



# THE US MARKET FOR FRESH HOT PEPPERS

Market Brief #14

## INTRODUCTION

Hot peppers, also commonly referred to as chile peppers<sup>1</sup>, belong to the genus *Capsicum*. Their historical significance dates back to the start of civilization in the Western Hemisphere, as they are among the oldest cultivated crops of the Americas. Chiles were subsequently introduced by explorers to Europe, Africa, and Asia, and are now produced, traded, and consumed extensively worldwide. With the rapid increase of the Hispanic population in North America and the increase in popularity of Mexican and Southwest-style cooking, consumption of hot peppers continues to grow in the US market.



Market trends for particular types of hot peppers are difficult to pinpoint, as there are numerous varieties which have distinct marketing channels. US production and trade statistics aggregate hot peppers in a broad category, “chili peppers”.

Although the word chile has come to be synonymous with hot peppers, technically it refers to all types of peppers of the genus *Capsicum*, whether hot or sweet. What differentiates the hot pepper from its counterparts of the genus *Capsicum* is the presence of capsaicin, the substance from which it derives its pungency, and which is found in the membranes surrounding the seeds of the pepper. The Scoville heat index is the most widely used and respected method of measuring pungency. This index ranges from 0 to 16,000,000; 0 meaning no dilution required and 16,000,000 meaning the extract must be diluted 16,000,000-fold before there is trace of pungency is eliminated.

**Table 1: Scoville Heat Ratings**

Variety	Scoville Rating
Pure capsaicin	16,000,000
Carolina Reaper	2,200,000
Trinidad Ghost Scorpion	855,000 – 2,199,999
Habanero, Scotch bonnet	100,000 - 350,000
Aji, Cayenne, Tabasco	30,000 - 50,000
Serrano	10,000 - 23,000
Jalapeño	1,000 - 10,000
Poblano, Anaheim	1,000 - 4,000
Cubanelle, Peperocini	100 - 900
Bell	0

Source: Wikipedia

There are numerous cultivars of hot peppers which vary in size, shape, color and pungency. Common varieties found in the US market include jalapeño, poblano, anaheim, habanero, Thai hot, cayenne, and Scotch bonnet, among others. Table 1 indicates the Scoville ratings of several common varieties.

For many North American consumers, fresh hot peppers are too pungent to be eaten alone, so they are generally used as flavorings in various dishes. Perhaps their most common application is in salsa, which, in several years since the early nineties has outsold ketchup, traditionally the most widely consumed condiment in the US. Consumers in niche markets, however, do consume fresh chile, particularly Latino and Asian populations.

## PRODUCTION

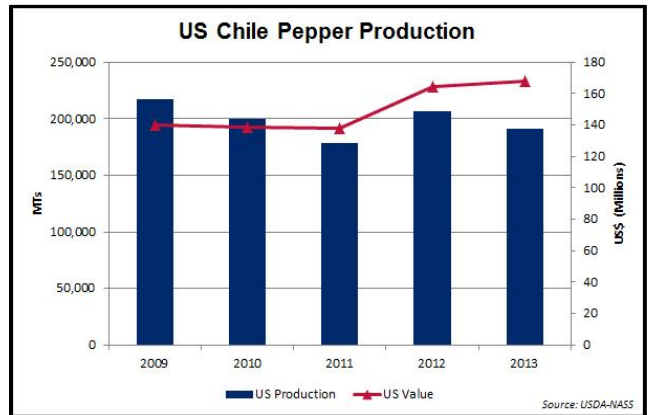
Chile pepper production in the US is dominated by California and New Mexico. Once the largest grower of chile peppers in the US, New Mexico has seen its output fall over the past five years from 108,181 MTs in 2009 to just 58,967 in 2013. Meanwhile, California's production has been steadily increasing and in 2010 surpassed New Mexico in terms of both total

<sup>1</sup> According to the New Mexican Chile Pepper Institute the spelling of the word ‘chile’ has evolved over time. Originally from the Aztec, Nahuatl word ‘chilli,’ the Spanish changed the spelling to chile in Mexico. In the United States while the USITC uses the category ‘chili peppers,’ production data from the USDA uses ‘chile.’ While both spellings are acceptable, this report uses chile for consistency.

production and value. In 2013 California’s share of domestic production was 63 percent and New Mexico’s was 31 percent, together these two states accounted for 94 percent of total US production.

Texas and Arizona are the next biggest chile producers, but their output is relatively small in comparison – 8,981 and 3,265 MTs respectively in 2013. Chile peppers from these states accounted for approximately 6 percent of US production that year.

Between 2009 and 2013 overall US production decreased from 217,271 to 190,962 MTs, continuing a downward trend that dates back to the early nineties.



Global production statistics from FAOSTAT aggregate data for fresh bell and chile peppers under the category “chilies and peppers, green”<sup>2</sup>, making it difficult to compare national production levels for hot peppers alone. A comparison of US statistics illustrates the size of the bell pepper market: US chile pepper production (USDA) was 206,611 MTs in 2012, while total US pepper production (FAOSTAT) was 1,064,800 MTs.

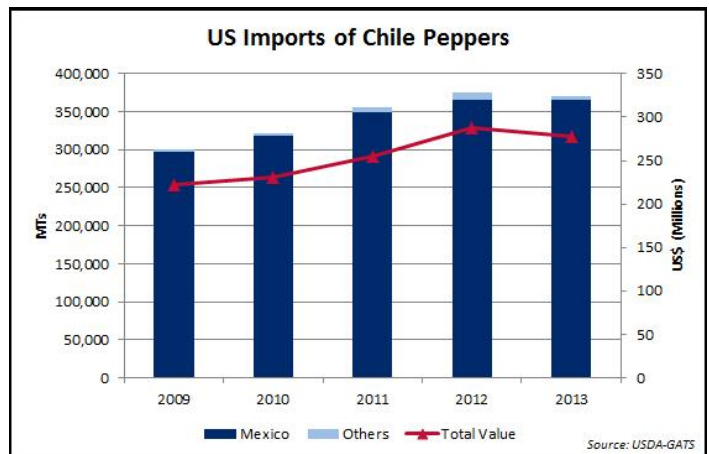
However, as FAOSTAT is the reference data commonly cited for comparison of national pepper production levels it is useful for understanding relative pepper production levels. Global pepper production was 31.2 million MTs in 2012. The US ranked 5<sup>th</sup> with 4 percent of production, behind China (51%), Mexico (8%), Turkey (7%), and Indonesia (5%).

## US MARKET

Consumption of chile peppers is growing in the US as they move from an ethnic specialty to a more mainstream food product. According to Fresh Trends research in 2012 more than 25% of US shoppers purchased chiles within a 12 month period.<sup>3</sup> Mild chile peppers tend to be more abundant in the market, with industry sources listing jalapeño, anaheim, and poblano peppers as the three most important varieties by volume. Hotter peppers such as habaneros and scotch bonnet are often considered specialty peppers and sold in smaller quantities. According to the USDA, approximately 41% of US production goes to the fresh market<sup>4</sup> while the remainder is used for processed products such as salsa, frozen entrees, and appetizers.

Hot peppers imported to the US are almost exclusively conventional (i.e., not organic). The market for organic hot peppers remains extremely small and importers indicated that while they have had some requests for organic product in recent years there is not yet sufficient enough demand to shift toward organic production.

In 2013, the US imported 369,890 MTs of chile peppers valued at \$278 million. This was a slight decrease from the previous year when 375,000 MTs were imported, however the prevailing trend over the past five years continues to be an increase in imported hot peppers coupled with a slight decrease in domestic production.



<sup>2</sup> FAOSTAT data for “chilies and peppers, green” includes: *Capsicum annum* (which includes bell peppers); *C. frutescens*; *Pimenta officinalis*, and excludes crops cultivated explicitly as spices.

<sup>3</sup> The Packer. Picking Peppers for Profit. December 2012. <http://www.produceretailer.com/produce-retailer-issues/Picking-peppers-for-profit-181907631.html?view=all> Accessed 16 Jan 2015.

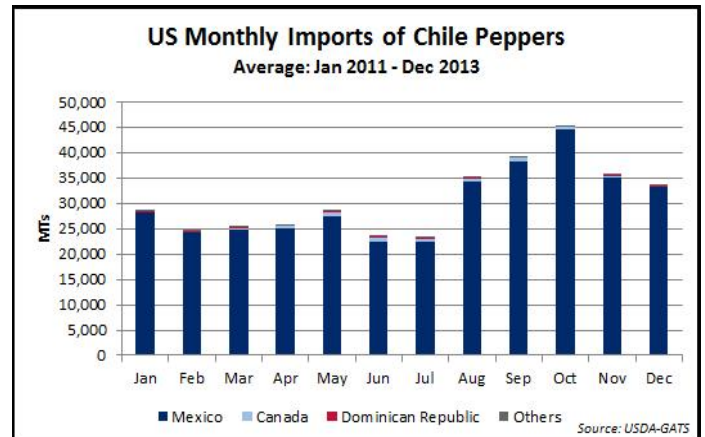
<sup>4</sup> USDA-ERS: Vegetables, Potatoes, and Melons Harvested for Sale: 2012 and 2007, 2012 Census of Agriculture, NASS, USDA, May 2014. [http://www.agcensus.usda.gov/Publications/2012/Full\\_Report/Volume\\_1,\\_Chapter\\_1\\_US/usv1.pdf](http://www.agcensus.usda.gov/Publications/2012/Full_Report/Volume_1,_Chapter_1_US/usv1.pdf)

Industry sources indicated that a major factor in the recent reduction in US output has been the cost of labor. Chile pepper harvests are labor intensive and other crops that are easier to pick and have higher returns have drawn labor away from the sector in the US. Producers in other pepper producing countries have lower labor costs, making it difficult for US producers to compete. In the southwest, water availability has also been an issue as both New Mexico and California have recently suffered from severe drought.

## SUPPLIERS

Mexico is by far the largest supplier of fresh hot peppers to the United States and their total exports have increased steadily since 2009. In 2013, 99% of US imports originated in Mexico, accounting for 96% of the monetary value of US chile imports. This market share has remained fairly steady over the past five years, ranging from 99% in 2009 to 97% in 2012.

The US imported 365,000 MTs of hot peppers from Mexico in 2013. In comparison, only two other suppliers achieved over a thousand MTs in the past five years: the Dominican Republic and Canada. Combined these two nations accounted for the majority of the remaining 1% of market share in 2013. The Dominican Republic appears to hold market share in specific varieties that are not supplied by Mexico such as aji peppers. However the Caribbean nation's total imports have fallen for the past four years from a high of 3,012 MTs in 2010 to just 1,768 in 2013. Canada, which supplied just 33 MTs in 2009 and 2010, reached a high of 6,997 MTs in 2012 before falling to 2,756 MTs in 2013.



Other small suppliers include Jamaica, Trinidad and Tobago, Peru, and Vietnam.

US Imports of Chile Peppers, Fresh

Suppliers	2009		2010		2011		2012		2013	
	MTs	\$000s	MTs	\$000s	MTs	\$000s	MTs	\$000s	MTs	\$000s
Mexico	296,783	216,158	318,774	224,402	349,191	237,837	365,495	266,080	365,183	266,839
Canada	33	34	33	31	4,161	11,492	6,997	16,156	2,756	6,605
Dominican Republic	2,481	4,433	3,012	5,242	2,947	5,062	2,372	4,388	1,768	3,421
Jamaica	5	24	15	35	49	213	38	178	58	295
Trinidad and Tobago	19	65	20	96	11	116	15	131	26	181
Peru	50	123	45	129	68	250	29	89	20	57
Vietnam	10	23	-	-	13	35	17	43	18	43
China	131	196	30	76	1	24	26	121	17	56
Guatemala	10	20	9	21	6	11	12	26	16	33
Israel	209	569	239	580	2	14	-	-	11	108
Others	86	321	12	65	36	202	43	136	19	106
<b>Total</b>	<b>299,817</b>	<b>221,966</b>	<b>322,189</b>	<b>230,677</b>	<b>356,484</b>	<b>255,256</b>	<b>375,044</b>	<b>287,348</b>	<b>369,890</b>	<b>277,744</b>

Source: USDA-GATS, HS Codes 0709602000, 0709602010, 0709602090

## SEASONALITY

The US and Mexican chile pepper harvest seasons are complimentary and allow for year round availability in the US market. Mexican chiles come in between November and May while US chile harvests range from approximately May to October/November (with some variation between states). This seasonality of supply is a driving force behind import trends. In the early fall, as US production starts to slow, buyers looking to maintain supply begin to source from Mexico.

Monthly imports of hot peppers in the US tend to peak in October, and then decrease steadily throughout the winter. In the spring and early summer, hot pepper imports are relatively consistent, averaging about 25,000 MTs between March and July 2011-13. From a low point sometime during this period to the peak in October, imports nearly double in volume.

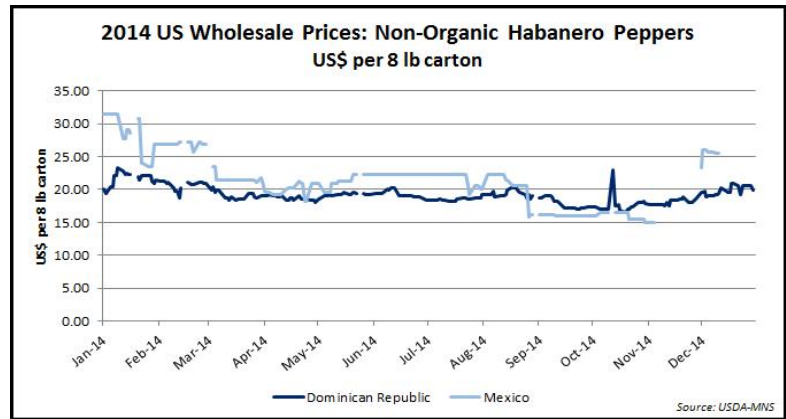
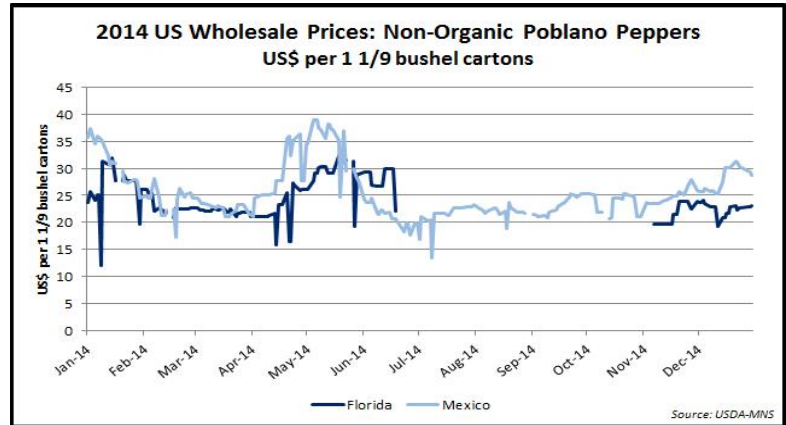


## PRICES

Prices for hot peppers vary widely depending on origin, variety, and method of transportation. They are also responsive to weather phenomena that affect supply.

In general the more common varieties such as jalapeño and poblano peppers appear to have more variance in price, while the established but less common hot varieties, such as habaneros, tended towards a steadier price range. A wholesale price overview from 2014:

- Non-organic poblano peppers of Mexican origin: the average price for 2014 was US\$25.33 per 1-1/9 bushel<sup>5</sup>, with a peak of US\$30 in May and a low of US\$13.46 in July
- Non-organic habanero peppers originating from the Dominican Republic: the average price for 2014 was US\$19.14 per 8 lb carton, with a peak of US\$23 and a low of US\$16.56, both in October
- Non-organic Anaheim peppers of Mexican origin: the average price for 2014 was US\$21.35 per 20 lb carton, with a peak of US\$28.5 in December and a low of US\$16 in June
- Non-organic jalapeño peppers of Mexican origin: the average price for 2014 was US\$24.12 per 1-1/9 bushel carton with a peak of US\$33.38 in November and a low of \$US18.10 in February



## STANDARDS, LAWS AND REGULATIONS

**Tariffs.** For countries with Normal Tariff Relations (NTF), hot peppers enter the US at a rate of 4.4 cents per kilogram.<sup>6</sup> There are, however, numerous beneficiaries of free trade agreements. Australia, Bahrain, Chile, Colombia, Israel, Jordan, Korea, Morocco, Oman, Panama, Peru, Singapore, and beneficiaries of trade agreements such as NAFTA, CAFTA-DR, and the Caribbean Basin Economic Recovery Act enjoy duty free exports of hot peppers to the US. Mexico and Central American nations, as NAFTA and CAFTA-DR signatories respectively, are not subject to tariffs on hot peppers.

**Phytosanitary requirements.** Regulations for the importation of fresh peppers are outlined by APHIS in the USDA Cut Flowers and Greenery Import Manual. Peppers originating in Mexico and the Dominican Republic require only an import permit and are subject to inspection and all general requirements as laid out in the USDA manual. Chile peppers from Honduras and most other Central American countries are permitted entry to the US under the following conditions as detailed by APHIS:

- An import permit is required and all shipments are subject to inspection as well as all general requirements.
- Must be accompanied by a phytosanitary certificate issued by the country of origin's department of agriculture stating that "These peppers were grown in an approved production site and the consignment has been inspected and found free of the pests listed in the requirements."

<sup>5</sup> 1-1/9 bushel cartons or crates weigh about 28 pounds.

<sup>6</sup> USITC. Harmonized Tariff Schedule of the United States. 2014. <http://www.usitc.gov/publications/docs/tata/hts/bychapter/1401gntoc.htm>. accessed 20 Jan 2015.

- Peppers must arrive at the US port of entry in insect-proof cartons or cartons covered with an insect-proof tarpaulin.
- The shipping boxes must be labeled with the identity of the production site.<sup>7</sup>

These regulations cover *Capsicum annum*, *Capsicum baccatum*, *Capsicum chinense*, and *Capsicum frutescens*, which includes peppers commonly referred to as chile or hot peppers.<sup>8</sup>

**Grades and Standards.** There are three grades for peppers (other than sweet peppers) as established by the USDA<sup>9</sup>:

- **US Fancy:** peppers must be mature with similar varietal characteristics (except when specified as mixed varieties/colors), firm, well-shaped, and free of damage as a result of: Blossom End Rot, crushed/broken, freezing, freezing injury, hail, insects, pitting, scars, shriveling, sunburn, or other means. Size may be specified in inches and fractions connected to the grade in terms of minimum/maximum diameter or length, or by count. Color may also be specified in connection with the grade, provided that 90 percent of peppers show any amount of the specified color.
- **US No. 1:** peppers must be mature with similar varietal characteristics (except when specified as mixed varieties/colors), firm, fairly well shaped, and free from crushed/broken, freezing, freezing injury, sunscald, decay affecting calyxes and/or walls, decay affecting stems, and free from damage caused by Blossom End Rot, bruising, dirt, discoloration, disease, hail, insects, pitting, scars, shriveling, sunburn, or other means. Size may be specified in inches and fractions connected to the grade in terms of minimum/maximum diameter or length, or by count. Color may also be specified in connection with the grade, provided that 90 percent of peppers show any amount of the specified color.
- **US No. 2:** peppers must be mature with similar varietal characteristics (except when specified as mixed varieties/colors), firm, not seriously misshapen, and free from freezing, freezing injury, sunscald, decay affecting calyxes and/or walls, decay affecting stems, crushed/broken and free from serious damage caused by Blossom End Rot, bruising, dirt, discoloration, disease, hail, insects, pitting, scars, shriveling, sunburn, mechanical or other means. Size may be specified in inches and fractions connected to the grade in terms of minimum/maximum diameter or length, or by count. Color may also be specified in connection with the grade, provided that 90 percent of peppers show any amount of the specified color.

**Packing.** Fresh peppers have a variety of packaging methods. They are commonly shipped in bushel and 1-1/9 bushel cartons or crates, which weigh about 28 pounds. A 15 pound ½ bushel carton and 8-10 pound carton are also common.

**Postharvest handling.** Almost all chile peppers are harvested by hand and placed in to buckets or sacks (mechanized harvesting is possible for some red chile crops<sup>10</sup>). Assessment of maturity for harvesting depends on the variety. Green chile peppers should be harvested when they are dark green and firm – a light green color and yielding easily when squeezed indicates immaturity. Chiles intended to be marketed as red can be harvested when they are turning orange or red.

It is best to harvest chile peppers in the early morning, placing them in the shade as they are vulnerable to water loss, sunscald, and heat damage – all of which are more likely when the fruit sits in direct sunlight for more than an hour. Chiles should be moved to refrigeration within 1 to 2 hours after harvest to preserve freshness and prevent water loss. If not refrigerated the peppers will shrivel and change color. Stems should be firm and green and any discoloration or shriveling is an indication that the pepper was not recently harvested.<sup>11</sup> Peppers have a transit and storage life of 2-3 weeks when

<sup>7</sup> USDA. Cut Flowers and Greenery Import Manual. 2014.

<sup>8</sup> USDA Agricultural Research Service Germplasm Resources Information Network, Taxon: *Capsicum frutescens* L. <http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?8913> accessed 16 Jan 2015.

<sup>9</sup> USDA. United States Standards for Grades of Peppers (Other Than Sweet Peppers): Effective March, 2007. <http://www.ams.usda.gov/AMSv1.0/getfile?dDocName=STELPRDC5051220>. Accessed 16 Jan 2015

<sup>10</sup> Western Farm Press. US Chile Pepper Industry Under Assault From Foreign Imports. <http://westernfarmpress.com/vegetables/us-chile-pepper-industry-under-assault-foreign-imports>. September 2012. accessed 16 Jan 2015.

<sup>11</sup> New Mexico State University. Postharvest Handling of Fresh Chiles. November 2010.

shipped under proper conditions.<sup>12</sup> They should be stored at a temperature of 45°F – 50°F (7°C – 10°C)<sup>13</sup>, as lower than 42°F could result in chilling injury, and at a relative humidity of 90-95 percent.<sup>14</sup>

## OUTLOOK

Due to logistical advantages that favor Mexican production (i.e., proximity to the US), it can be difficult for other countries to compete in the mainstream US market for fresh hot peppers. However there are a number of examples where niche markets not covered by Mexico have been served by Dominican, Trinidadian or Asian suppliers.

The current consensus among importers and in industry publications is that the fresh hot pepper market in the US will continue to grow in the next few years. This year, at least, supply seems poised to expand with demand as favorable weather conditions in Mexico this season have resulted in an early bumper harvest and one buyer noted that northern California has received better rains this year, causing speculation that their harvest may increase.

The best opportunities for new suppliers are likely to be in niche markets where specific varieties are in demand or through the creation of new markets through breeding programs meeting specific consumer interest (e.g., the development of the Carolina Reaper chile, the world's hottest). In this case, volume requirements will tend to be small. Prices may be less volatile in niche markets as compared to the more common varieties where a small change in supply tends to trigger a more significant price response. Several buyers reported that in January 2015 an increase in Mexican supply in these major pepper categories led to a steep drop in prices. However, niche varieties can run the risk of sharp shifts in demand as market trends change. Weighing these considerations, potential suppliers should contact buyers to assess which products are appropriate to different segments of the market, and plan to introduce their product accordingly.

Other than targeting niche markets, taking advantage of seasonal supply shifts may be the most likely way to enter the highly competitive chile market. For example, one importer mentioned that their most challenging month for maintaining supply is October, when California production is vulnerable to early frosts and the Mexican harvests have not yet started. Where production is sufficient and the timing is right, market entry may be possible for non-Mexican suppliers.

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<sup>12</sup> USDA. The Commercial Storage of Fruits, Vegetables, and Florist and Nursery Stocks: González-Aguilar, Gustavo. Pepper. Draft Updated August 2014.

<sup>13</sup> New Mexico State University. Postharvest Handling of Fresh Chiles. November 2010.

<sup>14</sup> USDA. The Commercial Storage of Fruits, Vegetables, and Florist and Nursery Stocks: González-Aguilar, Gustavo. Pepper. Draft Updated August 2014.