

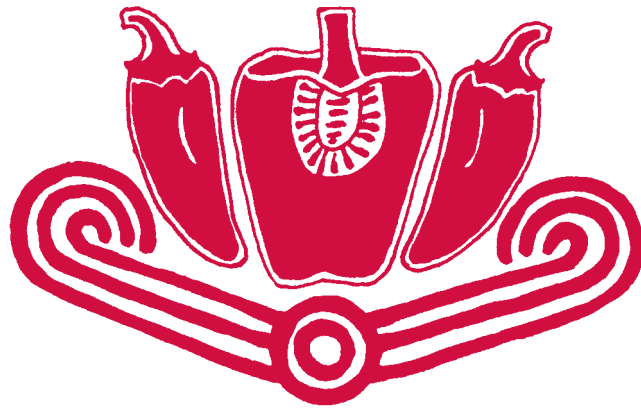
The
Peppers
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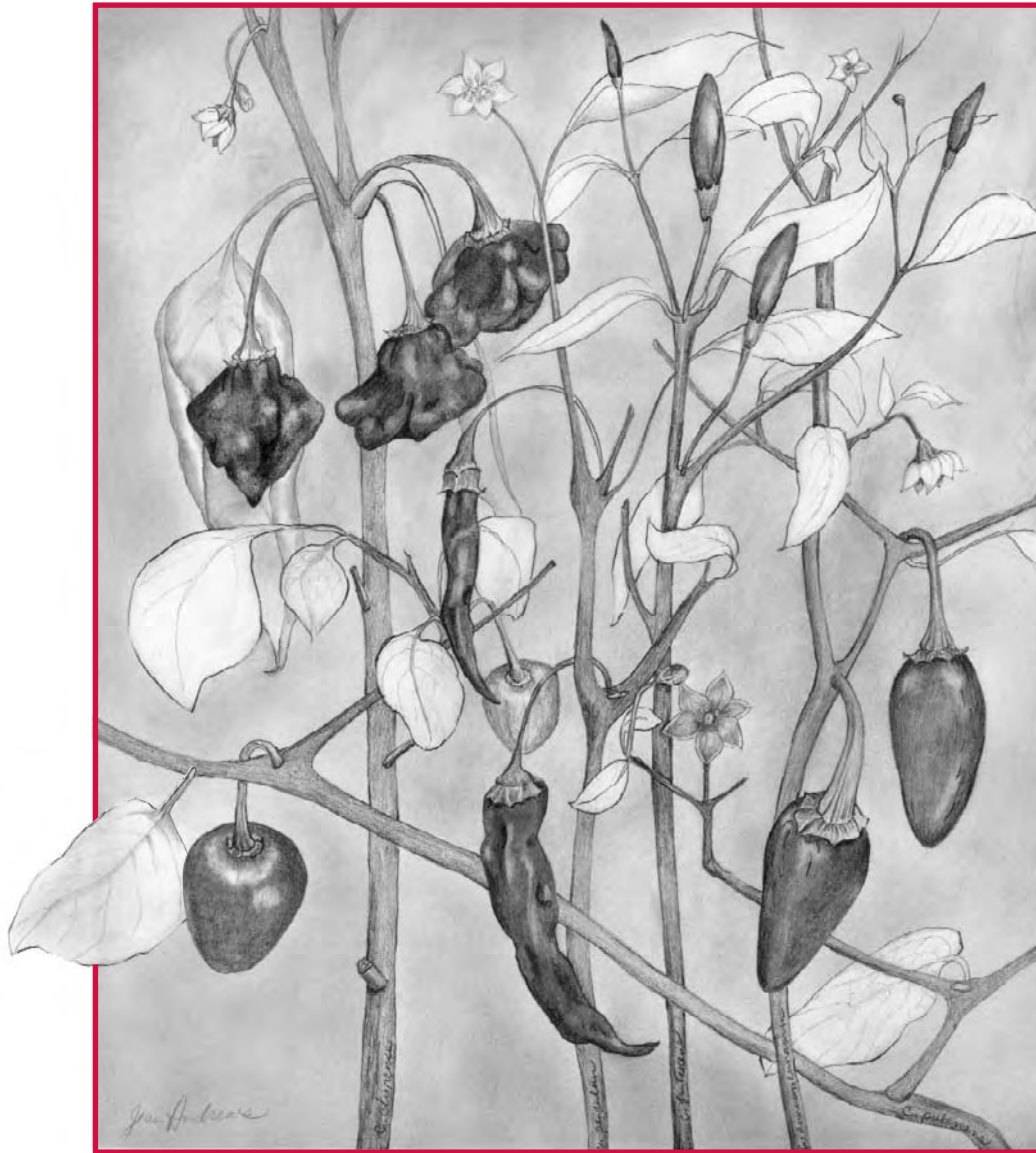
200 Recipes from the Pepper Lady's Kitchen

JEAN ANDREW

Foreword by Jerry Anne Di Vecchi

The
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Cookbook





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200 Recipes from the Pepper Lady's Kitchen

NUMBER TWO IN THE GREAT AMERICAN COOKING SERIES



University of North Texas Press
Denton, Texas

JEAN ANDREWS

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The Pepper Trail: History & Recipes from Around the World
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10 9 8 7 6 5 4 3 2 1

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University of North Texas Press

P.O. Box 311336

Denton, TX 76203-1336

The paper used in this book meets the minimum requirements of the American National
Standard for Permanence of Paper for Printed Library Materials, z39.48.1984.

Binding materials have been chosen for durability.

Number Two in the Great American Cooking Series

Interior Design by Carol Sawyer, Rose Design

ISBN-13 978-1-57441-193-5

ISBN-10 1-57441-193-4

Library of Congress Cataloging-in-Publication Data

Andrews, Jean, 1923—

The peppers cookbook : 200 recipes from the pepper lady's kitchen / Jean Andrews.

p. cm.—(Number two in the great American cooking series)

Includes bibliographical references and index.

ISBN 1-57441-193-4 (pbk. : alk. paper)

1. Cookery (Hot peppers) 2. Hot peppers. I. Title. II. Great American cooking series ; no. 2.

TX803.P46A524 2005

641.6'384—dc22

2005002605

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Foreword



Peppers and Jean Andrews were made for each other. Peppers are complicated and confusing. Jean is fired by curiosity and a meticulous organizer. Peppers have spread by circuitous means (birds, to explorers, to garden catalogs) and adapted to locations all over the world. Jean has tracked them fearlessly to rugged, remote, exotic destinations as well as test farms in New Mexico and California. Peppers have a muddled, mysterious history botanically and geographically. Jean is a Sherlock Holmes at heart, sleuthing and deducing to discover solutions that add to the literature. Peppers range from mellow, mild, even sweet, to explosively pungent and intensely flavored. Collectively, peppers are beautiful, cloaked in brilliant colors hued from sunrise to sunset. I might not use all these descriptors for Jean, but many apply!

Jean Andrews came to my attention twenty years ago when a particularly literate and savant garden editor rushed into my office with a large book in his hand. He was fairly bursting with enthusiasm, rattling (almost ranting) rapidly about “this amazing piece of literature on a capsicum . . . never saw anything so well done” and more. The book was Jean Andrews’ *Peppers: The Domesticated Capsicums*, accurately, sensitively illustrated with opaque watercolors of peppers rendered in scientific detail—not just the pod, but the whole plant, leaf, and blossom—by the author who is also an artist. One of those original paintings now hangs in my hallway, purchased through the University of North Texas, Denton, Texas to endow worthy scholarships in art that Jean supports.

Jean’s photo was on the book’s back jacket. Her hair was smoothed into a chignon—as I comb my own. The

picture was black and white, but I could tell she was wearing a blue cotton chambray shirt because it was identical to a favorite of my own. Her smile suggested a spirited personality and, possibly, an ironic gleam of humor. Clearly, here was a person with whom I could relate and learn from.

At the time, I was the food and wine editor for *Sunset Magazine* (1959–2001), a West coast shelter publication that recently celebrated its 106th anniversary. We considered peppers part of our culinary heritage, particularly the pungent chilies, because a huge chunk of our readership resides in what was once part of Mexico. Our editorial influence often impacted the marketplace. For example, we were instrumental in convincing growers of Bell peppers to market the more flavorful, although more perishable, ripe fruit as well as the green ones; other kinds of ripe chili peppers followed. It was also our self-assigned task to help our readers identify and use advantageously both the fresh and dried chili peppers that were steadily moving from ethnic markets into the supermarket mainstream. Much of our early information came from Southern California, the Southwest, and Mexico, primary sources of the products that we used in our tested recipes. In *Sunset’s Mexican Cookbook* (first edition 1969), we codified what we knew, but the pepper picture continued to evolve and expand. Nomenclature was confusing. A fresh chili pepper, as Jean explains, and its dried counterpart often have different names. Additionally, the very spelling of the word chili (chilli, chile, and more) is a subject of debate, not only among Jean’s learned associates, but on our own copy desk. On more than one occasion, phone calls and faxes

flashed from my office to Jean's as I sought her support and authority to resolve chili inspired debates. And as new kinds of fresh peppers continually popped up in Latin and Southeastern Asian markets, it was Jean who helped me identify them.

Serendipitously scheduled right after the publication of *Peppers: The Domesticated Capsicums* was a food conference in California's Napa Valley wine country. I was asked to chair a panel on Latin foods for an audience that ranged from celebrities like Julia Child, food print and media journalists, cookbook authors, food scientists, chefs, food industrialists, restaurateurs, restaurant reviewers, cooking teachers . . . right on down to folks just interested in eating well. Naturally, I jumped at a reason to invite Jean to participate. She was as impressive in the flesh as she was through her writing; we've been in touch ever since.

Jean often describes her life as BC and AC, Before Chilies and After Chilies. Truly, she deserves to be called a renaissance woman. Graduated a home economist, she's knowledgeable and interested in foods, nutrition, and textiles, too. Trained as an artist and illustrator, her scientific bent brings beauty and fact into her art. As a diver and researcher, she wrote and illustrated books on seashells. Self-taught, initially, in botany and horticulture, she's written and illustrated books on wildflowers.

But it was the capsicum family that pushed Jean onto center stage, focused her scholarly abilities, and earned her a world-wide reputation as an outstanding expert on the subject of peppers. Her timing was perfect. That food conference represented a major attitude shift about food and eating. Food was news, chefs as famous as movie stars, restaurants were theatre, where to dine as much a part of a trip as the destination.

Peppers were and still are right in the middle of the excitement, and so is Jean.

While following historical pepper trails around the globe, in dusty libraries with ancient manuscripts, mountain villages

in the Andes and Himalayas, and even the most chic restaurants from Paris to Bangkok to Santa Fe, Jean accumulated information about the cultures and foods that used peppers. She also gathered pepper seeds, grew the plants, studied, classified, photographed, and painted them; then she ate the fruit, identified their characteristics, and cooked with the peppers to develop recipes. Clearly, content for many a volume was piling up. Each of Jean's books on chilies brings new dimensions to a subject that is, no pun intended, HOT.

Because peppers are particularly able to adapt to growing conditions and shift personalities through breeding, the scene is constantly changing. Chilies that were once considered searingly hot have been bred to pull back their heat and let their flavor come forward. Jean's *The Pepper Lady's Pocket Pepper Primer* is a landmark volume about the physical aspects of peppers—names (common and Latin), size, color, flavor, shape, uses, sources, and genealogy. *The Pepper Trail* takes up where her first book left off.

What follows logically? This tome on cooking with peppers. It's fascinating to know why the pungency of a pepper hurts so much you want more; how capsaicin—the fuel of pepper sensations—serves us medically as fact or fiction, and how nutritious peppers are.

But best of all, it's wonderful to have this expansive collection of recipes selected by Jean that uses peppers for their unique personalities—by variety, by flavor, by color—to create delectable dishes and wonderful meals.

Jerry Anne Di Vecchio

Preface



Ask yourself—what am I doing here? If you are not a pepper fan (friend or fiend) or a “wannabe,” you are probably in the wrong place, because what follows is designed for those who want to cook with peppers and to know more ways to use and enjoy them as food. This is a pepper cookbook and every recipe contains at least one type or version of that pungent pod. It is also designed for the curious cook who wants to know more about the whys and wherefores of nutritious and flavorful food preparations and their ingredients. If the reader wants to learn more about other aspects of the *Capsicum* peppers, they can be found in my *Peppers: The Domesticated Capsicums*, (University of Texas Press, Austin, 1984, revised, 1995) and its companion *The Pepper Trail* (University of North Texas Press, Denton, 1999) which won the 2001 Jane Grigson Award for scholarship presented by the International Association of Culinary Professionals. Both of these books I researched, wrote, and illustrated with my own artwork and photographs.

Those books, designed to be two volumes, will tell you more than you probably want to know about New World peppers from their discovery in 1492 by Christopher Columbus until they reached your table. The first one covers the history, biology, taxonomy, physiology, descriptions, and literature with color illustrations of thirty-four *Capsicum* cultivars, but it barely touches on the food aspect of our subject. The second is all about peppers as food and their travels from the New World to the Old World with the effects they had on the cuisines of the various cultures that adopted them. This is followed by a section of recipes, certain ones of which are included

herein. A few are by some of America’s outstanding chefs, while others are recipes I have collected from my extensive travels as I tracked peppers on their journey from the Americas to Spain, Africa, India, Asia, the Middle and Far East, and Europe.

This book explains what peppers are, how to prepare interesting and nutritious dishes with peppers, and provides recipes for that purpose. Besides attempting to introduce you to the foodways and tastes of the world’s pepper eating cultures with their traditional dishes, the contents and recipes have been designed with several things in mind—good nutrition, ease of preparation, and flavor. I love good food! Not only to eat it but also to grow it, handle it, paint it, analyze it, smell it, preserve it, and prepare it for the table. I like to try new foods and different recipes using them. This is a very personal book, the kind I want in my kitchen. To test the recipes in this compilation, I have prepared every recipe in it—except for a few of those by chef friends. At home, my friends were invited to “Guinea pig” dinners to get their opinions of new dishes I had selected and prepared.

I am not a professional food person; however, on several occasions I have served as a paid consultant to several major American food companies, the Nestle Corp. for one, and magazines such as *Southern Living* in Alabama and *Sunset Magazine* in California, that wanted their staffs to know how to use peppers. Also I have lectured on the subject of peppers in more places than I can name, including the Smithsonian, and the Schlesinger Library at Harvard. I was invited to write “Chilli Peppers” for *The Cambridge World History of Food* published in 2000 by

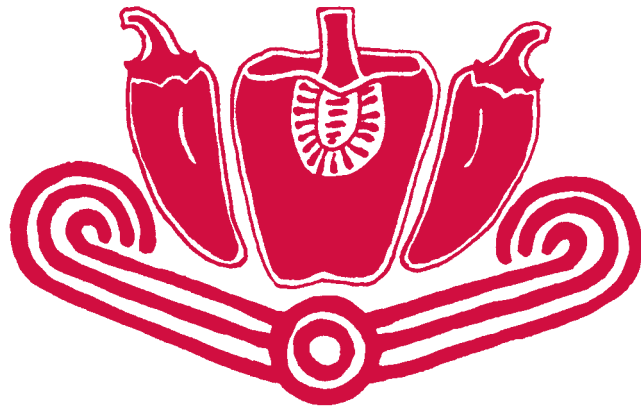
Cambridge University Press, and “Chili Peppers” in *The Encyclopedia of Food and Culture* published in 2002 by Charles Scribner’s Son. Also, I was chosen by the Texas State Agriculture Department to be in *Who’s Who in Food and Wine in Texas* and was one of three nominated to be “Grand Dame” of Les Dames de Escofier, an organization of female food professionals. My undergraduate degree is in Home Economics, and I am a Certified Home Economist with an almost manic interest in good nutrition. I have endowed Visiting Professorships in Human Nutrition and Economic Botany at The University of Texas at Austin. That University’s College of Natural Science saw fit to name me to their Hall of Honor—but what I do best is ASK QUESTIONS.

In this book I want to share with you some of the answers I have found to my food and cooking questions. It has been designed with the curious cook in mind. Not only one with curiosity but also one who likes to cook and wants to know more about what they cook, what they cook with, the tools they use, how to serve it, its cultural background, and nutritional value.

Some of the 200 recipes included have been in my other books but they are all worth repeating because they fill a certain niche that can hardly be improved on—especially the traditional sauces and condiments, most of which have been collected from around the world. This book is designed to go on the kitchen counter, not the coffee table. Take it there and ENJOY! Don’t be afraid to put your own twist on a recipe. Taste as you go. BLT’s are the sign of a good cook (that is Bites, Licks, and Tastes—not Bacon, Lettuce and Tomato), just watch the amounts.

Please forgive any Texas bias you might find in these pages, but I am a fifth generation Texan who comes from a long line of Texas women who were excellent cooks. Buried in Texas soil are two of my great-great grandmothers, two great grandmothers, a wonderful grandmother who let me spend a lot of time helping, watching, and tasting in her kitchen where she prepared goodies known all over town for their excellence, and an auntie and mother who inherited her food preparation skills. It is in their memory I dedicate this cookbook. I hope that you, your family, and friends will enjoy using it.

PART I



WHAT IS A PEPPER?

LOOK AT ME! CULTIVAR DESCRIPTIONS

PEPPERS ON YOUR PLATE

What is a Pepper?



How do you account for the popularity of the pepper pod—neither pepper nor a pod? It is the fruit of the genus *Capsicum*, which was named and defined by J. P. Tournefort in 1700, yet is still a rather mixed-up group of plants. Not just the Spanish name *pimiento* is cause for argument but the defining characteristics of that genus are still being debated. However, there are some things on which all agree. To begin with, a *Capsicum* pepper is not related to its namesake, black pepper, which is the seed of a woody vine native to India, *Piper nigrum*.

Origin and Discovery

The confusion originated over five-hundred years ago with Christopher Columbus, whose quest for black pepper and other spices, under the auspices of the crowned heads of Spain, caused him to sail to the west from the Spanish Canary Islands in his attempt to reach the East Indian Archipelago and India from whence spices came. If successful, the new route would have broken the Moslem monopoly of the spice trade. When he arrived at the Islands of the Caribbean he was so certain he had reached his goal that he called the islands the Indies, the natives Indians, and their pungent, red spice *pimiento* after the *pimienta* for which he was searching. Later other Spanish explorers added to the confusion when they also called a second unrelated indigenous American spice *pimienta*, or pepper. It was allspice, *Pimenta dioica*, in the myrtle family.

Before the discovery of the Americas Europeans had also used another pungent spice known as Guinea or ginnie pepper, *Aframomum melegueta*, which came from Guinea in

West Africa. It was known as “grains of paradise” or melegueta pepper which, along with its kin, cardamom, is a member of the ginger family. Soon after the Spanish Discovery the Portuguese acquired the new tropical, pungent, “pimento” from the “New World” and introduced it to their tropical west African bases where it flourished. The natives, who were already accustomed to pungent spices, fell in love with the new, fiery *Capsicum* pods. In 1535, the Portuguese first brought those capsicums to Brazil with their African slaves, who couldn’t eat without them. The new pungent spice had not only largely supplanted the native melegueta pepper but also adopted its common name—“Ginnie” pepper. These elongate cayenne type chili peppers or “Ginnie” peppers were the capsicums the Portuguese introduced to India and the Far East from their African outposts.

If it is not related to the black pepper of India, then just what is a *Capsicum*? The genus *Capsicum* is a member of the plant family Solanaceae along with potatoes, tobacco, petunias, the deadly night shade, and others. Thousands of years ago, some tropical Amerindians domesticated a wild, native *Capsicum* into a wide variety of plants with fiery fruits that grow from sea level to an altitude of ten thousand feet but are killed by frost. The original capsicums were perennial herbaceous to woody shrubs native to the American tropics. Today, breeders have developed annual varieties that can be grown in areas subject to freezes.

There is still no agreement among scholars as to its exact place of origin—either somewhere in central Bolivia or southwestern Brazil. Some capsicums had been carried by birds, their natural means of dispersal, to other parts of

South and Central America long before humans migrated across the Bering Strait to America, and before human migration reached Mesoamerica (Middle or Central America). That indigenous spice had also been carried by birds and native Americans from Mesoamerica to the Caribbean long before the Columbian Connection began in 1492. The pre-Columbian natives had also domesticated the four or five species of capsicums that are cultivated today, and no new species have been developed since that time.

All species of wild capsicums have certain common characteristics: small, pungent, red fruits that may be round, elongate, or conical and are attached to the plant in an erect position. The seeds of the deciduous fruits are dispersed by birds that are not affected by the pungency. Wild *Capsicum* flowers have a stigma-bearing style that extends beyond the anthers to facilitate pollination by insects. Domesticated cultivars have short styles that promote self-pollination. When humans began to cultivate the *Capsicum* plants they, unconsciously or perhaps even consciously, selected seed from those fruits more difficult to remove from the calyx so that birds could not pluck them, thereby remaining attached until harvest. They also found that capsicums, which hung down and were hidden among the leaves, were more difficult for hungry birds to collect. Consequently, pendent fruit became more desirable, and today most domesticated capsicums have pendent fruit instead of erect. As larger and larger fruits were selected, the size and weight increased, which caused the capsicums to become pendent. The fruit, the most valued part of the plant to humans, was changed through the grower's selection for the desired characteristics. All mild and sweet capsicums are the result of selection because all wild capsicums are pungent—mouth warming. This pungency results from the presence of a group of closely related alkaloid compounds and is unique in the vegetable kingdom.

Origin and Use of Name

When Columbus first came upon capsicums the Arawaks, who had come to the West Indies from South America, called their South American pepper *axí*, which the Spanish transliterated to *ají* (*ajé*, *agí*). That language is extinct now, and so are the Arawaks. Today, that name is applied to the pungent varieties in only a few places in the Caribbean along with much of South America. However, *uchu* and *huayca* are ancient native American words still used for capsicums by some Amerindian groups in the Andean area. A different *Capsicum* species arrived from Mesoamerica without a native name. The Spanish called fruits of both species *pimiento* or *pimientón* in the Caribbean Islands (depending on the size) after *pimienta* or East Indian black pepper. Those Spanish names traveled with the new plant to Spain but not to all parts of Europe; it is called *piment* in France, *peperone* in Italy, and *paprika* by the Balkan Slavic people.

In 1518, when the Spanish conquerors came to Mexico, they heard the Nahuatl speaking natives calling their fiery spice by a Nahuatl name that sounded like “chee-ye.” A half century later, when the Spanish botanist Francisco Hernandez arrived in 1570, he wrote that Nahuatl name as *chilli*, giving it the Spanish spelling using a “ll” which sounds like “y”—hence, *chilli*. The term *chilli* did not appear in print until 1651 when his work was first published. Later the Spanish “ll” sound as a “y” reverted to the sound of a single “l” (el) in Spanish.

The Nahuatl stem *chil* refers to the *chilli* plant. It also means “red.” To the generic word *chilli*, the term that described the particular *chilli* cultivar was added (e.g., *Tonalchilli* = chilli of the sun or summer, *Chiltecpin* = flea chilli). In Mexico today, the Spanish word *chile*, which was derived from *chilli*, refers to both pungent and sweet types and is used in combination with and placed before a descriptive adjective, such as *chile colorado* (red chilli) or a word that indicates the place of origin, such as *chile poblano*

(chilli from Pueblo). The same variety can have different names in different geographic regions, in various stages of maturity, or in the dried state. Consequently, the names of capsicums in Mexico can be very confusing.

The Portuguese language uses *pimenta* for capsicums and qualifies the various types—*Pimenta-da-caiena*, cayenne pepper; *Pimenta-da-malagueta*, red pepper; *Pimenta-da-reino* or *-da rabo*, black pepper; *Pimenta-da-jamaica*, allspice; while *pimentão* is pimento, red pepper or just pepper. *Ají* and *chile* are not found in a Portuguese dictionary, nor did they carry those words with them in their travels.

It is likely that the current *Capsicum* names were first carried to the Eastern part of the world by the Dutch. After that the English were probably responsible for their movement because in Australia, India, Indonesia, and Thailand *chilli* (*chillies*) or sometimes *chilly*, is commonly used by English speakers for the pungent types, while the mild ones are called capsicums. However, until very recently only mild varieties were to be had in Australia, while Indonesians and Thais don't yet consume sweet capsicums so they have no word for them. Each Far Eastern language has its own word for chillies—*prik* in Thai and *mirch* in Hindi, to name but two.

The United States is where the most confusion exists. Here we find both the anglicized spelling, *chilli* (*chillies*) or *chili* (*chilies*) and the Spanish *chile* (*chiles*) used by some for the pungent fruits of the *Capsicum* plant, while *chili* (minus one *l*) is also used as a short form in *chili con carne*, a variously concocted mixture of meat and chillies. *The Oxford English Dictionary* gives *chilli* as the primary usage, calling *chile* and *chili* variants. *Webster's New International Dictionary* prefers *chili* followed by the Spanish *chile* and the Nahuatl *chilli*. In the American Southwest, the Spanish *chile* refers to the long green/red chilli that is/was first known as the Anaheim or the long green/red chilli, but is called the 'New Mexican Chile' by the locals. New Mexicans even had the name entered in the *Congressional Record*

of November 3, 1983 (misidentified as *C. frutescens* instead of *C. annuum* var. *annuum*). In an English speaking country it seems incongruous to choose the Spanish *chile* over the anglicized *chili*, or *chilli*. It would be so much less confusing if they were called what they are—*Capsicum*, but getting Americans to call all peppers capsicums would be like getting us to use the metric system.

Not because one name is right and another is wrong, but for the sake of consistency and clarity, in this book *Capsicum* or pepper will be used for the fruit of the *Capsicum* plant. When used in singular form it is capitalized and in italics—*Capsicum*. When plural, it is lower case and without italics—capsicums. The pungent types will be *chilli* or *chili* pepper. *Chili* pepper is the most common usage in American scientific papers. *Chili* with one *l* is the spicy meat dish, and *pimento* is the sweet, thick-fleshed, heart-shaped red *Capsicum*. If *chile* in italics is used, it will refer to a native Mexican cultivar or, without italics, to the long green/red 'New Mexican Chile,' which is a registered cultivar. Whenever possible the name of the specific fruit type/group or cultivar name will be used. It is hoped that the reader will follow suit, thereby helping to stabilize the troublesome situation.

The important thing to keep in mind is that each variety has its own character and if another variety is substituted, the flavor of the dish will be changed. Therefore it is essential that not only the specific *Capsicum* but also its specific form (fresh, dried, canned, pickled, etc.) be used and not just hot pepper or green pepper. Studying the illustrated cultivar descriptions starting on page 11 will make this easier.

Nutritional Information

Capsicums are not only good, they are good for you. Nutritionally, capsicums are a dietary plus. They contain more vitamin A than any other food plant; they are also

an excellent source of vitamin C and the B vitamins. One jalapeño contains more vitamin A and C than three medium-size oranges. Capsicums also contain significant amounts of magnesium, iron, thiamine, riboflavin, and niacin. Even though chili peppers are not eaten in large quantities, small amounts are important where traditional diets provide only marginal vitamins. In *Peppers*, I give a detailed account of the nutritional value of capsicums along with the story of their use by the Hungarian scientist Albert Szent-Györgyi in his discovery of vitamin C (see fig. 1).

1 Gram Uncooked	Vit. A (ICUS)	Vit. C (MG.S)
Bell pepper	50	1.20
Fresh orange	2.24	.538
Carrot	30.5	.35
Potato	.375	.016
Tomato	8.49	.22

Figure 1

Vitamin C is a very unstable nutrient. It is readily destroyed through exposure to oxygen in the air, by drying, by heating, and it is soluble in water. In other words, cooking is very damaging to it. Keep cut or peeled capsicums well covered to prevent contact with oxygen. Don't permit them to stand in water for more than one hour. Nevertheless, cooked and canned green capsicums retain considerable vitamin C. Because vitamin C diminishes with maturity, green capsicums are higher in vitamin C than ripe red capsicums. Vitamin A is just the opposite because it increases as the fruit matures and dries. Also, oxygen exposure does not destroy vitamin A, and it is quite stable during the cooking and preservation process.

Pepper seed, like all seed, have some protein and fat (oil), although they are primarily carbohydrate. There is

also a little manganese and copper, but otherwise they add little nutritionally. In Anglo-America they are traditionally removed, but in other countries removal is seldom customary—especially in the small chili peppers. Removing seed from fresh green or red chili peppers reduces the pungency to some extent because the seed absorb capsaicin (CAPS) from the placental wall where they are attached. Pepper seed that are large when mature (for example ancho and 'New Mexican Chile' types) become woody in texture when dry. Some find that texture undesirable; however, others grind them up to give a nutty flavor to sauces (for example *chile cascabel*). Higher grades of paprika and pepper flakes have had the seeds and veins removed before grinding. Whether you leave the seed in or remove them is strictly a matter of personal preference having little effect on nutritional value.

Weight conscious readers may be pleased to learn that studies have found that eating capsicums and a few other pungent spices cause the metabolic rate to increase. This diet-induced thermic effect requires six grams of chillies or a very pungent chili pepper sauce (for example Tabasco Pepper Sauce®) combined with three grams of prepared mustard to burn off an average of forty-five calories in three hours. Prepare the pungent mixture and put it in a small jar with a screw-lid. Take a teaspoonful about thirty minutes before each meal—you'll get used to it.

Scientific studies in recent years reported the nutritional and medical attributes of capsicums. During this time the public's nutritional awareness has increased. Our daily vocabulary now includes terms like low-calorie, low-cholesterol, complex carbohydrates, high-fiber, low-sodium, unsaturated oils, and low-fat, and food growers and processors have responded to public demand by providing for these nutritional requirements (see fig. 2). An educated change in traditional American food-style is vital to good health. Capsicums are in line with these food restrictions and at the same time their distinctive flavor adds zest to an

Name of Food Capsicum annumm	Amount in Edible Portions of Common Measures	K. Calories	Protein (gm)	Fat (gm)	Carbohydrates (gm)	Fiber (gm)	Calcium (mg)	Phosphorus (mg)	Iron (mg)	Zinc (mg)	Manganese (mg)	Potassium (mg)	Ascorbic Acid (Vit. C) (mg)	Thiamin (mg)	Niacin (mg)	B ₆ (mg)	Follicin (mcg)	Vit. A (IU)
Peppers, Sweet, Raw Green and Red	1/2 C chopped = 50 g	12	0.43	0.23	19.76	0.60	3.0	11.0	0.63	0.09	0.07	98.0	64.0	0.043	0.275	0.610	8.4	265.0
Peppers, Chilli, Raw Green and Red	1/2 C chopped = 75 g	30	1.50	0.05	7.10	1.35	13.0	34.0	0.90	0.23	0.178	255.0	181.9	0.068	0.713	0.209	17.5	578.0
Paprika	1 teaspoon = 2.1 g	6	0.31	0.27	1.17	0.44	4.0	7.0	0.50	0.08	—	49.0	1.49	0.014	0.322	—	—	1273.0
Cayenne Pepper	1 teaspoon = 1.8 g	6	0.22	0.31	1.02	0.45	3.0	5.0	0.14	0.05	3.0	36.0	1.38	0.006	0.159	—	—	249.0
Jalapeño, Canned Solids and liquid	1/2 C chopped = 68 g	17	0.54	0.41	3.33	1.56	18.0	12.0	1.90	0.13	—	92.0	8.8	0.02	0.340	—	—	1156.0
New Mexican Chile Canned	1/2 C chopped = 68 g	17	0.61	0.07	4.45	0.82	5.0	12.0	0.34	—	—	—	46.2	0.014	0.549	—	—	415.0

Source: U.S. Department of Agriculture 1976. *Composition of Foods: Spices*. USDA Agricultural Handbook No. 8-2 Washington, D.C.: Government Printing Office, Superintendent of Documents.

Figure 2

otherwise bland, creamless, fatless, starchless, saltless, sugarless meal. Capsicums are a real health food!

Capsaicin (CAPS), The Pungent Principle

Vitamins and fiber are not the reason people eat chili peppers; they eat them because they are pungent, which causes a sharp stinging or burning effect. Take away the vitamins and the fiber and people would still eat chili peppers, but take away the capsaicin (CAPS) and they don't want them. Capsicums are the only plant in the world that has capsaicin, hence the name. It is a unique group of mouth-warming amide-type alkaloids containing a small vanilloid structural component that is responsible for the stinging or burning sensation associated with capsicums by acting directly on the pain receptors in the mouth and

throat. This vanilloid element is present in other pungent plants used for spices such as ginger and black pepper. For some time capsaicin was believed to contain only one active pungent principle but more recently, studies have added other compounds to form a pungent group of which capsaicin is the most important part. Three of these capsaicinoid components cause the sensation of "rapid bite" at the back of the palate and throat, and two others cause a long, low-intensity bite on the tongue and midpalate. Differences in the proportions of these compounds may account for the characteristic "burns" of the different *Capsicum* cultivars. In both sweet and pungent capsicums, the major part of the organs secreting these pungent alkaloids is localized in the placenta to which the seeds are attached along with dissepiment (ribs or veins), which is the part of the placenta that divides the interior cavity into sections or lobes (see fig. 3). The seeds contain only a low concentration of CAPS.

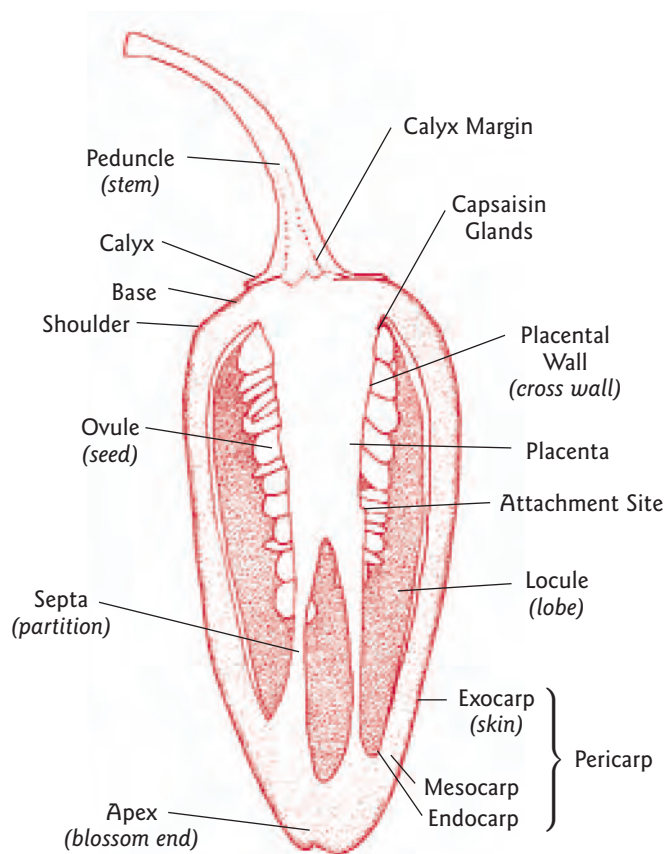


Figure 3
Cross Section of a Pepper

The response to some additives in food used at optimal levels is their perception in the mouth as a warm, mouth-watering quality, which is commonly referred to as hot, stinging, irritating, sharp, caustic, acrid, biting, or burning. V. S. Govindarajan, a sensory analyst and *Cap-sicum* authority from India, insists that this response should be defined by the term “pungency,” rather than those other less desirable connotations routinely used. He also suggests that pungency be given the status of a gustatory characteristic of food—as are sweet, sour, bitter, saline, astringent, or alkaline. I try to use “pungent” in

place of temperature descriptors such as “hot” or “burning,” but long-standing habit interferes as it does when I try to use meters instead of yards.

The CAPS content is influenced by the growing conditions of the plant, the age of the fruit, and could possibly be variety-specific. The amount of CAPS is increased by dry, stressful conditions. The CAPS content begins to increase in the fruit about the eleventh day after inception, becoming detectable when the fruit is about four weeks old. It reaches its peak just before maturity, then drops somewhat in the ripening stage. Sun-drying usually reduces the capsaicin content, the highest retention being obtained when the fruits are air-dried, with minimum exposure to sunlight.

CAPS keeps most animals from eating peppers; however, birds do not have pain receptors sensitive to that pungent principle. Consequently, they are the principal natural dispersal agent of capsicums. A bird’s digestive tract softens the seed without significant damage, which promotes germination. Many small animals cannot see red, but the red color attracts birds to the ripe fruit.

Capsaicin (CAPS) is hard to detect by chemical tests. It has virtually no odor or flavor but a drop of a solution containing one part in one-hundred-thousand causes a persistent burning on the tongue. CAPS is eight times more pungent than the piperine in black pepper, but unlike black pepper, which inhibits all tastes, CAPS only obstructs the perception of sour and bitter; it does not impair our discernment of other gustatory characteristics of food. In the kitchen, one should taste a tiny portion to estimate the pungency and adjust usage accordingly. A simple scale of one to ten has been used in this book to rate the pungency of the various cultivars described herein.

CAPS activates the defensive and digestive systems by acting as an irritant to the oral and gastrointestinal membranes. That irritation increases the flow of saliva and gastric acids. Eating CAPS also causes the neck, face, and

front of the chest to sweat in a reflexive response to the burning in the mouth.

There are several ways to put out the fire. CAPS is not soluble in water. No amount of water will wash it away; however, cool water will give temporary relief by changing the surface temperature. In 1984, I discovered that the addition of a small amount of chlorine or ammonia ionized the CAPS compound, changing it into a soluble salt (Andrews 1984, 127). This works miracles on your hands, but, of course, you can't drink chlorine or ammonia. However, as are many organic compounds, CAPS is soluble in alcohol. Again this works on the skin but caution must be noted when you drink it. For your burning mouth, try using cheap vodka as a mouthwash—gargle then spit it out—great for the designated driver.

Oral burning can also be relieved by lipoproteins, such as casein that remove CAPS in a manner similar to the action of a detergent, thereby breaking the bond the CAPS had formed with pain receptors in your mouth. Milk and yogurt are readily available sources of casein. It is the casein, not the fat, in milk that does the job; therefore, butter and cheese will not have the same effect. CAPS or the burning sensation produced by it is proving to be a non-habit-forming alternative to the addictive drugs used to control pain. Already this treatment is being used to deal with the pain associated with shingles, rheumatoid arthritis, and phantom-limb pain.

Aroma, Flavor, and Color

Each pepper cultivar—serrano, jalapeño, habanero, cubanelle, etc.—has a distinctive flavor. The flavor compound of capsicums is located in the outer wall (pericarp); very little is found in the placenta and cross wall, essentially none in the seeds (see fig. 3). Color and flavor go hand in hand because the flavor principle appears to be associated with the carotenoid pigment: strong color and strong flavor are

linked. For example, the red or colored Bell Peppers are far superior in flavor to the less expensive, unripe greens. Being able to recognize the differences in flavors of the various cultivars is most important in cooking. Using a different variety can completely change the character of a dish. An ancho or a guajillo cannot be substituted for a cayenne without a noticeable difference.

Color is the most compelling element in a painting and it is also an important component in foods as well. Even if you don't eat capsicums, their use as garnishes can enhance the total appearance of your dish or table. The carotenoid pigments responsible for the color in capsicums make them commercially important as natural dyes in food and drug products throughout the world. Red capsanthin, the most important pigment, is not found in immature green capsicums but develops with maturity. Green capsicums are simply gathered before they are fully ripe. Unripe capsicums have better keeping quality and are less difficult to transport than ripe ones; consequently, they are more available and less expensive in the market. The distinctive *Capsicum* flavors develop only as the fruit ripens, reaching its peak at maturity.

Taste and smell are separate perceptions. Americans are learning to appreciate aroma in capsicums as Asians and Africans have long done. The fragrance is produced by several aroma compounds. The taste buds on the tongue can discern certain flavors at dilutions up to one part in two million but odors can be detected at a dilution of one part in one billion. The more delicate flavors of foods are recognized as aromas in the nasal cavity adjacent to the mouth. Compare the aroma of a jalapeño with that of habanero and you will recognize the specific odor of each immediately.

Why Chili Pepper Lovers Love Chili Peppers

What is it about a fruit that makes one-quarter of the adults on the earth eat it every day in spite of the fact that nature designed it to be pungent (burn) in order to protect it? The burning effect produced by CAPS is a principal reason for liking capsicums. The initially negative feeling becomes positive. Regular consumption of chili pepper has a slight desensitizing effect, good news for the chili pepper lover who craves the burn. Liking to eat chili pep-

pers is definitely an acquired taste unique to human mammals. Young children do not care for them.

What is a *Capsicum*? An old dictionary of “Aztequismos” defined *chile* as “*el miembro viril*” or virile member. However, since this book concerns food and why we like to eat capsicums as a food, I’ll not go into the medical or physiological aspects that concern responses to such sensations as its aphrodisiac potential, opponent-endorphin responses, and benign masochism. If you want to know more about endorphin-stimulating capsaicins, look at my *Peppers*.



Look at Me! Cultivar Descriptions

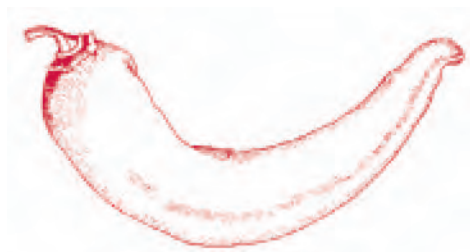


Descriptions of Peppers Used in the Recipes

Unless noted otherwise, the peppers you will be using in the recipes in this book are *Capsicum annuum* var. *annuum* Linné. In certain varieties of Mexican peppers the fresh and dried forms have different names. A simple scale of one to ten has been used to rate the pungency of each cultivar. Use the high rated ones with caution.

Banana Pepper and Hungarian Wax

C. annuum var. *annuum* Linné, 1753



COLOR: Pale yellow-green to yellow, maturing to bright red

SHAPE: Elongated cylinder, tapering to a point.
Wax-type

SIZE: 5½ to 6 inches long by 1½ inches wide

PUNGENCY: Sweet: 0. Hot: 5

SUBSTITUTES: ‘Cubanelle’ for sweet; ‘Caloro,’ ‘Santa Fe Grande’ for pungent

OTHER NAMES: ‘Sweet Banana,’ ‘Hungarian Yellow Wax’

USES:

Fresh: in salads, as garnishes, stuffed (as is done in celery), in vegetable dishes and stews, fried. Pickled: as garnishes, in salads, on sandwiches, as a condiment

SOURCES:

Fresh: Home garden, farmer’s markets

Dried: Not used dried

Processed: Pickled banana peppers available in food stores

Seeds: Most seed suppliers. Available cultivars: ‘Early Sweet Banana,’ ‘Giant Yellow Banana,’ ‘Hungarian yellow wax,’ ‘Long Sweet Yellow’

Bell Pepper

C. annuum var. *annuum* Linné, 1753



COLOR: Green to red, orange, yellow, brown, or purple

SHAPE: Blocky. A few cultivars, such as the tomato-shaped ‘Sunnybrook’ or the long, narrow ‘Ruby King,’ do not conform. Bell-type

SIZE: 4 to 6 inches long by 3½ to 4 inches wide
PUNGENCY: Sweet: 0, except for 'Mexi-bell': 3 to 5
SUBSTITUTES: Banana, 'Cubanelle,' pimento peppers
OTHER NAMES: Capsicums, mango, *morrón*, *pimentón*,
or any one of the hundreds of hybrid cultivar names
USES: Stuffed (parboiled 2 to 3 minutes first), fried, in
casseroles, vegetable dishes, salads, garnishes, relishes,
soups, crudités, sauces

SOURCES:

Fresh: Food stores, farmer's markets, home garden

Dried: Bell Peppers are not dried whole. Dehydrated
flakes can be found in the spice section of
food stores

Processed: Ripe red ones are canned as a pale
substitute for pimento. A flavorful, slightly pungent,
tapered variety (name undetermined) grown in
Eastern Europe and the Balkans is recently available
roasted, peeled, and canned as "roasted red pepper"

Seeds: There is a multitude of cultivars in any seed
catalog. Popular cultivars: 'Ace Hybrid,' 'Argo,' 'Big
Bertha,' 'Cal Wonder,' 'Klondike bell,' 'Ma belle,'
'Oriole,' 'Staddon's Select,' 'Yolo Wonder'

Cayenne

C. annuum var. *annuum* Linné, 1753



COLOR: Dark green to red; new yellow and orange

SHAPE: Elongate cylinder, wrinkled, curved;
Cayenne-type

SIZE: 5 to 6 inches long by ½ to ¾ inches wide

PUNGENCY: Hot to very hot: 7 to 8

SUBSTITUTES: Jalapeño, serrano, Thai

OTHER NAMES: A pepper of the elongate cayenne-
type was one of, if not the first, capsicums introduced
to the Far East. It has become the most common type
of *Capsicum* grown in the world with different names
in every country

USES: Commonly used powdered or dry in Creole and
Cajun dishes, Indian, Indonesian, Thai, Pakistani,
Hunan, and Sichuan cooking. In meat and vegetable
dishes, salad dressings, and as a table spice

SOURCES:

Fresh: Farmer's markets, home gardens, and some
food stores

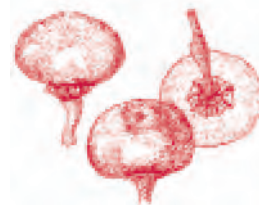
Dried: In any ethnic or supermarket spice section,
powdered or whole

Processed: Powdered in the spice section of almost any
food store; used in some pepper sauces; used in
some Cajun seasonings

Seeds: Most seed suppliers carry one or more varieties.
Available cultivars: 'Cayenne Langer,' 'Cayenne Large
Red Thick,' 'Cayenne Pickling,' 'Golden Cayenne,'
'Hades Hot,' 'Hot Portugal,' 'Japanese Fuschin,'
'Jaune Long,' 'Long Red,' 'Long Slim,' 'Mammoth
Cayenne,' 'Ring of Fire'

Cherry

C. annuum var. *annuum* Linné, 1753



COLOR: Medium green to red

SHAPE: Oblate. Cherry-type

SIZE: ¾ to 1 inches long by 1¼ to 1½ inches wide

PUNGENCY: Sweet or hot: 0 to 4
SUBSTITUTES: Any pickled pepper
OTHER NAMES: Hot cherry, Hungarian cherry, sweet cherry
USES: Pickles, relishes, jams, salads, garnishes, condiments
SOURCES:
Fresh: Home gardens, farmer's markets
Dried: Not used dried
Processed: Pickle section in food markets
Seeds: Most seed suppliers have at least one cultivar. Available cultivars: 'Bird's Eye,' 'Cerise,' 'Cherry Jubilee,' 'Cherry Sweet,' 'Christmas Cherry,' 'Super Sweet,' 'Red Giant,' 'Tom Thumb'

Chile de Árbol

C. annuum var. *annuum* Linné, 1753



Fresh



Dried

COLOR:
Fresh: Green to red
Dried: Bright red
SHAPE: Elongate conical, narrow shoulders; pointed apex. Cayenne-type
SIZE: 3 inches long by 3/8 inches wide
PUNGENCY: Hot: 7
SUBSTITUTES: Cayenne, chiltepín, japonés, dried Thai
OTHER NAMES: *Alfilerillo, bravo, cola de rata, cuauhchilli, ginnie pepper, pico de pájaro*

USES: Primarily dried, in table sauces
SOURCES:
Fresh: Seldom used fresh; home gardens in the United States
Dried: Found packaged in the spice section of many supermarkets and ethnic food stores
Processed: Not processed
Seeds: Catalogs of specialty seed companies; from packaged dried fruits

Chiltepín (Chiltecpín)

C. annuum var. *glabriusculum* (Dunal, 1852) Heiser & Pickersgill, 1975



COLOR:
Fresh: Green to red, some nearly black; glossy
Dried: Brownish red
SHAPE: Ovoid
SIZE: 1/4 inch long by 3/4 inch diameter
PUNGENCY: Very hot: 10+
SUBSTITUTES: Really nothing, but try cayenne pepper, Thai peppers, 'Tabasco' peppers, (not the sauce)
OTHER NAMES: *Amash, amomo, bird, bravo, chilillo, chilipiquin, chilpaya, chilpequin, chiltipiquín, del monte, huarahuao, malagueta, max, piquén, piquin*, to name but a few
USES: Fresh or dried they are mashed together with anything on your plate; table sauces; seasoning meats, vegetables, soups, and stews. Soak peppers in a little hot water; allow to sit, mash, then use the water for seasoning

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