the US market, the American Spice Trade Association (ASTA) adopted the original Cleanliness Specifications for spices, seeds and herbs in 1969. These have been revised numerous times, the latest occurring in 2007. The ASTA Cleanliness Specifications were designed to meet or exceed the United States Food and Drug Administration (FDA) Defect Action Levels (DAL). The DAL refers to Title 21, Code of Federal Regulations, Part 110.110 that allows the Food and Drug Administration (FDA) to establish maximum levels of natural or unavoidable defects in foods for human use that present no health hazard.

Table 4: US Cleanliness Specifications for Cardamom

Whole insects dead	Excreta Mammalian	Excreta other	Mold	Insect defiled/ infested	Extraneous foreign matter
By count	By mg./lb	By mg./lb	% by wgt.	% by wgt.	% by wgt.
4	3	1	1	1	0.5

Source: American Spice Trade Association, Revised 2007

Common Grades. In general, the weight in grams per liter and the color are decisive in determining quality. The proportion of burst fruit pods ("open pods") also determines quality, as do color (green or yellow) and drying method (mechanical or sun).

The following definitions refer to common Indian Grades:

- **Bold** is a popular export grade where 90 percent of the cardamom pods have a diameter of 6.5mm or above. The product has a mature green coloration with a weight in grams per liter of 415 grams.
- **Super Bold** is a high quality variety where all pods should have a diameter of 8mm or above. The product has a mature green coloration with a weight per liter of over 450 grams.
- **Extra Bold** is also a popular export grade where all pods will have a diameter of 7 mm or above. The product has a mature green coloration with a weight in grams per liter of 435 grams.
- **Bulk** is cardamom that has not been graded. As such, it contains all sizes, both mature and immature capsules, as well as black, yellow and/or split cardamom.
- **Small** is a grade with pods that measure between 5.5 mm and 6.5 mm in diameter. The weight in grams per liter is approximately 385 grams.
- **Open/Splits** is lower quality cardamom where over 60 percent of the pods are “open” (i.e. seeds exposed) and the color of the pods may be greenish/pale yellow. All pods will be mature with a diameter of 6.5 mm or above
- **Seeds** are the black/brown seeds of the cardamom pods (i.e. husk fully removed). The weight in grams per liter is typically 550 to 600 grams.
- **Fruit** are generally over matured pods with slight yellowish in color. The weight in grams per liter is 425 grams or above.

The following definitions refer to common Guatemalan Grades:

- **Jumbo Green** are extra-large green small cardamom pods.
- **Imperial Best Green** are large green pods.
- **Fancy Green Extra** are extra green pods.
- **Fancy Green** are medium sized green pods.
- **Imperial Mixed Green** are large pale green pods.
- **Mixed Green** are pods of assorted colors.

[1]ISO 882-1:1993 http://www.iso.org/iso/iso_catalogue/catalogue_tc/catalogue_detail.htm?csnumber=5269

- **Mixed Green Split** are medium sized open green pods.
- **Yellow Mixed** are medium/large closed yellow pods
- **MYQ** or Mixed Yellow Quality is medium sized light-brown cardamom for grinding.
- **Seeds** is cardamom with the husk removed.

Packaging. Because of the high value of cardamom, it is generally packaged in double-layered bags (42 kg -50 kg) and is seldom transported in boxes without bags. Increasingly used are single ply fabric bags lined with polybags. Black polybag liners are used for the better, green grades to protect them from light as color is an important determinate of price. Premium grades from Guatemala are packed in protective bags and shipped in 5 kg cartons, with a master carton holding 8 of these. Cardamom husks are sometimes shipped in compressed bales of up to 300 kg or loose in bags.

Harvesting. Fruits are picked when fully developed but still green. For quality, it is important that the seeds within the green pods have changed color from white to brown or black. Because fruit ripening is highly irregular, harvesting of individual fruits occurs at the correct stage of ripeness. Fruits are also picked with care so that they are not bruised or broken. In India, two types of picking are adopted – light picking and hard picking. In light picking, only mature pods are harvested whereas in hard picking the semi-mature crop is also removed.

Postharvest Handling. Postharvest operations consist of washing, curing (drying), cleaning, polishing, sorting, grading and packing. Sometimes after harvesting, pods are treated with 2 percent washing soda (sodium carbonate) for 10 minutes to stabilize chlorophyll and impart better green color. It is important to dry the cardamom capsules as soon after harvest as possible to prevent the loss of flavor. It is also important that the drying process is as short as possible so that mold does not grow on the capsules and the bright green color is retained.

There are several ways of drying the fruit to reduce the moisture content from about 75 percent at harvest to 13 percent for safe storage. These include sun-drying, solar drying, wood-fired drying, electric/gas drying and humidity controlled drying. In sun-drying cardamom pods are spread on a concrete floor to dry using the natural heat from the sun, whereas in solar drying the pods are placed in a special dryer, out of direct sunlight. Wood-fired drying is the traditional method used in India and typically requires a large amount of firewood to dry the pods. The smoke from the fire can give the pods an unpleasant smoked flavor and may burn some of the cardamom. Consequently, cardamom pods dried by this method are not of the highest quality.

OUTLOOK

On the whole, the cardamom import market has not fully recovered from the 2008 global financial crisis. In 2008, global imports totaled 37,700 MTs, but declined to 26,900 MTs in 2010. Based on these figures, there is room for growth in the cardamom export market. Global imports have in fact been increasing since 2008, although at a relative slow rate. This import trend should continue and possibly reach 30,000 MTs per year in the future although much depends on the global economy. Consumption of cardamom in India and Saudi Arabia strongly correlates with income trends. In early 2011, sources noted that buyers from the Middle East withdrew from the market on concerns over political unrest in the region; but have since returned and slowly resumed supplying the market again.

Based on recent price trends, prices should be stable and maintain their current level. This is due to an adequate 2011 harvest in Guatemala and a relatively stable economic situation in Saudi Arabia. A lackluster 2011 harvest in India due to fungal disease outbreaks could push prices up in the near term as India would have to import more to supplement domestic consumption.

In addition to economic factors, climatic conditions must be taken into account. For instance, the El Niño weather disturbance affected Guatemala from October 2009 to May 2010, causing low rainfall and drought (cardamom is generally not impacted by excessive rain). Consequently, production was adversely effected as the cardamom plant requires a continuous spell of rain interspersed with periods of good sunshine. In early 2010, La Niña brought more rain than normal to Guatemala, which was a boon to production.

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Annex: Guatemalan Cardamom Exports

TOTAL GUATEMALAN CARDAMOM EXPORTS (MTs)

	2009	2010	2011	2011 vs 10
January	2,865	2,476	3,384	**36.70%**
February	3,234	1,636	2,394	**46.30%**
March	2,284	1,435	2,325	**62.00%**
April	1,956	1,363	1,168	**-14.30%**
May	1,480	1,877	1,688	**-10.10%**
June	1,162	1,294	1,597	**23.40%**
July	744	1,096	1,249	**14.00%**
August	160	276	948	**243.50%**
September	118	321		
October	3,148	2,297		
November	3,894	4,137		
December	2,648	3,960		
YTD	13,885	11,453	14,753	**28.80%**
Full year	**23,693**	**22,168**		

Source: The Public Ledger

GUATEMALAN YTD CARDAMOM EXPORT DESTINATIONS (MTs)

	2009	2010	2011	2011 vs 10
Saudi Arabia	3,660	3,695	4,606	**24.70%**
United Arab Emirates	2,397	2,202	1,601	**-27.30%**
Syria	1,076	750	1,482	**97.60%**
Pakistan	1,231	477	853	**78.80%**
Bangladesh	601	410	813	**98.30%**
United States	375	638	652	**2.20%**
Germany	166	265	644	**143.00%**
India	525	39	520	**1233.30%**
Jordan	701	298	482	**61.70%**
Kuwait	227	351	438	**24.80%**
Total	**13,885**	**11,452**	**14,753**	**28.80%**

Source: The Public Ledger