Perplexing sweet-tart fruit
Kumquats Don’t Get Much Respect

Growing up in Los Angeles in the 1960s, my brother and I knew just what to do with kumquats from the potted tree on the patio: we tossed them at each other. In the manner of most Californians, we never ate them. (turn to page 12)
Are Kumquats Citrus?

Many sources state that kumquats are not citrus fruits, but the truth is, like kumquats, their flavor is complex. In most ways, kumquats closely resemble citrus, and they were classified together after the Scottish botanist Robert Fortune brought the first kumquat plant to London in 1856. In 1915, however, the great citrus scientist Walter T. Swingle established a new genus, Fortunella, for kumquats, based on structural differences in the flowers, oil glands, leaves, and fruits of kumquats compared to those of other citrus.

Molecular sequence analyses, which in theory could settle the question, have differed in their conclusions, depending on the methods used. A British botanist, David J. Mahler, proposed reuniting kumquats taxonomically with citrus in 1998, but Swingle's system is still more generally accepted, at least partly because scientists don't want the inconvenience and confusion of changing names.

"I don't believe that there's overwhelming evidence on one side or the other at the moment," said Mikeal L. Roose, professor of citrus genetics at the University of California at Riverside. "There's science involved in accumulating a body of evidence, but how you evaluate that evidence in deciding what should be different genera, and what should be different species within a genus, is not as far as I can see a scientific argument. In the worst case scenario, all you're talking about is a continuum of variation, as things move further and further apart, as their last common ancestor is longer and longer ago they get more and more different, but the question is when the degree of divergence becomes sufficient to justify calling them separate genera. There's not a clear rule in my mind as to how you make that decision."

"I view all of taxonomy as a human endeavor to artificially categorize that which has evolved naturally and in many different ways, shapes, and forms," said Dr. Fred G. Gmitter Jr., professor of citrus genetics at the University of Florida at Lake Alfred. "To me the only important thing is that we have a common name to speak about things."

Variegated calamondin, Lindcove REC
RESPECTING KUMQUATS
(from page 10)

Since then, without much fanfare, cultivation of kumquats for food has grown considerably in Southern California, which now leads the nation in production. It's still a minor crop compared to other citrus, but both chefs and consumers are giving kumquats more respect, and specialty growers are planting intriguing, previously rare varieties.

The standard variety, the oval-shaped Nagami, does present a challenge for the uninitiated, at least for eating fresh. In most citrus the juicy pulp is consumed, and the peel discarded. Contrarily, kumquats are eaten whole, and the Nagami's appeal stems from the contrast between its tart flesh and thick, sweet rind. Some aficionados rub the skin to release its pungent oil, or cut the fruit and squeeze out the sour juice before eating.

Kumquats are intense, complex flavor bombs. Trained sensory analysts detect a fresh, citrusy odor and pungent taste to begin, followed by green and woody notes, with a persistent oily undertone, and a sweet, apricot-like aftertaste. A few years ago a Korean flavor chemist determined that the component that imparts the fruit's distinctive spicy aroma is an ester, present in minute quantities, called citronellyl acetate (Choi, 2005).

North San Diego County, where many farms focus on specialty crops, is the top production area, with 71 acres of kumquats, mostly in small plantings. The local season starts in January and runs through June, but kumquats are at their best, fully ripe yet still firm, from February through April.

The fruit's biggest booster may be Helene Beck of Fallbrook, aka "Miss Kumquat," who grows several hundred of the trees with her husband, Robert. She sells Nagamis wholesale and online, along with kumquat syrup, puree, conserves and fruit leather, and is working on a book of recipes.

"Even here in Fallbrook, many people still don't know what to do with them," she said, offering a plate of freshly baked kumquat cookies.

On a sunny morning in late January, the view from her Tuscan-style hilltop villa, flanked by cypress trees, evoked an old-world vineyard and chateau. Below in the kumquat orchard, the lush green trees sparkled with bright orange fruit, which two workers painstakingly clipped into canvas sacks.

Chefs prize kumquats' pungency, chewy texture and sheer beauty. Breanne Varela, pastry chef at Lucques and AOC in Los Angeles, serves a dessert of yogurt panna cotta with candied kumquats, Cocktail grapefruit and blood oranges. Zoe Nathan at Rustic Canyon combines kumquats with crème fraîche for an ice cream that she serves by itself or with cornmeal pound cake.

Origin in Asia
Kumquats are native to China, where they are eaten fresh, made into preserves, used for religious offerings, and grown as ornamental plants. They reached Europe long after other citrus, and in 1846, and arrived in California about 1880.

For many years kumquats were grown in Florida primarily for the gift-package trade, and in California almost exclusively as ornamental plants. The 1950 Census listed 180 acres of kumquats in Florida in 1961, just one in California. But starting in the late 1960s, increased Asian immigration to California

Leading Varieties of Kumquats and their Hybrids

KUMQUATS
Hong Kong, or Golden Bean kumquat (Fortunella hindsii). The most primitive kumquat type, and the only one found growing wild, in southern China. The smallest citrus fruit, grown primarily as an ornamental. Fruit pea-sized, round; rind bright red-orange, thin; pulp very scanty, bitter and acid; two to four seeds fill the fruit. Rare in the United States, not grown commercially here.

Marumi, or round kumquat (F. japonica). Ancient Chinese kumquat type, called Luowen in China. Fruit small, round to slightly oval; rind thick, smooth, orange to yellow-orange, with prominent oil glands, intermediate between Nagami and Meiwa in sweetness; pulp can be dry or fairly juicy; one to six seeds. Commercially grown in very small quantities, prospects limited by high harvest costs.

Melowa, or large round kumquat (F. x cattleya). Jordan or Ringan in China, Newha in Japan. Natural hybrid of Nagami and Marumi. Best kumquat for eating fresh, popular in Asia. Fruit large, slightly oval to round; rind smooth, orange, very thick and sweet; juice scanty; two to five seeds. Brought to Japan from China during the Melowa period (1764–72), hence its name; imported to the United States 1910–12, but only recently grown commercially, on a modest scale, in California and Florida.

Nagami, or oval kumquat (F. margarita). Ancient Chinese kumquat type, known as Loqua in China. Brought to the United States in 1850, and to California in 1880. Medium size; oval shape; rind thick, smooth, bright orange, sweet; pulp tart, fairly juicy; flavor spicy, intense; sweet-tart; two to five seeds. The standard commercial kumquat, 90% of the crop in both California and Florida.

Nordmann Seedless kumquat (F. margarita). Named on a Nagami seedling by George Otto Nordmann in 1965 in Deland, Fla. Similar to Nagami, with a slightly different shape, lighter skin and no seeds. Medium size; tear drop shape, tapered toward stem end; rind thick, yellow-orange; sweet, tart, fairly juicy; flavor like Nagami; seedless. Commercially grown in very small quantities in California.

KUMQUAT HYBRIDS
Calamondin, or calamansi. Hybrid of kumquat and sour mandarin, or perhaps a backcross from such a hybrid to mandarin. Originated in southern China, but best known as the leading citrus fruit of the Philippines; also grown in other countries in Eastern Asia; juice used for souring, as for lime and lemon; also grown as a potted ornamental. Fruit small, round; rind smooth, orange, pleasant when mature, edible, with kumquat flavor; pulp very tart, juicy. Recently grown commercially in California.

Centennial variegated kumquat hybrid. Variegated mutation found on a twig of a breeding selection, a Nagami hybrid, in 1986 in Florida; grown primarily as an ornamental. Tree very attractive; fruit larger than a typical kumquat; round to oval, reddish; foliage veined light green, pale yellow and dark green; rind thin, sweet, striped green and yellow when young, pinkish orange against yellow-orange when mature; pulp orange, fairly acid, juicy; seeds easily removed from the fruit. nursery. "Erstis" (Erstis). Hybrid of West Indian lime and Marumi kumquat made in 1909 by Walter T. Swingle, intended as a more coldhardy lime-like fruit. Fruit larger than a kumquat, oval to round; rind very smooth, thin, light yellow, sweet and edible; pulp light green to yellow, juicy, very acid, with lime flavor; fairly seedy. Commercially grown in small quantities. Also popular as an ornamental tree.

Fukushu, or Changshou hybrid kumquat (F. x obovata). Hybrid of kumquat and mandarin, commonly grown as a potted plant in China, and for candying fruits. Fruit large for a kumquat, slightly flattened to round; rind smooth, orange, relatively thin, sweet and edible, often peelable; pulp tart and juicy, seedless variety. Recently has been grown commercially on a modest scale in California.

Indo mandarin/kumquat. Hybrid of Nagami kumquat and Dancy mandarin, made at UCLA before 1972, selected in India. Too tart to eat fresh, but good for marmalade and as an ornamental. Fruit larger than a kumquat, tear drop shaped, with a distinct neck; rind bright orange, rough, thin, edible but not sweet; pulp tender, juicy, tart, three to ten seeds. Grown commercially on a small scale in California.

Rio Grande Valley lemonquat. Discovered in Beeville, Texas, chance hybrid of a kumquat and either a Meyer lemon or a mandarin such as Dancy or clementine (which would make it a mandarin/kumquat). Fruits large, round; rind smooth, bright orange-yellow, sweet and edible; pulp orange-yellow, tender, very juicy, moderately tart, pleasant. Backyard favorite in Texas, trees not yet available in California.

Tavares limequat. Hybrid of West Indian lime and Nagami kumquat made in 1909 by Swingle, intended as a more cold hardy lime-like fruit. Fruit small, oblong, more elongated than fusilis, narrower at the stem end; rind very smooth, thin, yellow to orange-yellow, sweet and edible; pulp light green to yellow, juicy, very acid, with lime flavor; fairly seedy. Hardly grown at all in California.

Variegated calamondin. Natural mutation of calamondin, originated with Paul Peters in Altadena, circa 1954. Attractive ornamental tree, foliage variegated dark green, light green, yellow. Fruit smaller, lighter in color when mature than calamondin, variegated, only when immature, green and yellow. Grown on a small scale by California specialty citrus farms, to ship ornamental branches.
spurred demand and prices for kumquats.

"The market was so hot for Nagamis in the 80s, we used to send crews to harvest home garden trees," recalled Lloyd Bittner, manager of the Cal Flavor packing house in Escondido, which was at the center of the boom.

Eventually supply exceeded demand, said Bittner. "People would call up to ask, 'hey, are you coming to pick my kumquats this year?' But we had all that we could sell."

Today California has 133 acres of kumquats, and Florida 46, mostly near Dade City, northeast of Tampa. Shippers estimate that 80 percent of the crop goes to Asian-Americans, and 90 percent is Nagami.

In the last decade, however, the roundish Meiwa variety, the best for eating fresh, has become more available. Introduced from Japan about 1910, later than Nagami, it is larger, and has thicker, sweeter skin, and less sour juice; when fully ripe it has a wonderful tropical banana flavor. Long popular in home gardens, it was not much planted commercially because the tree is a slower, less vigorous grower, incompatible with some common rootstocks, and the fruits have a shorter shelf life.

These drawbacks sound daunting, but in De Luz, a gorgeous, pristine area of chaparral, citrus and avocado groves north of Fallbrook, two growers, Juan Garcia and George Cunningham, have thrived planting Meiwas. "I sell 10-pound boxes of Nagami for $2.2, but Meiwa for $3," said Cunningham in his packing shed. "Meiwas just fly out of here."

Similarly other farmers would jump on this lucrative opportunity, but citrus growers in San Diego County recently have suffered such catastrophic ordeals — fires, irrigation water cutbacks, and the threat of deadly greening disease — that few are planting new citrus these days.

In the Southeastern San Joaquin Valley, the state's largest commercial citrus district, kumquats are rare, but several niche growers offer exotic kumquats and hybrids.

The most potentially significant, although planted in only small quantities so far, is the Nordmann Seedless, discovered on a Nagami seedling in Florida in 1965 (Loeblich, 1994a). With a teardrop shape and a slightly thinner, paler skin (probably caused by the absence of plant hormones from the seeds), it looks slightly different from Nagami, but has much the same flavor. Its primary appeal is seedlessness.

Kumquats typically have two to five seeds, which some people swallow, but most spit out; removing them for cooking is tedious. D.J. Olsen, chef of Lou in Hollywood, which serves sliced candied kumquat with burrata, speck, and vincotto, said his kitchen help groans when he brings in a box of kumquats for deseeding. "They say, 'I did it last time, so it's your turn.'" he said. "I'd love it if someone had seedless kumquats."

Other seedless varieties exist in Texas and Asia, and it seems likely that in time they will become common.

Spring warmth in the San Joaquin Valley causes most citrus to mature several weeks earlier than in the Southland, but kumquats, which flower very late, in summer, ripen peculiarly in the Central Valley, as late as March in some locations.

In order to supply the market for Chinese New Year, which can fall from late January to mid-February, several growers have planted Fukushu, which is large, round, and juicy, and matures around Christmas. It is sold as a kumquat, but is actually a hybrid with mandarin.

"Asians love them, and marmalade companies get into bidding wars for them," said Mike Foskett of California Citrus Specialties, who has 300 Fukushu trees.

The Calamondin

Another kumquat-mandarin hybrid starting to be grown commercially is the calamondin, the national citrus fruit of the Philippines, where the juice is used for souring like limes or lemons. Filipino immigrants to California have long grown the attractive trees in their

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Gardens, and sold a few fruits at farmers markets, but not in substantial quantities. Brigitte and Angelito Uson, taking the cake for creative siting, planted 175 calamondin trees to beautify a bare corner of the lot around their funeral home, Vaca Hills Chapel, in Vacaville, southwest of Sacramento. They did so well selling the fruit to Filipino stores in the San Francisco Bay Area that they planted nearly 4,000 trees on 10 acres in nearby Fairfield. Filipinos squeeze fresh calamondin juice into marinades for barbecue meats, and add it to soy sauce to dress noodles, while the rind, which has a kumquat aroma, is used for flavor custards, said Mr. Uson.

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Select Kumquat Bibliography


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