



The

Volume XXIII Number 1 Winter/Spring 2010-2011

Chile Pepper Institute

N E W S L E T T E R

www.chilepepperinstitute.org

hotchile@nmsu.edu

Chile Peppers in Spain – Unos Pican y Otros No By Emily Bosland

In Every Issue

- Chile Pepper Recipe 3
- Capsicum News 6
- Burning Questions 7

After a long day of travel, you sit down to enjoy dinner with colleagues at an unassuming restaurant on the coast of Spain. As a seasoned traveler, you ask the waiter to bring you the local specialty and are excited when a plate full of chile peppers arrives at your table.

The peppers aren't too big or too small. They're fried to perfection and smell delicious. There's only one catch: you have no idea which of the seemingly identical pods on the plate are hot and which are not.

These green pods are the Pimiento de Padrón (*Capsicum annuum*), one of Spain's most popular chile peppers. Typically lightly fried with olive oil and sprinkled with coarse sea salt, the Pimiento de Padrón is described as sweet and nutty in flavor unless, of course, you happen upon one of the fiery ones. Out of a dozen pods, usually two or three are notably spicy.

In sharp contrast to international markets,

including the United States, which demand consistency in heat level, the Spanish enjoy snacking on pods that may or may not have a kick to them. Pimientos de Padrón are regularly seen on *tapas* menus along with roasted bell

peppers and pickled sweet peppers.

Although the Pimiento de Padrón originated in Galicia, it is enjoyed across the country, including in Valencia, where the Polytechnic University of Valencia recently

hosted the 14th EUCARPIA Meeting on Genetics and Breeding of Capsicum and Eggplant.

Organized by Drs. Jaime Prohens and Adrián Rodríguez-Burruezo, the conference attracted *Capsicum* (chile pepper) and eggplant researchers and breeders from many countries, representing both the public and private sector. More than 80 oral and poster presentations covered a variety of topics ranging from the



Pimientos de Padrón in a Restaurant in Barcelona, Spain



Inside This Issue

- Top Producer 2
- LED Light 4
- Seed Sample 5

development of biotechnological tools to the conservation of genetic resources. The next EUCARPIA conference will be held in Turin, Italy in 2013.

In addition to the knowledge gained during the EUCARPIA Congress, attendees had the opportunity to explore Valencia and the surrounding region to sample chile peppers in local restaurants and markets.

Visit any local *mercado* to check out a wide selection of paprika colors and flavors, from sweet to spicy. Paprika is used to season meat and seafood dishes, which vary by region. Valencia boasts a rich feast of fresh seafood including grilled squid, cuttlefish and octopus, all of which can be enjoyed with a dusting of paprika for flavor.

Weekly outdoor markets are another great place to source fresh chile peppers. A wide range of peppers were spotted in markets in northeast Spain, including Corno de Toro, green and red bell peppers, Pimientos del Piquillo and Pimientos



Dried and Ground Spanish Paprika in a market in Valencia, Spain



Bell Peppers and Eggplants in a market in Vic, Spain

de Padrón.

At an outdoor market in the northern town of Vic, varying shades of bell peppers, sold alongside rich purple eggplants were a common sight. However, the most popular chile pepper being sold was the potted ornamental. A rainbow of fruit colors stood out amongst the verdant foliage of a florist's stand in the main square where, in less than an hour, locals snapped up all of the ornamentals for sale.

Different sizes and colors of ornamental peppers were found on display on people's front doorsteps and balconies from Valencia to Barcelona to the quaint town of Queralt, in the Spanish Pyrenees.

For more information and a report from the XIVth EUCARPIA Capsicum and Eggplant Working Group Meeting (Valencia, Spain, August 30-September 1 2010) please visit: [http://](http://www.eucarpia.org/02meetings/Report_XIV_Capsicum_eggplant_2010.htm)

www.eucarpia.org/02meetings/Report_XIV_Capsicum_eggplant_2010.htm.

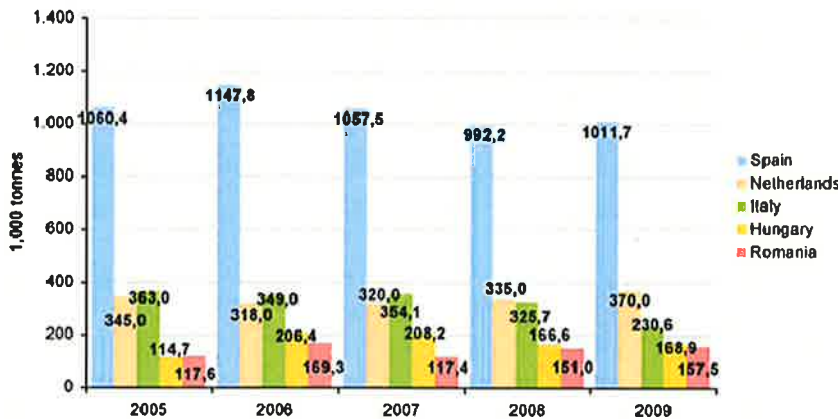
Spain was the Top European Pepper Producer in 2009

Spain, the Netherlands, Italy, Hungary and Romania accounted for 92% of total European pepper production, according to data from EuroStat. Spain has been the top pepper producer in Europe since 2005, harvesting a total of 1,011,700 tons in 2009. The next four most important pepper-producing countries in Europe are the Netherlands, Italy, Hungary and Romania.

During the period analyzed (2005-2009), these five countries were present in the ranking of the top five producers in Europe. These five countries accounted for 92% of total pepper production in Europe in 2009. Total European pepper production decreased by 11.3% between 2005 and 2009, from 2,373,200 tons in 2005 to 2,104,600 tons in 2009.

Top 5 European pepper producers Although pepper production in Spain increased by 8.2% between 2005 and 2006, 2009's harvest was 11.8% below the level of 2006 at a total of 1,011,700 tons. However, this did not affect Spain's undisputed status as the leading European pepper producer.

Between 2005 and 2009, the Netherlands increased its production by 7.2%, from 345,000



Statistical data showing the top pepper producing countries

tons in 2005 to 370,000 tons in 2009.

During the period from 2005 to 2009, Italy's pepper production decreased by 36.4% to a total of 230,600 tons in 2009.

Hungary's pepper production grew by 81.5% between 2005 and 2007, only to fall 18.8% in 2009 to a total of 168,900 tons. In

Romania, pepper production climbed from 117,600 tons in 2005 to 157,500 tons in 2009, an increase of 34%. *From Syngenta Seeds Vegetables Peppers Today – October 2010*

Recipe - Patatas Bravas - "Fierce Potatoes," a Classic Spanish Tapa

- 6 medium potatoes
- Oil for deep frying
- 4 medium plum tomatoes
- 3 tbs olive oil
- 1/4 of a red onion, finely chopped
- 1/3 cup water
- 2 cloves garlic, crushed
- 1 tbs paprika
- 1/4 tsp cayenne
- 1 bay leaf
- 1 tsp sugar
- 4 ounces Italian parsley, chopped

Peel potatoes and cut them into 3/4 inch cubes. Rinse, drain and pat dry. Fill a deep pan or deep fat fryer 1/3 with oil and heat to 350°F. Cook the potatoes in batches for 5 minutes or until golden brown. Do not discard the oil. Score a cross in the base of each tomato. Put in a saucepan of boiling water for 10 seconds, then plunge into cold water and remove the skins. Chop the flesh of each tomato.

Heat the olive oil in a saucepan over medium heat and

cook the onion for 3 minutes or until softened. Add the garlic, paprika and cayenne and cook for 1-3 minutes or until fragrant. Add chopped tomatoes, bay leaf, sugar and 1/3 cup water and cook, stirring occasionally, for 20 minutes or until thick and pulpy. Cool slightly and remove the bay leaf. Blend in a food processor until smooth. Before serving, return to saucepan and simmer over low heat for 2 minutes or until heated through. Reheat the oil to 350°F and cook the potatoes again, in batches for 2 minutes or until very crisp and golden. The second fry makes the potatoes crispy and keeps the sauce from soaking in and making them soggy. Garnish with parsley.

Cooking Spanish, by John Newton can be found at the Chile Pepper Institute.



Korea: Pepper Growers use LED Light as a Substitute for Sunlight

Korean fruit and vegetable growers are having to face the challenge of limited hours of sunlight as a result of recent climate change, the public information service agency Arirang TV reports. In response to this problem, some pepper growers have been experimenting with the use of LED lights and the results achieved are surprising.

Exact simulations of seasonal variations in sunlight are difficult to achieve using artificial lights, but crude modification of day length and the colors of light that are produced by LED lighting are adequate for the successful growth of most plant species in artificial environments.

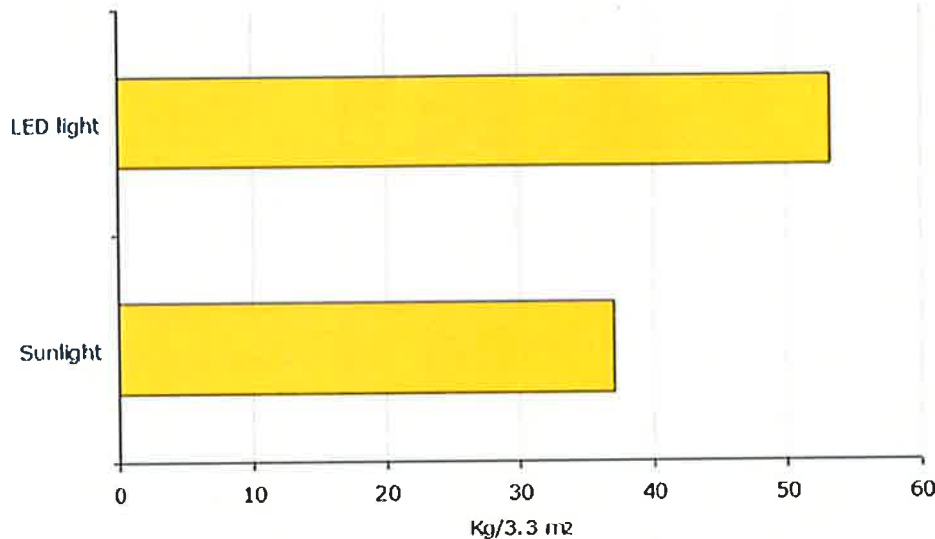
As Arirang TV reports, over the past eight months some growers have been trying out the LED system as a substitute for sunlight. One Korean bell pepper

grower had a 44% increase in yield when peppers were grown under LED lights. Under normal sunlight, the average farm produces 37 kg of bell peppers per 3.3 m², but under LED lights this grower

achieved 53 kg per 3.3m². Mr. Kim Dal-ryong, a spokesman for the Korea Agro-Fisheries Trade Corporation, told Arirang TV: "This kind of LED technology is crucial. It means that the lack of sunlight as a result of

climate change can be sidestepped and a good harvest is ensured."

The LED lights are run by an automated system which supports the monitoring of temperature and humidity in real time. The major obstacle to popularizing this system across the nation is the high start-up cost. *Syngenta Seeds Vegetables Peppers Today – December 2010*



Graph showing the differences between LED and sunlight

The Chile Pepper Institute's Development Leadership Council

The Development Leadership Council is a dynamic group of Chile pepper industry leaders. Their purpose - to raise \$16 million to fund an Endowed Chair to continue the legacy of NMSU's Chile pepper research and build the new energy efficient Chile Pepper Institute, featuring a tourist venue for a sustainable teaching and demonstration garden/greenhouse.

Leadership Council members provide:

- A yearly sustaining donation of \$2,500;
- Participation in bi-annual leadership council meetings;
- Facilitation of corporate sponsorships;
- Recommendation of colleagues who have the financial capacity to support the Institute's adventure; and
- Encouragement of Chile aficionados to become Chile Pepper Institute members.

Interested in joining the Council? Contact Wendy Hamilton whamilto@nmsu.edu, 575-646-5284 or Mark Gladden markglad@nmsu.edu.

NuMex Las Cruces Cayenne - 2010/2011 Seed

The Chile Pepper Institute's special seed packet for you this year is **NuMex Las Cruces** cayenne pepper. Cayenne peppers add the distinctive flavor and spiciness to Cajun and Creole dishes. They are used fresh, dried, or chopped fresh and mixed with about 20 percent salt, then allowed to ferment. This resulting

"mash" is the key

ingredient in Louisiana style hot sauces. Retail sales of hot sauces topped \$2.0 billion in 2006.

Cayenne hot sauce was the original sauce on Buffalo wings. The dried crushed cayenne flakes are the red pepper used on pizzas. Even Indian curry has cayenne as an important ingredient.

Fresh cayenne peppers are rare in grocery stores, so growing them in your garden will provide a ready supply. 'NuMex

Las Cruces' is a high-yielding, high-heat, early maturing cayenne cultivar. 'NuMex Las Cruces' has fruit approximately 7 inches long and about 1 inch wide. The heat level of 'NuMex Las Cruces' is approximately 17,500 Scoville Heat Units, making it a very hot chile pepper.

In addition, it possesses resistance to curly top virus, having resistance to at least three viruses: Beet curly top virus, Beet severe curly top virus, and Beet mild

curly top virus. The curly top viruses are vectored by the beet leafhopper, and virus outbreaks are erratic in New Mexico. The virus can cause leaves to turn yellow, twist and curl upward. The leaves become thickened and stiff, causing reduced fruit quality and yield. There are no insecticides available for

controlling the virus vector to limit curly top incidence.

Several cultural practices can reduce infections, but host resistance has the smallest environmental foot print and is the most effective control for curly top. In 2010, another year of high curly top virus incidence in the Las Cruces, NM area, 'NuMex Las Cruces' had 67% less curly top incidence than the other standard cayenne cultivars grown.

Cayenne peppers are versatile chile peppers and are the best way to ensure your

creole and Cajun dishes have that authentic flavor.

Additional seed packets are available from the Chile Pepper Institute, New Mexico State University, P.O. Box 30003, MSC 3Q, Las Cruces, NM 88003. The Chile Pepper Institute can be contacted at www.chilepepperinstitute.org, hotmail@nmsu.edu, or phone: (575) 646-3028.



'NuMex Las cruces Cayenne'

C A P S I C U M N E W S

New Face at the Chile Pepper Institute

A new face will be seen and voice will be heard at the Chile Pepper Institute. Jessica Miller is

the newest addition to the student staff at the Chile Pepper Institute. Jessica is majoring in theater, and shares a love for chile peppers.

Jessica grew up in northern New Mexico and is the Institute's very own Holy Jolokia addict, buying it by the



case. She is well known around the Institute for being the only girl in the group to have eaten the Bhut Jolokia whole, the hottest chile pepper in the world on record. Next time you need a chile question answered give our two newest chile-heads a call. 575-646-3028.

Chile Peppers May Come With Blood Pressure Benefits

According to a study reported in the August issue of *Cell Metabolism*, while capsaicin might set your mouth on fire, it also leads blood vessels to relax, the research in hypertensive rats shows.

"We found that long-term dietary consumption of capsaicin could reduce blood pressure in genetically hypertensive rats," said Zhiming Zhu of Third Military Medical University in Chongqing, China. Those effects depend on the chronic activation of something called the transient receptor potential vanilloid 1 (TRPV1) channel found in the lining of blood vessels. Activation of the channel leads to an increase in production of nitric oxide, a gaseous molecule known to protect blood vessels against inflammation and dysfunction, Zhu explained. The

findings in rats should be confirmed in humans through epidemiological analysis, the researchers said. Earlier studies were based on acute or short-term exposure to the chemical, with some conflicting results. Zhu says their study is the first to examine the effects of long-term treatment with capsaicin in rats with high blood pressure. In fact, there were already some clues: the prevalence of hypertension is over 20% in Northeastern China compared to 10-14% in Southwestern China, including Sichuan, Guozhuo, Yunnan, Hunan, and Chongqing, where Zhu is from. For those who can't tolerate spicy foods, there might be some hope. Zhu notes the existence of a mild Japanese pepper, which contains a compound called capsinoid that is closely related to capsaicin.

Limited studies show that these capsinoids produce effects similar to capsaicin.

ScienceDaily
(Aug. 4, 2010)



U.S. Pepper Sales Increased in Third Quarter of 2010

During the third quarter of 2010, fresh and fresh-cut produce sales in US retail increased both in volume and value compared with the third quarter of 2009. Pepper weekly dollar sales per store were 5.1% higher than one year before while weekly volume sales per store climbed 5.8%, according to the latest edition of FreshFacts® on Retail, the quarterly retail research report of the United Fresh Foundation. According to the research, overall produce prices climbed in the third quarter of 2010 compared to the same period last year. Vegetables volume sales grew 1.3%, while dollar sales increased 3.1%, with prices up 1.7%. The strong sales trends

BURNING QUESTIONS

Q. How hot is the Holy Jolokia Hot Sauce compared to the pepper itself? In other words would it rate about the same or is it diluted to be less hot. I understand that some sauces sold over the internet indicate over 1,000,000 Scoville Heat Units. I was wondering the degree of heat Holy Jolokia would have relevant to the chile pepper itself?

A. The creators of Holy Jolokia, CaJohn's Fiery Foods, did not want the Holy Jolokia to "melt your face off," so they created a hot sauce using the Bhut Jolokia pepper that is more about the flavor than the heat. John Hard wanted to create a hot sauce with the world's hottest chile that people could enjoy the flavor of. Holy Jolokia is a Louisiana style hot sauce, however it is also very hot, hotter than most commercial hot sauces, yet not nearly as hot as the pepper itself.



Q. I have been growing several varieties of chile peppers including jalapenos, poblanos, serranos and thai types. I just started to harvest some of the ripe fruits and noticed that the heat levels are

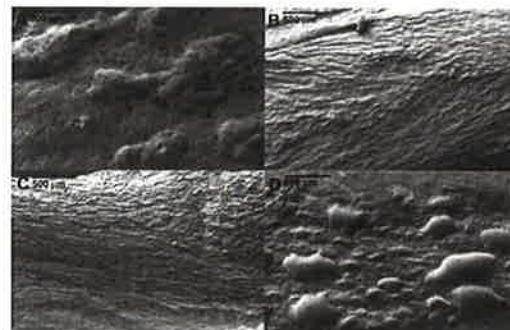
considerably less than what I had expected. Did I get a bad batch of seeds?

A. Capsaicin development is dependent on genetic factors as well as environmental factors.

When the environment is harsh, i.e., less soil moisture, with dryer and hotter air temperatures, the plants will produce pods with more capsaicinoids. When the environment is optimal, i.e., plenty of moisture and mild temperatures, the pods will have less capsaicin.

Q. My wife says the seeds in chile peppers makes them hot! I say no. Could you tell us how the seeds do or do not make chile peppers hot?

A. The seeds do not produce any capsaicin. The placenta or "veins" of the chile pepper pod is the only place where capsaicinoids are produced. The capsaicin oil is held in microscopic "glands" or vesicles on the inside of the chile pepper pod



Microscopic photographs of the placental tissue in a jalapeño pepper.

located along the placental tissue. The seeds are attached to this tissue and many times are erroneously referred to as being hot.

continued

for the overall produce department are evident in the top 10 fruits and vegetables. According to United Fresh, peppers hold seventh position on the top-10 list and the increase in volume sales could be due to the price decline of 0.6%.

NEW NMSU GUIDE
"Postharvest Handling of Fresh Chiles"
 Guide H-235
 Revised by **Stephanie Walker**
 Contact the Chile Pepper Institute for your copy.