



Champaign County Juvenile Detention Center Master Gardener Community Garden

Chili Peppers Lesson

Time

15 – 30 minutes

Overview

Chili peppers are now becoming popular in our cuisine and have become a common garden vegetable that is familiar to most people. This lesson explores the chili pepper.

Objectives

Students will:

- Discover how chili peppers spread around the world.
- Identify what makes a chili pepper hot and the scale used to measure the heat of peppers.
- Learn about different colors, sizes, and shapes of chili peppers.

Supplies

- Varieties of chili peppers (sliced with membranes removed):
 - Jalapeno, habanero, red or green chilies, poblano, scotch bonnet, or any available variety
- Ranch dressing
- Paper towels and paper plates
- Juice, cold water, or milk

Snack

- Peppers for tasting
- Any other veggies from the garden

Activity

Planting, harvesting, and tending chili peppers

Chili pepper taste test

Sources

www.wikipedia.org/wiki/Chili_pepper

Margen, S. et. al (1992). *The wellness encyclopedia of food and nutrition: How to buy, store, and prepare every variety of fresh food.* Distributed by Random House

www.liferesearchuniversal.com/peppers.html

Berkley, R. (1992). *Peppers: A Cookbook.* New York: Simon, Schuster.

Chili Peppers

DO: Begin by introducing yourself and the other Master Gardeners by first names.

SAY: Good afternoon. We are a group of Master Gardeners of Champaign County here to provide a gardening program today at JDC. In the fall and winter months we come every other week to give a lesson on plants, eating right, and taking care of the planet. In the spring and summer we work together with you to plant and maintain a vegetable and flower garden in the outside rec area. (depending on time... I became interested in gardening because... Does anyone else have gardening experience or a relative who gardens?)

Today's lesson will be... I am... with other volunteers...(introduce themselves). (Participants may introduce themselves also.)

Today we are going to talk about a very popular food, the chili pepper. First let's discuss the history and origin of these peppers.

Chile peppers originated in the lowlands of Brazil as small red, round, "berry-like" fruits. Scientists believe that birds are mainly responsible for the spread of wild chili peppers out of this area. Over the centuries, birds developed a symbiotic relationship with chili peppers. Birds do not have the receptors in their mouths that feel the "heat" and a bird's digestive system does not harm the chili pepper seed.

Chili peppers have been a part of the human diet in the Americas since at least 7500 BC. There is archaeological evidence at sites located in southwestern Ecuador that chili peppers were domesticated more than 6000 years ago, and is one of the first cultivated crops in the Central and South Americas that is self-pollinating.

Christopher Columbus was one of the first Europeans to encounter them (in the Caribbean), and called them "peppers" because they, like black and white pepper of the *Piper* genus known in Europe, have a spicy hot taste unlike other foodstuffs.

Upon their introduction into Europe chilies were grown as botanical curiosities in the gardens of Spanish and Portuguese monasteries. But the monks experimented with the chilis' culinary potential and discovered that their pungency offered a substitute for black peppercorns, which at the time were so costly that they were used as legal currency in some countries.

Chilies were cultivated around the globe after Columbus. Diego Álvarez Chanca, a physician on Columbus' second voyage to the West Indies in 1493, brought the first chili peppers to Spain, and first wrote about their medicinal effects in 1494.

From Mexico, at the time the Spanish colony that controlled commerce with Asia, chili peppers spread rapidly into the Philippines and then to India, China, Indonesia, Korea and Japan. They were soon incorporated into the local cuisines.

Scoville test for Capsaicin--A Thermal Richter Scale

All hot peppers contain capsaicinoids, natural substances that produce a burning sensation in the mouth, causing the eyes to water and the nose to run, and even induce perspiration.

Capsaicinoids have no flavor or odor, but act directly on the pain receptors in the mouth and throat. The primary capsaicinoid, capsaicin, is so hot that a single drop diluted in 100,000 drops of water will produce a blistering of the tongue.

Capsaicinoids are found primarily in the pepper's placenta--the white "ribs" that run down the middle and along the sides of a pepper. Since the seeds are in such close contact with the ribs, they are also often hot.

In the rest of the vegetable, capsaicinoids are unevenly distributed throughout the flesh, so it is likely that one part of the same pepper may be hotter or milder than another. You can reduce the amount of heat in a chili pepper by removing the ribs and seeds, but you must wear gloves while doing so.

Capsaicinoid content is measured in parts per million. These parts per million are converted into *Scoville heat units*, the industry standard for measuring a pepper's punch.

One part per million is equivalent to 15 Scoville units. Bell peppers have a value of zero Scoville units, whereas habaneros – a very hot pepper -- register a blistering 200,000 to 300,000. **Pure capsaicin has a Scoville heat unit score of 16 million.**"

Peppers and Health

Are hot peppers bad for you? According to recent studies, probably not. A common concern is that hot peppers or other spicy foods cause ulcers, but there's no evidence that they do.

Studies of areas where hot peppers are used extensively in cooking, such as Brazil and Thailand, have found no higher incidence of stomach ulcers among their populations. And in a study conducted at a Veterans Administration hospital, researchers ground up about an ounce of jalapeno pepper and injected it directly into the stomachs of volunteers. Follow-up observation showed no damage to their stomach linings.

Nor do hot peppers aggravate or cause hemorrhoids, as has often been claimed, since capsaicinoids are broken down before they reach the lower intestine.

Actually, evidence has shown that peppers may have some beneficial properties. Capsaicin has been found to work as an anticoagulant, thus possibly helping prevent heart attacks or strokes caused by blood clot. Small amounts of capsaicin can produce numbing of the skin and have a slight anti-inflammatory effect. In some countries, peppers are used in salves.

Moreover, peppers are high in vitamin C, which, in turn, may be effective in protecting against cancer. Vitamin C is an antioxidant, a chemical substance capable of removing the threat from free radicals, which can cause cells to mutate.

By weight, green bell peppers have twice as much vitamin C as citrus fruit; red peppers have three times as much. Hot peppers contain even more vitamin C, 357 percent more than an orange. And red peppers are quite a good source of Vitamin A.

Remedies for the Pepper's Bite

There are several remedies for the effects of eating a pepper that is too hot for you, something that is usually discovered when it is too late.

Eventually, you can build up tolerance to the heat of peppers, and will be able to eat hotter and hotter chilis without having to resort to these cures.

Many people recommend drinking tomato juice or eating a fresh lemon or lime, the theory being that the acid counteracts the alkalinity of the capsaicin.

Some people won't begin eating hot peppers without a pitcher of cold water handy, though this is not the best idea. The capsaicin, which is an oil, does not mix with the water but is instead distributed to more parts of the mouth.

More useful solutions include drinking milk (rinsing the mouth with it as you sip) or eating rice or bread, which absorb the capsaicin. Another retaliation against attack by hot chili pepper is to simply eat another. And if that doesn't work, eat another one.