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# THE U.S. MARKET FOR CHAYOTE

Produced by the USAID-ACCESO Project

Market Survey #18

## INTRODUCTION

Chayote, otherwise known as the vegetable pear, is a pale green, ridged, fleshy fruit that has a single seed. It comes from Mexico and Central America. Chayote is a member of the gourd family, related to squash and cucumbers. It grows on trailing vines in mild climates. The fruit can be steamed, baked or fried for use in a wide variety of dishes. It has grown in popularity across the U.S. as the Hispanic population has increased and has also been adopted by other U.S. consumers. There are about a dozen varieties in varying shades of green, many with sharp spines on the skin. Sizes usually range from 6-8 inches. U.S. consumers, however, tend to prefer the taste of the smooth, pale varieties.



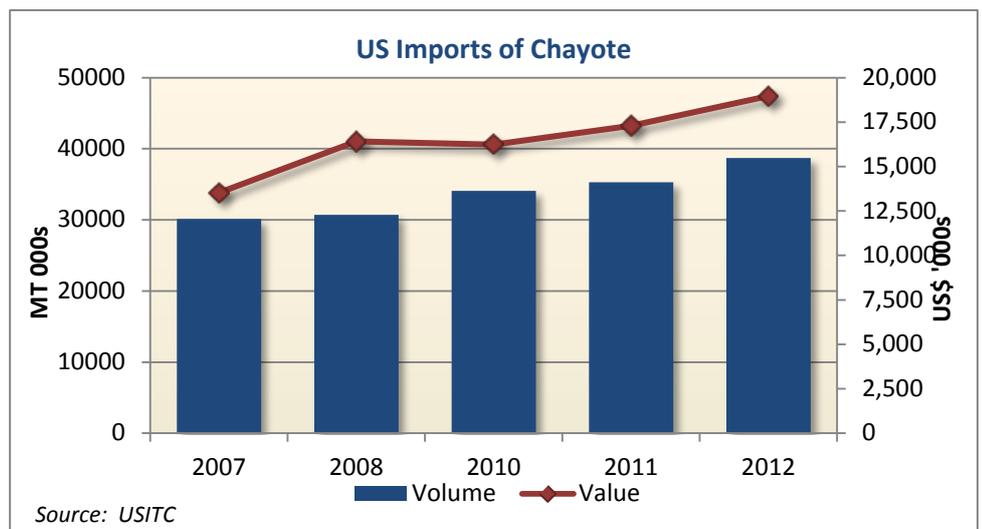
Most of the chayote consumed in the U.S. comes from Costa Rica and Mexico, with Mexican exports matching Costa Rica for the first time in 2011. Mexico and Costa Rica each share 49 percent of the U.S. market.

## PRODUCTION

No statistics on domestic or international production of chayote are available from the USDA or Food and Agricultural Organization, but research from the Institute of Food and Agricultural Sciences shows that small quantities are grown in Florida. According to the University of Hawaii<sup>1</sup>, chayote is also grown commercially in California and Louisiana. While the U.S. production is consumed locally, the quality of U.S. production is not sufficient to be competitive with Costa Rica and Mexico.

## U.S. MARKET<sup>2</sup>

Overall, U.S. imports of chayote have been steadily rising. From 2000 to 2007, imports increased from 23,451 MT to 30,104 MT, an average annual increase of four percent. In the period of 2007 to 2012 (see Figure 1), imports increased to 38,674 MT, an increase of nearly six percent a year. The value of imports is increasing by a greater rate than the volume, from \$13,516,000 in 2007 to \$18,949,000 in 2012.



<sup>1</sup> <http://www2.hawaii.edu/~hector/prod%20guides%20fold/CHAYOTE.pdf>

<sup>2</sup> Trade data is not yet available for 2013 or 2014

## SUPPLIERS

**Costa Rica** has long dominated the U.S. import market for Chayote, but has been losing market share to Mexico in recent years. The volume of Costa Rican exports to the U.S. decreased by 7 percent from 2007 to 2011. In 2000, Costa Rica held 82 percent of the U.S. market share by volume<sup>3</sup>. In 2007, Costa Rica's market share was 68 percent, and by 2011, its market share was down to 49 percent.

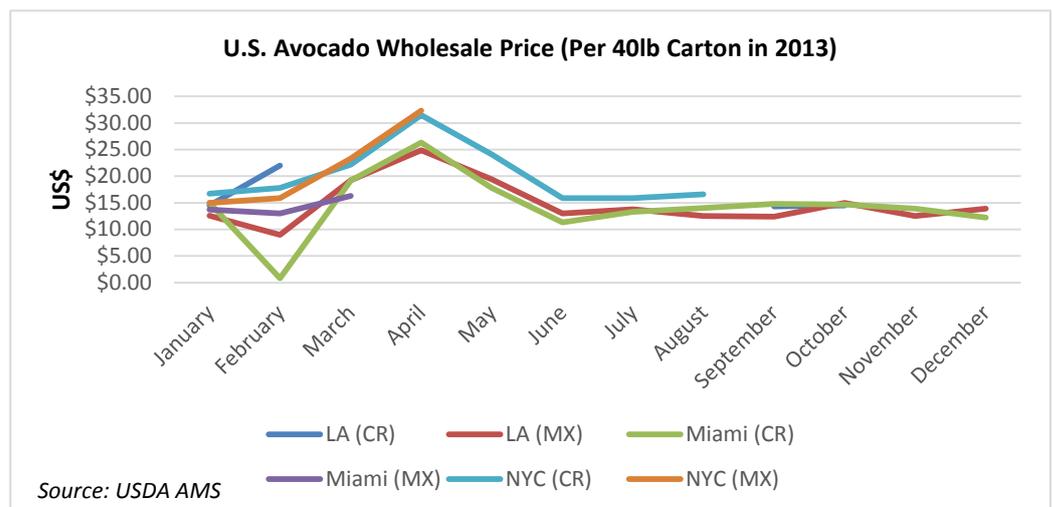
**Mexico** has significantly increased its U.S market share, increasing from 18 percent in 2000<sup>4</sup> to 32 percent in 2007 and 49 percent in 2011. Between 2007 and 2011, the total volume of Chayote exports to the U.S. doubled from 9,516 MT to 19,512 MT. This increase matches the total increase in U.S. imports of Chayote, implying that Mexico has been able to completely capture increases in the U.S. market.

### US Chayote Imports by Origin

Supplier	2007		2008		2009		2010		2011	
	MTs	\$000s	MTs	\$000s	MTs	\$000s	MT	\$000s	MTs	\$000s
Mexico	9,516	5,862	14,403	8,756	18,093	9,341	16,355	8,504	19,512	9,861
Costa Rica	20,507	7,617	16,217	7,599	15,862	6,840	18,820	8,748	19,017	9,018
Guatemala	0	0	0	0	37	18	50	7	73	35
Honduras	0	0	0	0	0	0	14	8	0	0
Nicaragua	0	0	78	36	17	11	0	0	4	3
Other	81	37	0	0	40	17	27	18	68	32
<b>TOTAL</b>	<b>30,104</b>	<b>13,516</b>	<b>30,698</b>	<b>16,392</b>	<b>34,049</b>	<b>16,227</b>	<b>35,266</b>	<b>17,285</b>	<b>38,674</b>	<b>18,949</b>

## PRICES

From the available wholesale market data, it is clear that prices are relatively consistent from July to December, with much greater volatility from January to June. Prices spiked from April to May, with the highest wholesale price registered for Mexican chayote in the New York City market at \$31.3 per 40lb carton.



## STANDARDS, LAWS AND, REGULATIONS

**Postharvest handling:** According to the National Gardening Association, it is best to pick chayote before the fruit begins to split and germinate on the vine. The fruit is sensitive to moisture loss, so once cut; chayote should be placed in pre-cooled in cold rooms between 50 and 55 degrees Fahrenheit, with relative humidity of 85-90 percent.<sup>5</sup>

**Packing:** Chayote is packaged into fiberboard boxes, individually wrapped, in a single layer, with 24-30 pieces in each 20-pound box.<sup>6</sup>

<sup>3</sup> USAID Honduras, 2005, The U.S. Market for Chayote, Market Survey Series #04

<sup>4</sup> USAID Honduras, 2005, The U.S. Market for Chayote, Market Survey Series #04

<sup>5</sup> USAID Honduras, 2005, The U.S. Market for Chayote, Market Survey Series #04

<sup>6</sup> <http://www2.hawaii.edu/~hector/prod%20guides%20fold/CHAYOTE.pdf>

**Phytosanitary requirements:** Chayote is permitted entry to the U.S. from most Latin American and Caribbean producers without special treatment or geographical restrictions.

**Grades and Standards:** According to the CODEX Standard for Chayotes (CODEX STAN 216-1999), in all classes, chayotes must be clean, free of pests, free of visible foreign matter, and other damage.<sup>7</sup> Three classes of product are specified:

- 'Extra class' must be of superior quality and free of defects;
- 'Class I' must be of good quality, with slight defects (slight defects in shape, slight defects in coloring not exceeding 25 percent, slight skin defects due to scarring not exceeding 3 cm squared) allowed provided they do not affect the general appearance of the produce;
- 'Class II' must satisfy the minimum requirements specified above, with defects (defects in shape, defects in coloring not exceeding 35 percent, skin defects due to scarring not exceeding 5 cm squared).

**Tariffs and charges:** Mexico enjoys duty-free entry on chayote as a result of the North American Free Trade Agreement (NAFTA). Costa Rica and other Central American countries including Honduras, also enjoys duty-free entry through the Dominican Republic-Central America-United States Free Trade Agreement (CAFTA-DR). The tariff on chayote imports to the U.S. from non-preferential trade partners is 5.6 percent.

## OUTLOOK

While small, the U.S. import market for chayote is consistent and growing. Given the lack of exports and negligible U.S. domestic production, domestic consumption is estimated to match imports. As consumption has increased by an average of nearly six percent per year since 2007, consumption is expected to grow to over 35,000 MT by 2015. This demand has been driven largely by an increasing U.S. Hispanic population, which is increasing by over two percent per year. While the lack of domestic and international production data hampers a more in depth analysis, demographic trends suggest that the product will be increasingly important to US consumers, with most opportunities to compete still based on price.

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<sup>7</sup> According to CODEX Standard for Chayotes (CODEX STAN 216-1999), the full specifications are as follows "chayote must be whole, sound, clean, practically free of any visible foreign matter, practically free of pests affecting the general appearance of the produce, practically free of damage caused by pests, free of abnormal external moisture, excluding condensation following removal from cold storage, free of any foreign smell and/or taste, firm, fresh in appearance, free of damage caused by low temperatures, practically free of bruising, free of damage caused by the sun; free of fibrous flesh; free of hard spines; and free of visible signs of germination.