Looking to try something unusual? Filipinos have long known the value of pepper leaves (dahon ng sili) as an ingredient in soups and stews. A trip to your local Asian market can often uncover a bag of these familiar-looking leaves in the frozen food section. Thawing frozen leaves, however, can cause a loss of texture, so true aficionados prefer them fresh from the plant.

The youngest, most tender leaves are harvested before the plant reaches maturity and begins redirecting photosynthates to floral development and fruit production. The non-pubescent (non-hairy) leaves of both C. annuum and C. frutescens are used, and while some debate exists, there appears to be little difference in taste among varieties. The taste is subtle and unique, and the texture is a little like freshly picked cabbage. Leaves can be refrigerated for several hours, but the high rate of water loss necessitates that they be used as soon as possible after harvest.

In the open markets of the Phillipines, the upper shoots of the plants are sold in bunches much like spinach is in American markets. It's not unusual to find these leaves sold alongside other delicacies such as sweet potato leaves and the flowers of summer squash.

Unlike the pepper's close solanaceous relatives the tomato and potato, pepper leaves lack the alkaloid compounds that make solanaceous foliage unpalatable and even dangerous to consume. Caution should be used, however, as pesticide recommendations are not made with the leaf in mind, but rather the pods. Thoroughly wash the leaves before use, regardless of whether or not they were grown organically.

Continued on next page
Eat the Leaves, continued from previous page.

Folklore holds that the leaves also have medicinal uses. They are used with a small amount of oil in compresses as a home remedy to relieve pain and sterilize wounds. While we are not qualified to comment on the effectiveness of such treatments, they do suggest that our friend the pepper plant may have yet more uses that we haven't yet considered.

Here's a recipe from the Philippines that utilizes chile pepper leaves.

**Tinulang Manok**
(Chile Leaf Chicken with Rice)

2 tablespoons vegetable oil
2 cloves garlic, chopped
1 medium onion, diced
1 pound boneless chicken breast, cut into 1-inch cubes
1 medium chayote, or substitute zucchini or yellow squash, peeled and cut into 1-inch slices
1 1/2 cups water or chicken stock
Salt and pepper to taste (Filipinos season heavily)
1 whole Filipino or Thai chile (optional)
20 Capsicum leaves (any pepper)
Cooked white rice

In a large skillet, heat the oil and sauté the garlic until brown. Add the onion and chicken and cook for 15 minutes over medium heat, stirring often.

Add the chayote or squash, the water, the salt and pepper, and the chile (if desired) and cook until the squash is tender, about 20 to minutes. Add the pepper leaves and cook for 3 to 4 minutes. Remove the Filipino or Thai chile before serving.

Serve hot over white rice that has been kept warm.

Serves: 3 to 4

Jack Stamates, DCH (Dedicated Chile-Head) Applies Grease and Chile Powder to his ADCP.

**Chiles Prevent Biofouling**

Jack Stamates, an oceanographer with the National Oceanic and Atmospheric Administration reports that hot chile powder has been recommended as a preventative for biofouling, which is the technical term for the growth of barnacles and other marine organisms. "In recent weeks," he wrote "our group was involved with a experiment on board the RV Seaward Explorer, where we employ an Acoustic Doppler Current Profiler (ADCP), which can measure water velocity in three dimensions. Performance of the ADCP is hindered by biofouling, and in recent years most commercial anti-biofouling coatings have been banned from use due to their high toxicity. As a substitute for these coatings, the manufacturer of the ADCP recommends a 50/50 mixture of chile powder and silicone grease or petroleum jelly."
Distinguishing Between Sun Scald and Blossom-End Rot

by Dr. Paul W. Bosland

As the chile plants begin to set fruit and early harvest begins, two common disorders found on chile fruits are blossom-end rot and sun scald. Most often blossom-end rot is the first to appear, with sun scald happening after some initial fruits have been harvested.

Sunscald is a bleached, sunken lesion on the sun-facing side of the fruit. At first it may appear silvery, but as it dries up it will turn brown. It will even appear papery after the tissue has dried completely. It can occur when fruits are picked and leaves or stems are broken off the plant. The problem—simply stated—is sunlight. The fruit is suddenly exposed to sun, and the injury results. Mature green fruits tend to be the most susceptible. Sun scalding often predisposes the fruit to secondary pathogens, such as anthracnose. The only control measure in commercial operations is to keep a healthy frame and a well-set supply of leaves. Shading with screens will help in home gardens. In addition, when harvesting, be careful not to break off leaves. Remember, if plants wilt due to lack of water, the exposed pods can develop sun scald.

With blossom-end rot, a water-soaked area develops on the pod wall near the blossom-end (apex or point) of the chile pod, but rarely in the blossom scar. The affected tissue rapidly desiccates, becoming light brown and leathery in appearance. Affected pods often mature prematurely and soft-rot bacteria may enter the pod through the damaged tissue. Saprophytic fungi generally colonize the dead tissue, turning it dark.

The condition is caused by a lack of calcium to the growing fruit cells. There may be plenty of calcium in the soil; it just doesn't reach the fruits. It can occur in gardens with low or moderate calcium levels. However, fluctuating soil moisture due to over-watering or drought, high nitrogen fertilization, or root pruning during cultivation (weed removal), are the usual causes of blossom-end rot. The best control is to maintain a uniform supply of soil moisture throughout the growing season. Never let the plant wilt, but do not over-water, as this can cause other disease problems, such as the dreaded phytophthora (root rot).

For additional reading on this subject, the following studies are recommended:


PEPPER PROFILE

Capsicum annum "Bonita"
ICC Update
The Chile Institute is struggling to raise funds for the International Center for Chile, the $2.5 million building that would house a museum, library, and botanical garden devoted to the Capsicums. Although we have received numerous contributions to the building fund from individuals and small companies, we have not been able to convince major companies in the Fiery Foods Industry to contribute the huge sums of money necessary. With governmental and industry cutbacks, it's a difficult time to raise funds.
We are not giving up, but the board of directors has an interim plan. The Chile Institute has been offered space for exhibits in the new Farm and Ranch Heritage Museum, which will open in Fall, 1996 at Las Cruces, New Mexico. We plan to take advantage of this offer by building state-of-the-art exhibits on the history, agriculture, culinary arts, and other uses of Capsicums. It is the board's hope that companies will be encouraged to contribute once they can actually see some exhibits and can imagine what the International Center for Chile could become.

Balance of Chiles Deficit Drops Dramatically
Continuing the trend started in 1993, the 1994 chile deficit was reduced by 31 percent to $31.8 million, down from $45.9 million in 1994. The most telling figures showed a sharp reduction in the dollar volume of paprika oleoresin. Since 1992, paprika oleoresin imports have dropped from $18.6 million to $2.3 million, an 88 percent decline. The reason for this is the establishment of new oleoresin extraction facilities in this country, such as Resolex, Inc. in Radium Springs, New Mexico. Exports of U.S. chiles remained approximately the same, with a minor $109,000 drop.
For the sake of comparison, here are the deficit figures for the past few years:
1992: $51.5 million
1993: $45.9 million
1994: $31.8 million
Here are how the 1994 chile imports and exports compared, courtesy of U.S. Departments of Agriculture and Commerce. All Capsicums are counted, included nonpungent paprika and paprika oleoresins.

Imports
New Mexican (Anaheim) and Ancho $2,832,300
Other 23,965,600
Ground 1,917,300
Paprika 6,544,200
Paprika Oleoresin 9,320,900
Total 41,130,300

Exports 9,376,700
Deficit 31,753,600

What Chills Chile?
Have your ever bitten into an enchilada or a jalapeno, then all of a sudden you've experienced a sudden and immense wave of heat rushing over you? Automatically, you reached for that glass of ice cold water. STOP! Don't ever make that mistake again! For my middle school science project, I scientifically proved that milk is the best. The experiment involved taking nine people and feeding them raw chopped jalapenos. Then 1/4 cup increments of either water, Kool-aid, or 2% low fat milk were given to relieve the pain. On average, it only took 2.25 increments of milk to "kill" the chile heat, while Kool-Aid took 3.0 increments, and water took 4.5 minutes to stop all heat symptoms. Overall, milk definitely chills chile heat better than either Kool-aid or water. So from now on remember that milk does a body (and tongue) good.
— Emily Bosland
Colored Mulch Improves Pepper Yields

As reported in American Vegetable Grower (Feb., 1995), researchers at Penn State University's research plots in Rock Springs, Pennsylvania, have determined the superiority of colored plastic mulches to replace the standard black plastic mulch.

Of yellow and silver mulches on peppers revealed that the colored mulches improve pod yield by 14 percent. Added benefits were larger fruit and earlier maturity.

Yellow mulches transmit heat to the beds and reflect sunlight up into the plants, encouraging growth. Another interesting effect was that the yellow mulch attracted pests such as cucumber beetles. But why would that be a benefit? Because you then know where the bugs are and can make an accurate count to determine control methods. Some researchers suggest planting one row with yellow mulch among six or seven rows of another color.

"We feel you can get control just by spraying the yellow and not the other rows," said researcher Mike Orzolek. "I think it works into integrated pest management schemes very nicely."

One problem, though—colored mulches cost up to 50 percent more than ordinary black muches. Suppliers of colored mulches include Edison Plastics (908-752-6660), North American Film Corp. (800-593-0501), and AEP Industries (800-999-2374).

A Blast from the Past

The Spanish physician Nicholas Monardes wrote one of the earliest treatises on New World plants and their properties. His book, which was translated into English in 1577, became a standard work on American diseases and their cure. Monardes endorsed the medicinal use of chile pepper: "It comforte mucho, it dooth dissolve windes, it is good for the breast, and for theim that bee colde of complexion: it dooth healte and comforte, strenghenyng the principall members."

To some extent, the taking of chile peppers and alcohol in small amounts was a good adaptive strategy, but not for the reasons the colonists and their medical advisors thought. Though people feel warm after taking them, both promote a degree of hypothermia by increasing the flow of blood to the skin and promoting sweating. Both stimulate gastric secretions, and peppers also increase gastric muscular activity and can, as Monardes indicated, "facilitate the expulsion of gas." --Karen Ordahl Kupperman, "Fear of Hot Climates in the Anglo-American Colonial Experience." The William and Mary Quarterly, Vol. XL, No. 2 (April, 1984), 213.
A Children's Chile Book

You are never too young to enjoy the wonders of chiles. Dutton Children's Books, a division of Penguin USA, has announced the publication of a new children's book about chile peppers. Author and photographer, Elizabeth King; has written a book entitled Chile Fever: A Celebration of Peppers. In this book, she explains the growth cycle of peppers, the history of their cultivation, and their importance to cultures worldwide. She takes the young readers to a festival devoted to chiles in Hatch, New Mexico. The book is colorfully illustrated with a photo-essay about chiles. Elizabeth King moved to New Mexico when she was 12 years old and her first meal there was tacos garnished with chile peppers. She has enjoyed chiles ever since. She is also the author of Backyard Sunflower, an NSTA-CBC Outstanding Science Trade Book for Children in 1994.

Publications Available from The Chile Institute

Capsicum: A Comprehensive Bibliography, New 3rd Updated Edition
by Paul W. Bosland, has recently been updated by the inclusion of 500 more citations. It now contains about 6,000 technical citations in thirteen categories including taxonomy, genetics, breeding, biochemistry, production, and disorders. It is available on 3.5-inch diskette, 5.25-inch diskette, or hard copy for $20 postpaid.

Chile Peppers: A Selected Bibliography of the Capsicums,
by David A. DeWitt, has more than 1,100 citations primarily concerned with non-technical articles and books on the history and culinary arts of Capsicums, with other sections on gardening and nutrition/medicine. It is available on 3.5-inch diskette, 5.25-inch diskette, or hard copy for $20 postpaid.

Chile Pepper Slide Set, 20 slides of the major pod types and varieties, $7.50 each or $100 postpaid for the set.

Proceedings of the 12th Biennial National Pepper Conference,
Aug. 1994, Las Cruces, NM, hard copy, $15.00 postpaid.

Chile: Preparation and Recipes,
booklet, $2.50 postpaid.

Chile Pepper Varieties and Classification,
booklet, $2.00 postpaid.

Persons wishing to order publications or slides should indicate format desired, make checks out to NMSU Foundation/Chile Institute, and send them to The Chile Institute, Box 30003, Dept. 3Q, NMSU, Las Cruces, NM 88003.

Other publications are also available; please write for details.
Chiles in Cuba

The 1994 Plant Genetic Resources Newsletter, volume 99 of the Food and Agriculture Organization (FAO) of the United Nations and the International Plant Genetic Resources Institute (IPGRI), published a short group of papers on Cuba to mark the 90th year of operation of the Instituto de Investigaciones Fundamentales en Agricultura Tropical. Part of the papers reported on Capsicum collecting in Cuba. They reported finding in western and central Cuba one accession of C. baccatum, a race of chile known as 'ají guaguao'. This folk name has been largely recognized for C. frutescens. It had be considered that C. baccatum did not exist on the island; however, during this expedition semi-wild plants with very small, pungent fruits were found growing in the subcoastal xeromorphic thicket near Puerto Escondido, Havana.

Another collecting expedition in central Cuba found great variation among C. annuum accessions. Several sweet types were collected, among them 'pimiento dulce' and 'ají chay'. For C. frutescens, most of the accessions were the hot races such as 'ají cachucha' (C. chinense) and 'ají guaguao'.

Back Issues of The Chile Institute Newsletter

$2.50 each postpaid

Volume I, No. 1 (Fall, 1992). Message from The Director; Chile Conference Roundup, "Green Gold" Video.


Persons wishing to order back issues should indicate the issues wanted and make checks out to NMSU Foundation/Chile Institute, and send them to The Chile Institute, Box 30003, Dept. 3Q, NMSU, Las Cruces, NM 88003.