

Chili Peppers – the hottest trend in flavors!

2015



Agenda

History – the great migration

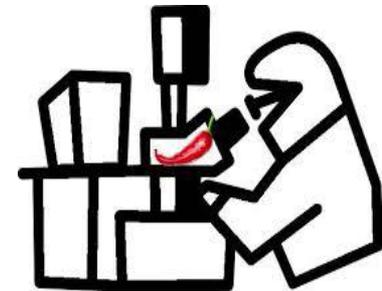
Biology - why are they

HOT

Variety – the growing family

Traceability – and how chili peppers fit

Quality – many challenges



History of chili peppers

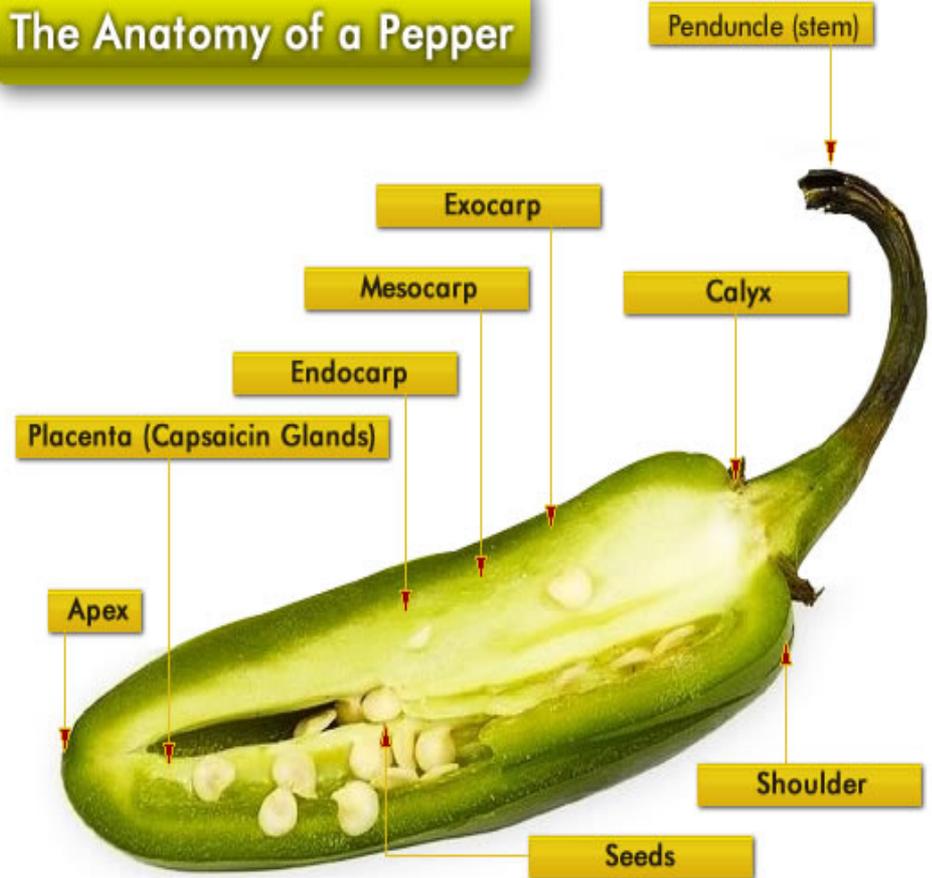
- Chili pods originated in the Americas
- Cultivation took place as far back as 6,000 BC
- Spread through trade, exploration and colonization
- Varietals evolved with climatic conditions
- Hybrids were being developed as early as the 1700's
- Now over 2000 varietals grown around the world



What makes a chili pepper so unique?

- The chili plant produces the pod for water storage and capsaicin to protect the pod
- More varieties than any other vegetable and featured in almost all cuisines
- Capsaicin stimulates the neural sensors in the tongue and skin that also detect rising temperatures. As far as these neurons and the brain are concerned, your mouth is on fire.
- With enough heat, adrenaline flows and the heart pumps faster. This reaction, according to some physiologists, is part of what makes peppers so enticing.
- Interesting alternative uses: topical pain relief, self defense

The Anatomy of a Pepper



How hot is that?!?!

SHU = Scoville Heat Units, a chemistry based system to measure pungency.

Capsaicin = SHU is a combined measure of three closely related compounds: capsaicin, dihydrocapsaicin and nordihydrocapsaicin. They exist naturally in capsicums in various ratios depending on the pepper, though capsaicin is always the dominant compound of the three. A measure of 1% capsaicin, without any contribution from the other two compounds, equates to 143,000 SHU

Categories: Varietals

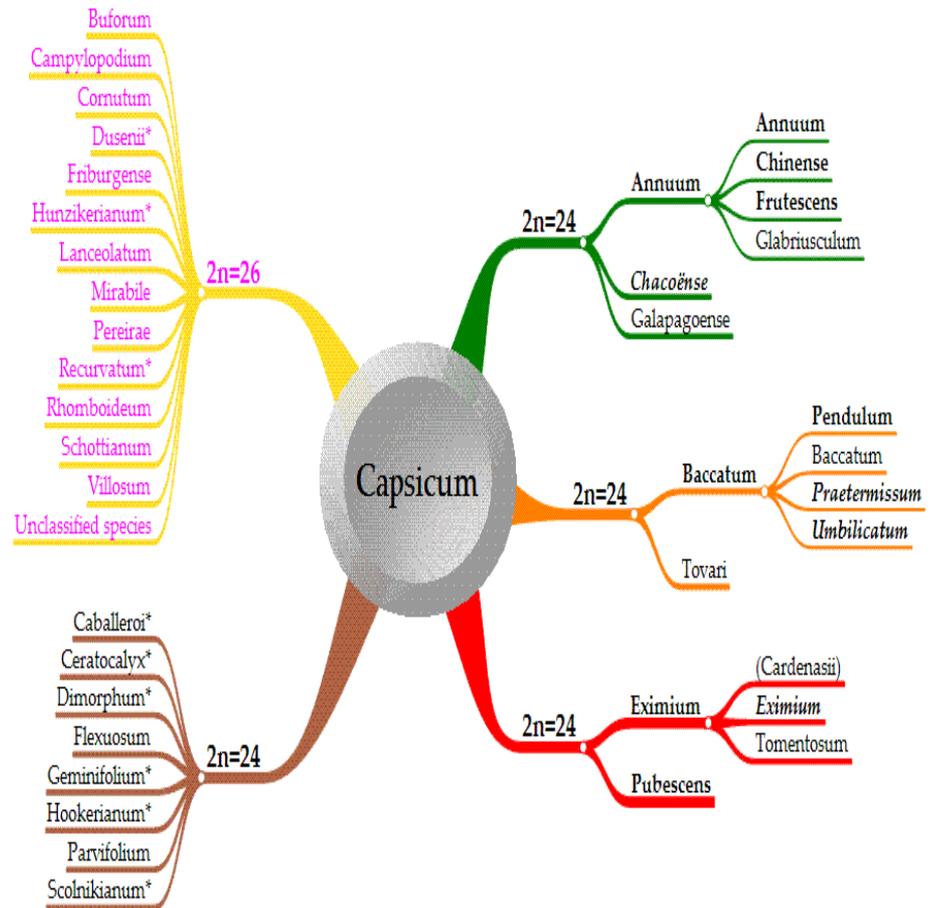
- **Superhot >100,000 SHU** : Habanero, Bird's Eye
- **Hot <50,000 SHU** : Byadgi, Teja
- **Medium <20,000 SHU** : Jalapeno, Serrano, Aji Panca, Chipotle
- **Mild <5,000 SHU** : Bells, Paprika

| Image | Chili | Units |
|---|--|----------------------------------|
|  | Pure Capsaicin | 15,000,000-16,000,000 |
|  | Nordihydrocapsaicin Standard US Grade Pepper Spray | 9,100,000 2,000,000-5,300,000 |
|  | Bhut Jolokia (Ghost Chile) | 855,000-1,041,427 |
|  | Dorset Naga | 876,000-970,000 |
|  | Red Savina Habanero | 350,000-577,000 |
|  | Habanero Pepper | 100,000-350,000 |
|  | Scotch Bonnet | 100,000-350,000 |
|  | Jamaican Hot Pepper | 100,000-200,000 |
|  | Thai, Malagueta, Chiltepin | 50,000-100,000 |
|  | Cayenne, Aji, Tabasco | 30,000-50,000 |
|  | Serrano Pepper | 10,000-23,000 |
|  | Tabasco Sauce (Habanero Pepper) | 7000-8000 |
|  | Wax Pepper | 5000-10,000 |
|  | Jalapeno Pepper | 2500-8000 |
|  | Tabasco Sauce (Tabasco Pepper) | 2500-5000 |
|  | Rocotillo Pepper | 1500-2500 |
|  | Poblano Pepper | 1000-1500 |
|  | Tabasco Sauce (Green Pepper) | 600-800 |
|  | Anaheim Pepper | 500-1000 |
|  | Pimento, Pepperoncini | 100-500 |
|  | Bell Pepper | 0 |

Scoville Unit Scale

The Capsicum Family Tree

- The capsicum family
 - 5 species
 - 39 subspecies
 - 2000+ varieties
- Culinary / Market families
 - Chili – some heat, a mild flavor
 - Chili Powders – chili blended with spices
 - Paprika – no heat, mild flavor, all color
- Varietals
 - Regional – natural seed selection
 - Hybrids – cross breeding of seed strains



A wide world of attributes

- Flavor – from the sweet bells to the smoky chipotle
- Heat – from the mild paprika to the thermo-nuclear Bhut Jolokia
- Colors – from white to purple and everything in between
- Size – from the little button types to the monstrous hybrids



Varietals by geography

North American Varietals

- Ancho
- Chipotle
- Serrano
- Guajillo
- Habanero
- Jalapeno
- Arbol

South American Varietals

- Amarillo
- Mirasol
- Panca
- Rocoto
- Malagueta

Asian Varietals

- Teja
- Byadgi
- Devanur
- Ban Giu
- Chao Tian
- Tianjin

African Varietals

- Bird's Eye
- Peri Peri
- Peppadew
- Paprikaans
- Bawa
- Josi
- Rodo

Market Trends – Ethnic Cuisine

- Menu changes 2008 – 2012 (Datassential)

| Fastest Growing Ethnic Flavors and Ingredients (% change in menu penetration, 2008 vs. 2012) | | | |
|---|------------|-------------------|------------|
| Ethnic Flavors | (% growth) | Ethnic Platforms | (% growth) |
| → Sriracha | 153% | Brioche | 70% |
| Chimichurri | 115% | Margherita Pizza | 36% |
| Wasabi Aioli | 72% | Thin Rice Noodles | 28% |
| Yuzu | 70% | Lettuce Wraps | 27% |
| → Chipotle Aioli | 65% | Caprese | 26% |
| Queso Fresco | 58% | Naan | 21% |
| → Habanero | 57% | Breakfast Burrito | 18% |
| Jalapeno Cheddar | 55% | Empanada | 17% |
| → Thai Chili | 52% | Samosa | 16% |

Ease of travel, the plethora of food programming on TV and the influence of millennials (a group notoriously open to the new and exotic) continue to influence food. This trend has gone beyond travel and restaurants and is now into the snack categories and home use dry blends and sauces. Chili peppers, because there so many varieties found around the world, are a perfect fit for this trend.

Market Trends – Ethnic Eating – Complex Flavors

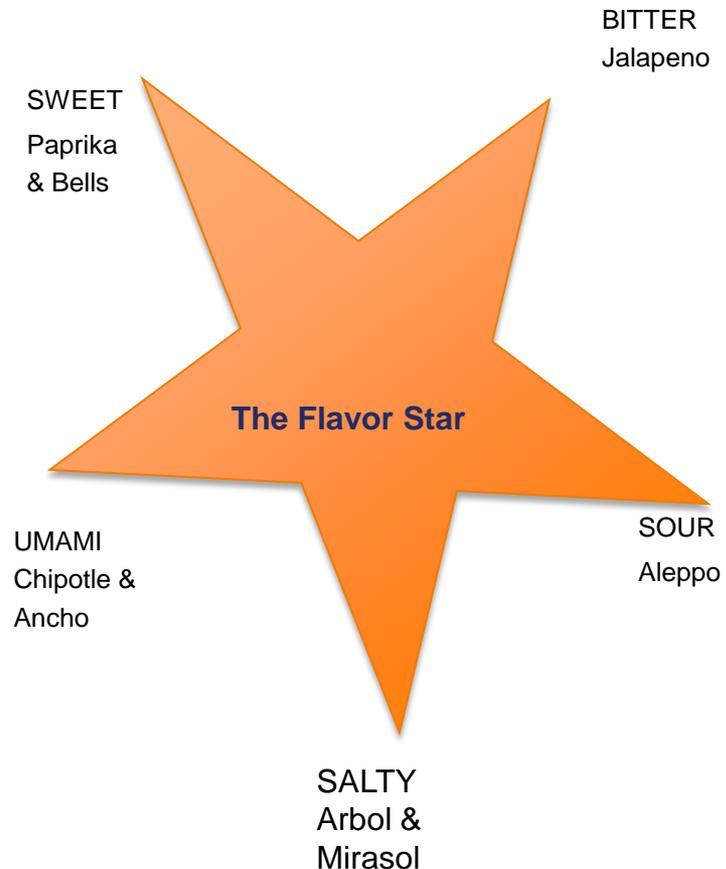
PreparedFoods.com

For several years, adding spice to recipes and formulations was all about adding heat. Today, however, **consumers like dishes with the juxtaposition of heat select sweet, hot, sour and umami flavors.**

The influential Millennial generation is helping drive a trend for more interesting flavors. Because the generation has grown up with spicier foods, **they demand a flavorful and authentically ethnic approach to various cuisines** -- not just blatant heat.¹

The nation's Hispanic population boom also is fueling growing interest in authentic cuisine and flavors. There are an estimated 52 million U.S. Latinos, which comprise about 16% of the population. Those numbers are expected to grow nearly 25% by 2030, according to Technomic. Forecasts say Hispanics will account for 60% of U.S. population growth between now and 2016, and **Hispanic food and beverage sales are projected to top \$9.5 billion in 2014.**³

In the U. S., jalapeño and chipotle peppers lead the growth with top penetration and turn up on menus everywhere. They also appear on grocery shelves in main dishes, marinades, sauces and more.⁴ These mainstream peppers have created opportunities for lesser-known varieties. Hot and **spicy sriracha** sauce, featuring hot chilies, is the newest entry in the pepper trend. It has even emerged in the mainstream as one of the **top three flavors in PepsiCo's flavor** contest for Lay's potato chips.



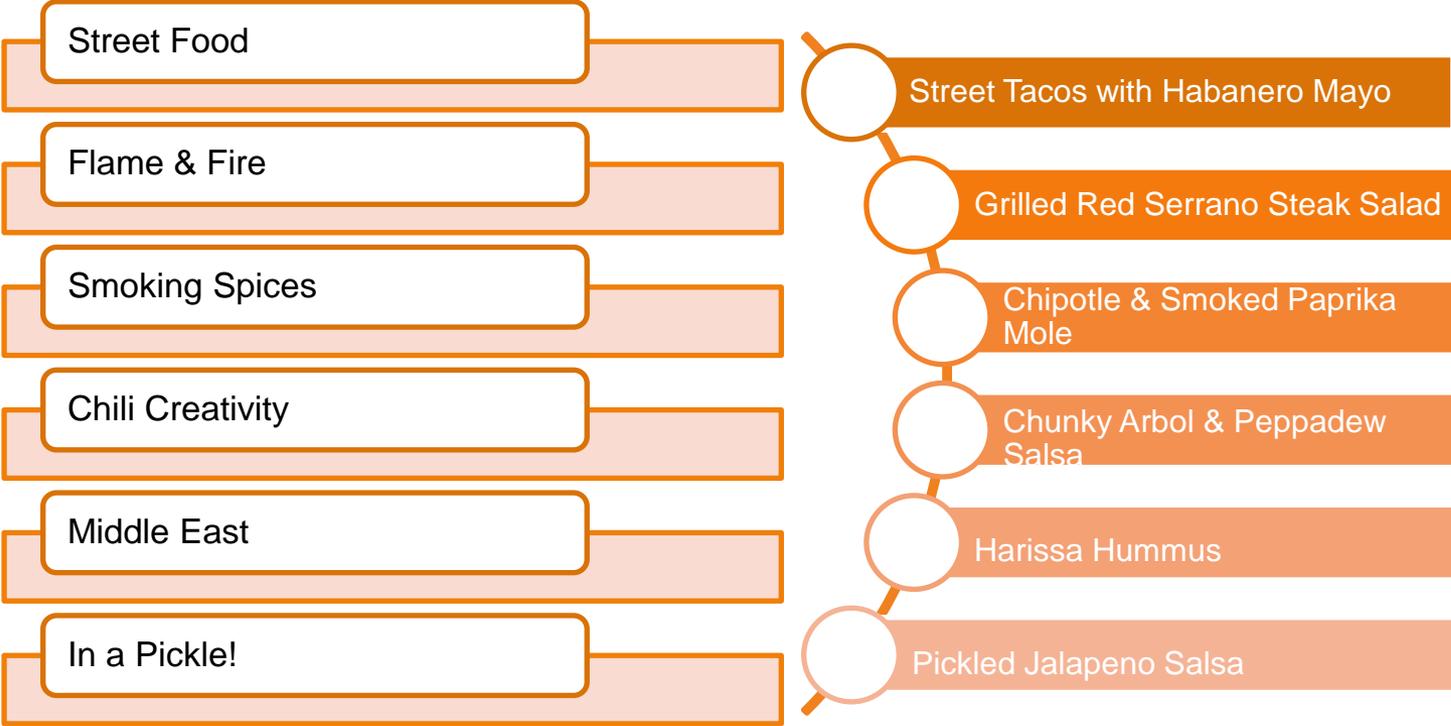
Market Trends – Continued Growth

- A new market report by **Transparency Market Research** shows the global seasonings and spices market is projected to hit \$16.6 billion by 2019 as consumers spice things up in the kitchen and keep this recession-proof industry booming. According to the report, the global seasonings and spices market is expected to grow at a CAGR of 4.8% from 2013 to 2019, increasing from \$12 billion in 2012.
- As Americans steadily become more adventuresome eaters, we are now setting a place at the dinner table for hot sauce on a regular basis. Our mealtime macho has triggered a hot sauce growth spurt so great that hot sauce production has been rated one of the 10 fastest-growing industries in the U.S., according to a new report. The trend shows no sign of cooling off. **IBISWorld**, an industry and market research organization, recently compiled a list of the 10 industries that they expect to outpace the rest of the U.S. economy through 2017.



Market Trends – IFT – Innova 2014

Apps and Blends that meet those Trends



Consumer Trend – Clean & Clear Labels

Food Author and Critic – Michael Pollan

In Defense of Food: An Eater's Manifesto.

If You Can't Say It, Don't Eat It

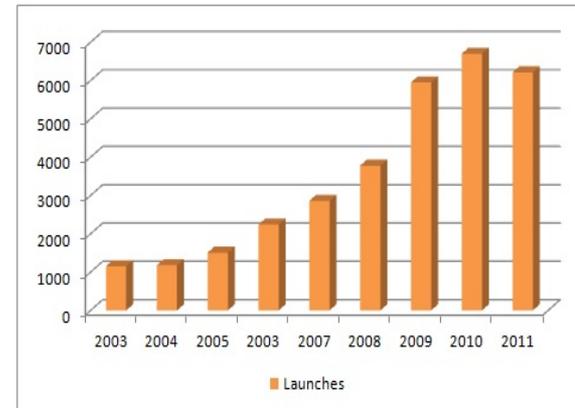
Don't buy products with more than five ingredients or any ingredients you can't easily pronounce.

Innova Insights – Top Trends 2015

- 1. From Clean to Clear Label. Clean label claims are tracked on nearly a quarter of all food and beverage launches, with manufacturers increasingly highlighting the naturalness and origin of their products. With growing concerns over the lack of a definition of "natural," however, there is a need for more clarity and specific details. Consumers, retailers, industry and regulators are all driving more transparency in labeling.

Cleanlabelinsights.com

- Clean label product launches in North America
- North American food launches in 2003 - 2011 with claims matching one or more of 'all natural', 'no additives / preservatives', 'organic' (Innova)



Consumer Trends - Provenance



According to Mintel, two thirds of consumers rank authentic, traditional flavors as the most important factor.

Ethnic foods were an \$8.7 billion industry and are projected to grow 20.3% to 2017 to reach \$10.5 billion.⁶ Food formulators should know that peppers are very easy to use and apply to almost any production scenario. That's because peppers can be fresh, roasted, retorted, frozen or used in the kettle-cooking process and still keep their integrity. Peppers aren't just on trend, they are here to stay.



"The McCormick Flavor Forecast 2014"

Predicts that two of the top five up-and-coming flavors for 2014 will involve peppers: aji Amarillo, a hot and hard-to-source Peruvian yellow pepper with bold, fruity flavor; and chamoy sauce, a Mexican condiment made from apricot, lime, chilies and spices.

Additionally, two of the top five 2014 flavor trends involve peppers: the pepper obsession where foodies seek the newest, hottest pepper (i.e., the ghost pepper) and Mexican flavors overall.



Why provenance matters

From farms to factories & back again

Ingredient integrity and source verification, short and comprehensible ingredient labels, transparency in the supply chain, and an open dialogue with consumers are imperative. These are not fad-driven considerations, and they ladder directly to some of the Futures macro trends that we have identified in our longitudinal research and analysis

The opportunity and imperative for brands is all about authenticity and transparency. To establish or re-establish trust, consumers need to know who you are and what you really stand for. And be prepared to prove it.

Food Trend – Pickled & Brined

Shoppers are filling their carts with pickled products—and not just traditional favorites such as cucumbers and carrots. We're talking everything from beets to cabbage to raisins. Sales of shelf-stable pickled and marinated vegetables increased 11 percent in the natural channel in 2011, while refrigerated options grew an impressive 30 percent, **SPINS** reports.

Freeman & Co: Food trend:
Sour flavors will appear in everything from the bar menu to desserts. Shrubs, created by preserving fruit with vinegar, sugar and water, are appearing in cocktails. Burgers, like that of E&O Asian Kitchen in San Francisco are being topped with kimchi.

Culinary Trend Tracking Series (CuTTS). "Packaged Facts survey data in 2014 finds that 53 percent of consumers seek out bolder flavors. Fermented foods have found a rising tide of popularity due to the convergence of this desire for spicier, bolder flavors and a growing focus on global foods that represent authentic preparations.

Market Trends – Salt Awareness and Reduction

World Health Organization: The WHO has been particularly vocal about the importance of reducing sodium consumption in order to tackle the issue of raised blood pressure and its impact on increased risk of heart disease and stroke. In 2013, it issued new guidelines related to salt consumption, advising that sodium intake should be no more than 2,000 mg per day, equivalent to 5 g of salt.

Increased awareness through labeling: The Nordic Keyhole System now 25 years old; the UK Stoplight System; FDA Food Labeling; Nutrition Labeling of Standard Menu Items in Restaurants and Similar Retail – Final rule published Dec 1, 2014 Food Establishments

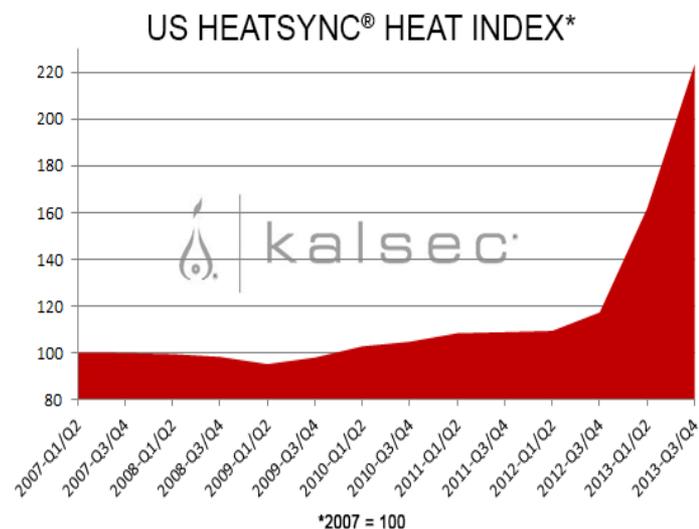
New research presented at the [American Heart Association's Epidemiology & Prevention/Nutrition, Physical Activity & Metabolism Scientific Sessions 2014](#) showed people who received guidance on substituting spices and herbs for salt have a better chance of decreasing sodium consumption than those who attempt it alone. So, what does this have to do with chili peppers? An opportunity to replace salt with spices, especially chili pepper.



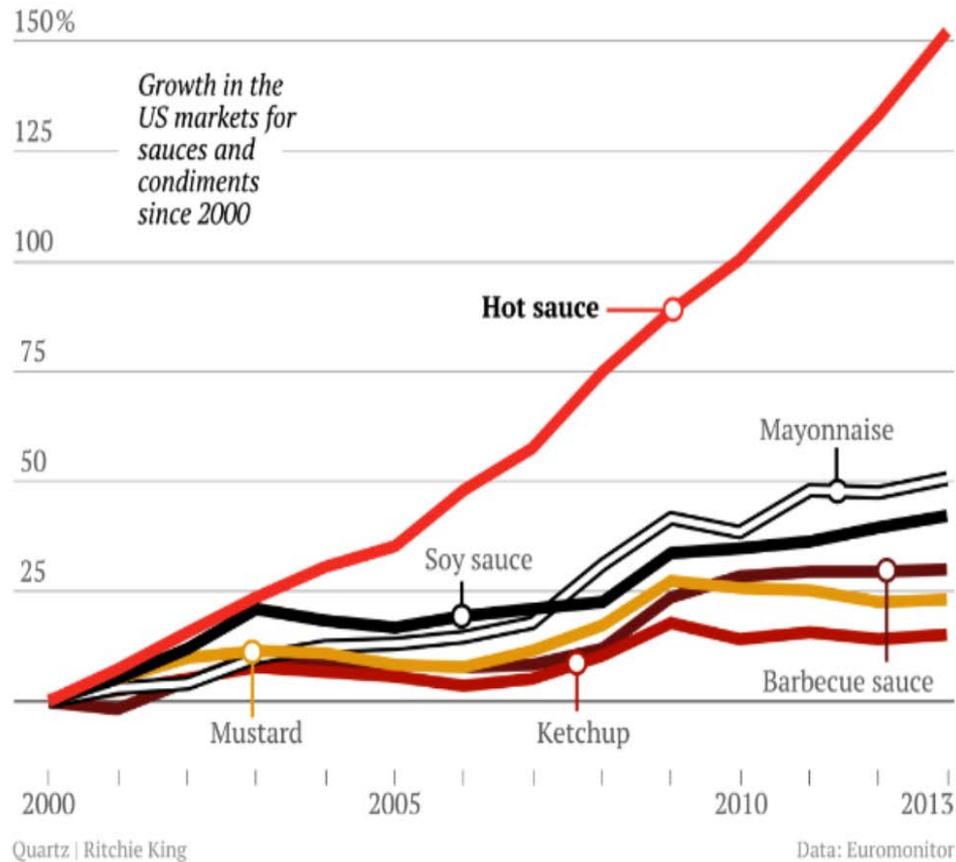
CONSUMER TREND - BRING ON THE HEAT

THE KALSEC HEAT INDEX :

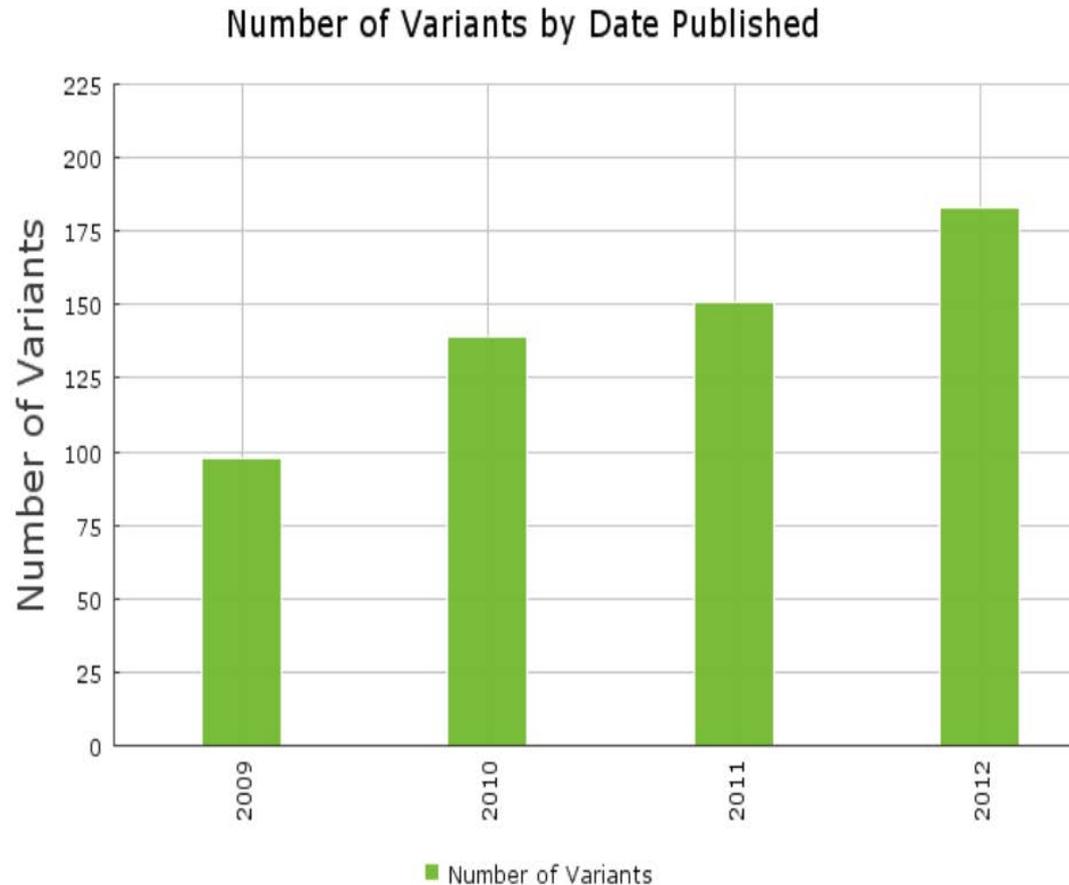
In collaboration with market data from Mintel's Menu Insights and the Global New Products Database (GNPD), the U.S. index evaluates more than 2,400 restaurant food and drink menus and the European index measures new retail production introductions. Heat index measurements show consumers' preference for hot and spicy foods is growing. In 2012, the European Heat Index increased 16% ,and the U.S. index had an almost 8% increase compared to the previous year. The European Index has grown steadily since 2007, while the U.S. index grew 21% since 2009. The habanero pepper proved popular in both European and U.S. markets with above average index gains in both. In 2012, the jalapeno and poblano peppers increased in the United States, while cayenne peppers increased in Europe.



Growth in US Markets for Sauces & Condiments - Euromonitor



Food products in the US introduced in “spicy” flavors (Mintel)

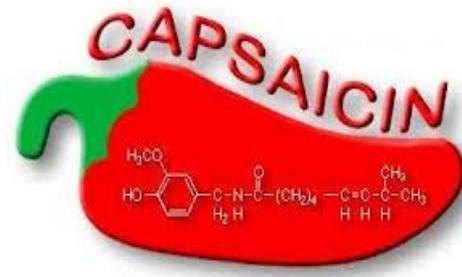


Even the most mainstream of products now come in SPICY SKUs

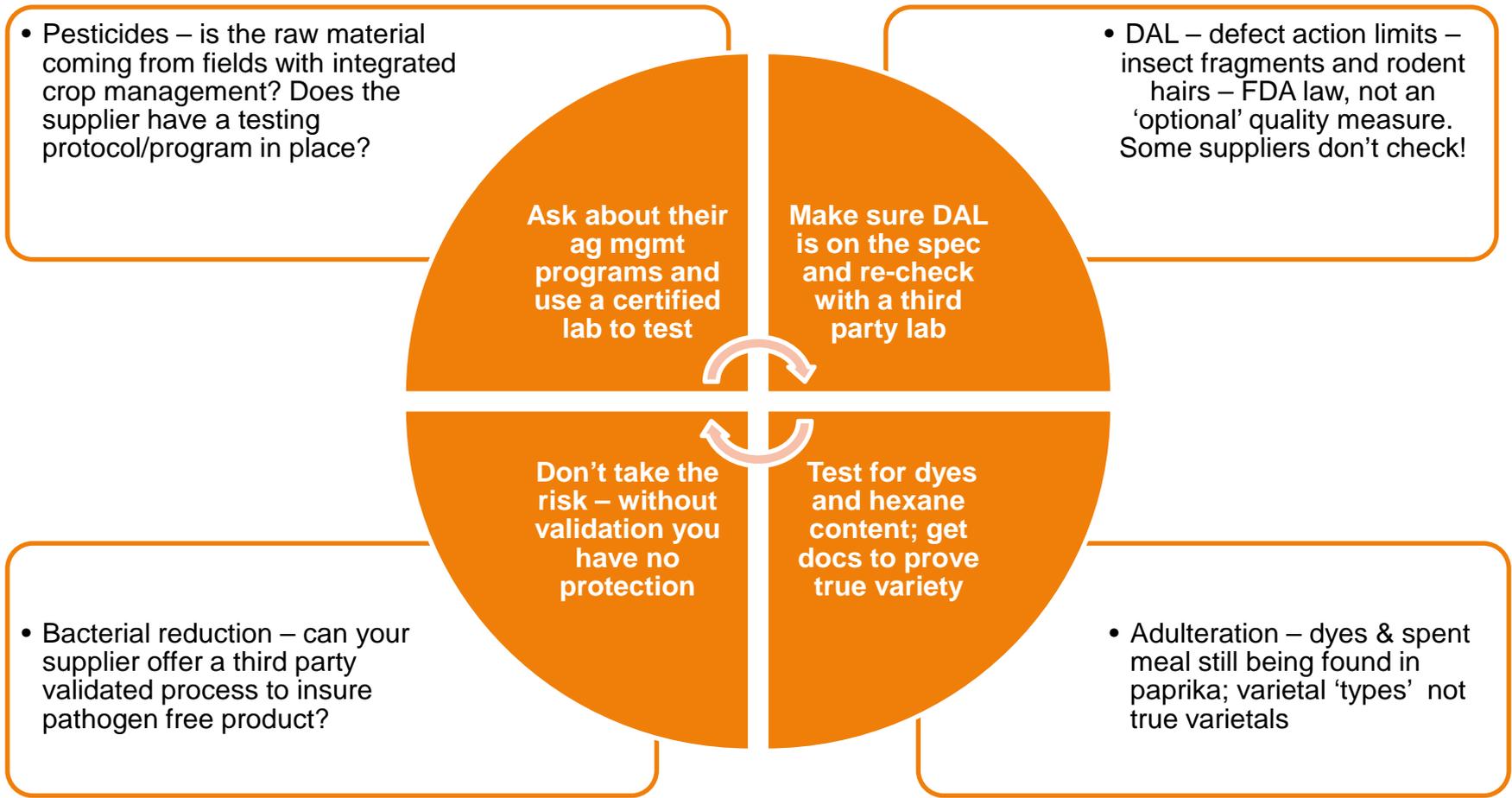


The health benefits of chili pepper

- **Pain relief** – capsaicin used in many commonly used topical formulas for decades
- **Weight loss** – 2010 UCLA study showing increased internal body temperature
- **Appetite suppression** – Purdue study showing core temperature increase and thus calorie expenditure higher in hot chili consumers
- **Blood Pressure reduction** – Chinese university studies showing lab and regional population differences between non-chili eaters and spicy chili eaters
- **Sinus relief** – University of Cincinnati study uses capsaicin to alleviate non-allergenic rhinitis



Quality Control – Buyer Beware



Quality Control – What level of quality assurance is your supplier providing?



- Sensient Vendor qualification process: samples, audits (Sensient and third party), extensive documentation – all to insure GFSI level food safety compliance
- Pre-ship samples arranged by our team or a trusted third party laboratory
- Testing for ASTA, Agtron (surface color), moisture, DAL, ash/AIA, mesh
- Steam treatment, milling, blending, color preservation, natural flow agent
- Xray, metal detection, micro test, pesticide and heavy metal testing



Understand. Innovate. Deliver.

Thank you!



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