

Commodity Spotlight



Economic Research Service, USDA

Stalking Celery

American poet Ogden Nash composed a short ode to celery that sums up two of its key characteristics:

*Celery, raw
Develops the jaw,
But celery, stewed,
Is more quietly chewed.*

The distinctive crunch of a fresh rib of celery is a hallmark of this vegetable, widely considered a salad item. But it can also be transformed into a subtle but flavorful ingredient in a variety of dishes from chow meins to stews and gumbos.

Although not a major plate vegetable, celery has nutritional properties and versatility that have made it a relatively steady item in the grocery cart. Two medium-sized celery ribs have just 20 calories yet provide 15 percent of the RDA for vitamin C and 8 percent of the recommended dietary fiber. The popularity of salads and salad bars and the introduction of prepackaged fresh-cut products over the past decade may have helped to raise the profile of celery among consumers.

U.S. Production Heads West

Although European settlers brought celery to America in the 1600's, the U.S. commercial celery industry did not take hold until the latter 1800's, when Dutch farmers in Michigan began marketing the crop. The industry spread south to Florida and then west to California, where it is concentrated today.

The U.S. celery industry is relatively small, with 378 farms reporting celery production in the 1997 Census of Agriculture—unchanged since 1987 but one-third less than in 1978. California, Florida, Michigan, and Texas account for most of the nation's celery crop, which had an average annual farm value of \$236 million during 1997-99.

In California, the number of farms reporting celery acreage (175 in 1997) rose over the past decade, while the numbers declined in most other states. California now accounts for about 86 percent of national celery production (ERS estimate)—up from 75 percent in 1990 and 64 percent in 1980. Celery contributed \$218 million to California's farm cash receipts during 1997-99—ninth among all vegetable crops in the state.

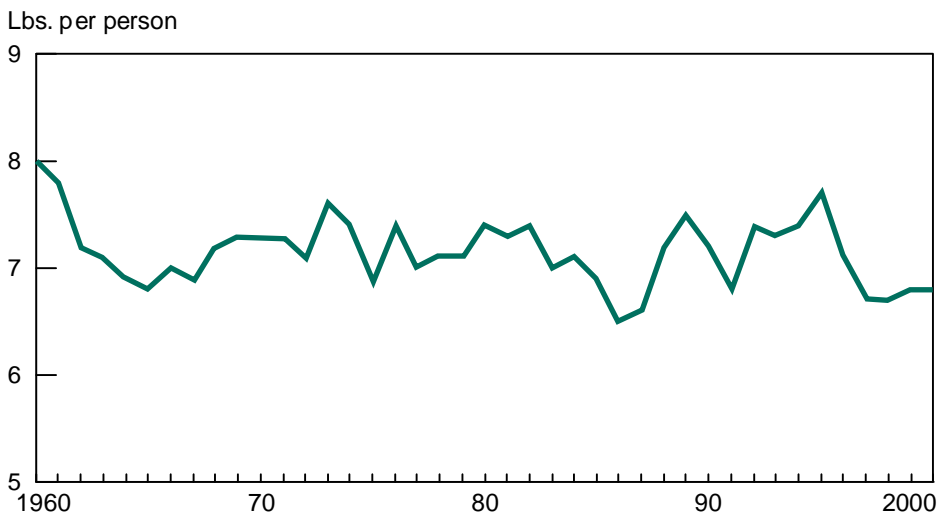
California produces celery year-round, with output concentrated in the central and south coastal valleys, where the climate is mild. The counties of Ventura (43 percent of state production), Monterey (34 percent), and Santa Barbara (13 percent) account for most of the state's celery output. Although the bulk of California's celery enters the fresh market (including fresh-cut products such as celery sticks), frozen and dehydrated celery items are also sold.

The celery industry in Florida has been in decline over the past 20 years as competitive pressures and weather setbacks forced out a number of growers. According to the 1997 Census of Agriculture, Florida harvested 4,115 acres in 1997—half the area of 1992 and one-third the celery acreage recorded in the 1978 Census. This reduction in Florida and larger supplies from California led the Florida industry in 1998 to discontinue its marketing order for Florida celery, which, among other things, authorized mandatory inspection, grade, size, pack, and container and flow-to-market regulations. Despite the trend, Florida remains the second-leading producer of celery in the nation, with an estimated 8 percent of the country's output. Florida's season runs January through April, and the state's crop is grown largely in the Everglades area of Palm Beach County.

Michigan is the third-ranking producer of celery in the U.S., harvesting an average 2,133 acres during 1997-99. Although the number of Michigan celery growers has declined by half since 1982, the longrun trend (1950-99) in harvested acreage has been flat. According to information from Michigan State University, about 75 percent of the state's celery crop is packed for the fresh market, 60 percent of that as standard-sized celery packs and 15 percent as celery hearts. The other 25 percent of Michigan's celery goes into products such as soup, juice, and frozen foods. Although acreage is spread among several counties, the leaders are Ottawa (17 percent), Allegan (15 percent), and Muskegon (13 percent); 60 percent of the acreage is in the southwestern part of the state. Michigan ships celery July through October.

Commodity Spotlight

Per Capita Celery Use Has Hovered Around 7 Pounds



2000 forecast.
Economic Research Service, USDA

Like Florida, Texas celery acreage has trended down over the past decade. During the 1990's, California shippers had an advantage over Texas and Florida growers because of lesser freeze risks and because transportation costs were low. Celery acreage is now one-third the level of the late 1980's with just 600 acres remaining. The majority is located in the fertile Rio Grande Valley with most shipments January through March.

**U.S. Since 1970's
A Net Exporter**

The U.S. was historically and continues to be a net exporter of celery. In 1999, exports of fresh-market celery totaled \$43 million, while imports were valued at \$9 million. During the 1990's, an average 12 percent of celery supplies was exported annually—a steady upward trend from 11 percent during the 1980's and 8 percent during the 1970's. In 1999, Canada, China/Hong Kong, and Taiwan were the largest importers of U.S. celery, accounting for 70, 15, and 7 percent of fresh-celery exports. The U.S. is the leading foreign supplier of celery to these countries and ships celery to them year-round, with some seasonal variation in volume.

Steady, ample supplies from a relatively efficient domestic industry keep prices

low and limit opportunities for imports of fresh celery. Despite this, U.S. import volumes have been trending upward since the late 1980's. In the 1990's, fresh imports accounted for 3 percent of celery consumption, up from 1 percent in the 1980's; fresh-celery imports doubled between 1989 and 1999. Ninety percent of the fresh celery imported by the U.S. comes from Mexico, most entering the

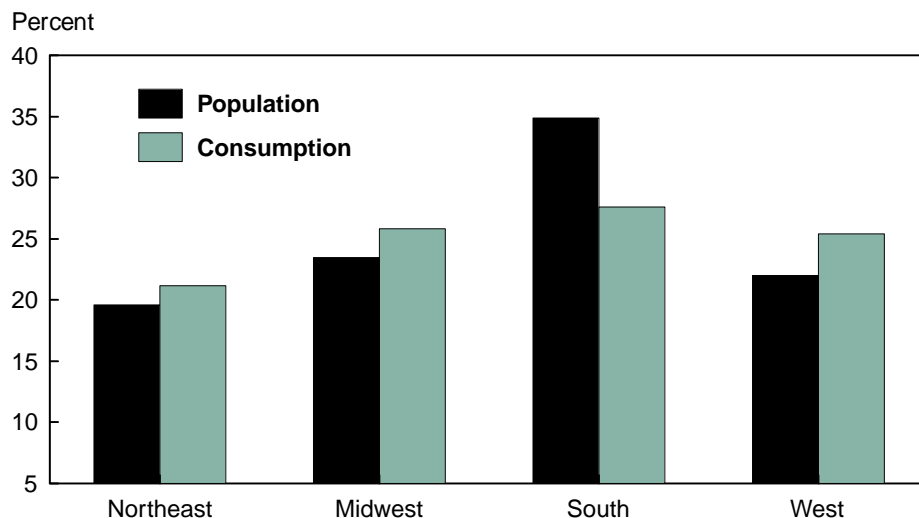
country during the winter months. The U.S. also spends \$2 to \$3 million annually to import dried celery stalks, with the bulk coming from Chile and China.

Domestic Demand Constant

U.S. consumers used 1.8 billion pounds of celery in 1999. Although consumption fell during the last half of the 1990's, average per capita use of celery has remained relatively flat over the past four decades. Despite the recent drop, celery use averaged 7.1 pounds per person during the 1990's—the same amount recorded in the 1980's and just below the 7.2-pound average calculated for both the 1960's and 1970's. Looking further back, per capita use peaked at 9.1 pounds in 1946 before dropping to 7.9 pounds the following year.

Fresh-market celery shipments stay fairly constant throughout the year, except for a seasonal peak during November and December. The holiday season heralds the peak of celery use in the U.S., as celery appears on party platters, with vegetable dips, and in turkey stuffing. In the 1990's, January-to-October monthly celery shipments each generally amounted to 7 to 8 percent of the annual total, with the lowest volume shipped in August (7 percent). However, reflecting the Thanksgiving hol-

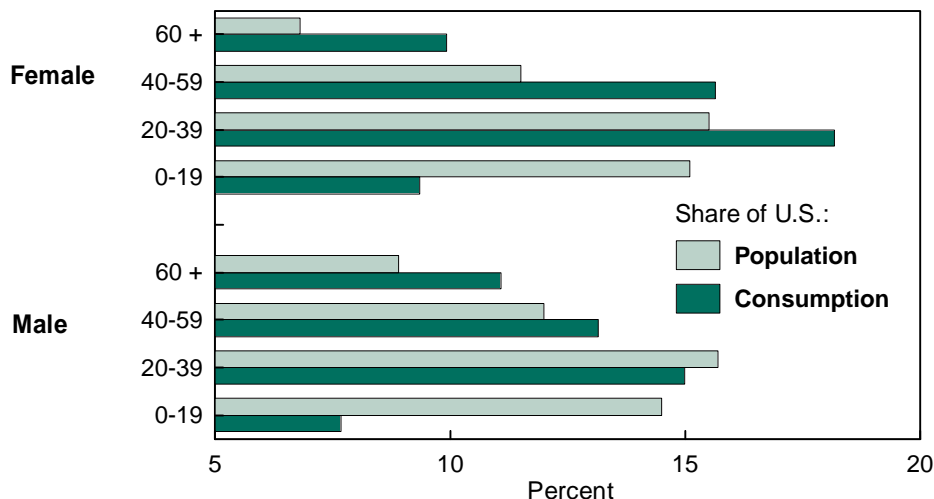
Northeast, Midwest, and West Consume More Than Their "Share" of Celery



Source: Derived from USDA's *Continuing Survey of Food Intakes by Individuals, 1994-96*.
Economic Research Service, USDA

Commodity Spotlight

Older Age Groups Favor Celery



Source: Derived from USDA's *Continuing Survey of Food Intakes by Individuals, 1994-96*.
Economic Research Service, USDA

iday, volume rose to nearly 12 percent in November, then fell off slightly to 9 percent in December. December celery shipments were even higher in the 1980's (about 10 percent of the annual total), possibly reflecting changes from decade to decade in the main holiday dishes served in that month.

Celery sells largely in fresh form (including fresh-cut diced and in sticks), with smaller amounts canned, frozen, and dehydrated. According to USDA's 1994-96 Continuing Survey of Food Intakes by Individuals, fresh celery, like most other foods, is consumed largely at home (76 percent). This reflects the wide variety of uses for celery at home—for example, as an ingredient and flavoring agent in main-course recipes, a component of green salads and of sandwich salad spreads, a dipping vegetable for parties, and a convenient snack item.

In the away-from-home market, U.S. consumers most often eat celery in standard "white tablecloth" restaurants (14 percent). Celery shippers have been able to carve only a small niche in the expanding fast-food market, which is responsible for only 4 percent of celery consumption. Consumers eat more than 90 percent of processed celery products in items like soup and dehydrated and frozen products at home.

Who Eats Celery?

According to regional breakdowns of data from USDA's Continuing Survey of Food Intakes by Individuals, 1994-96, southerners (in a 16-state southern region defined by the Census Bureau) eat proportionately less fresh-market celery than consumers in all other areas of the country. This may reflect food preferences along racial/ethnic lines, as 53 percent of Blacks (non-Hispanic) live in the South, and Blacks are the only major racial group to consume less celery in proportion to their numbers in the population. Specifically, while Blacks account for close to 13 percent of the population, they accounted for only 8 percent of the fresh celery con-

sumed nationwide. Whites, non-white Hispanics, and others (largely Asians) each consumed more fresh-market celery than their respective proportions of the population. Northeasterners consume about half of the national total of processed celery products.

The wealthiest consumers appear to prefer celery more than other socio-economic groups. Households with incomes at least 3.5 times greater than the poverty level (the cutoff point for food stamp eligibility is 130 percent of the poverty level) represent 39 percent of the U.S. population but account for 47 percent of fresh celery consumption. This was the only defined income class whose use proportionally outweighed their population percentage. The 19 percent of the population who earn the lowest incomes consumed just 15 percent. For processed celery products, middle-income consumers accounted for the greatest share of use (63 percent); both upper and lower income groups ate proportionally less of these.

Men eat more celery than do women—53 percent of the total. This may be explained largely by the overall higher caloric intake of men. In proportion to their population shares, both men and women over the age of 60 are strong consumers of celery. Middle-aged men and women also consume more celery than their share of the population. And in what may come as surprising news to some, men between the ages of 20 and 39 also eat proportionately more celery than their share of the population; women in the same age group eat slightly less.

Celery Culture

Celery seed is very small and light; a pound of some varieties contains more than 1 million seeds. The small seed size makes successful field planting difficult. To assure consistent stands, virtually all commercial celery is started in greenhouses, grown indoors for 10 weeks, and then transplanted. Because each greenhouse-grown plant costs about 2 cents and an acre of celery may contain 40,000 to 50,000 plants, the "seed" cost to establish an acre of celery can be as high as \$1,000. Total costs of production likely exceed \$4,000 per acre.

Celery is a cool-season crop that exhibits fairly uniform growth—a characteristic that allows growers to harvest fields with one pass. Field packing of fresh-market celery (as opposed to cutting and then hauling it to a shed for trimming, sorting, and packing) is the predominant and most efficient harvest method today. Celery destined for processing can be mechanically harvested.

Relative to other age groups, men and women under the age of 20 eat little celery. People in this age group account for nearly 30 percent of the population yet reported consuming only 17 percent of the fresh celery. Given the steady nature of celery use over the past several decades, this could reflect a normal maturation of tastes and preferences that favors celery consumption as people age. An alternative scenario suggests that celery use may decline as the current population ages.

Price Trend Is Flat

Although prices for celery can fluctuate widely (largely due to weather variations), the trend in celery prices during the 1990's was relatively flat. Between 1990 and 1999, nominal f.o.b. shipping point prices trended upward by just 1 cent per month. (F.o.b.—free-on-board—prices include no delivery charge to move the product and load it onto a carrier at a particular point during shipping.) Unlike more storable commodities such as potatoes, fresh-market celery exhibits weak seasonal price variation that reflects relatively consistent domestic marketing throughout most of the year. Celery prices also followed pronounced 3-year cycles in the 1990's, which may reflect recurring weather patterns.

Like many vegetables, the proportion of the retail value of celery accounted for by the shipping-point price has been in a slow but steady decline. During 1995-99, growers and shippers received about 25 percent of the retail value. This was down from 26 percent during 1990-94, 27 percent during 1985-89, and 28 percent during 1980-84. Although a number of factors probably account for this trend, one explanation may be that farm prices are rising more slowly because productivity is growing faster (as efficiency increases) in the farm sector than in the retail sector.

Celery Root

Native to the Mediterranean region and the Middle East, celery has been around for more than 3,000 years. Used in ancient times at first for ceremonial garnishes and medicinal purposes, celery eventually gained favor with Greeks and Romans as a food-flavoring agent. Celery is a prominent member of the parsley family, along with carrots, anise, and parsnips. Although commercial celery is grown as an annual plant, it is biennial (grows vegetation the first year and fruits and dies during the second). Native celery can be found growing in the wild in damp or marshy areas in the Mediterranean region and in the Caucasus in western Asia.

Modern celery is an improved version of the plant cultivated in Europe during the 18th century. Today's celery is larger, more succulent, and less stringy than its ancestors. Most celery grown in the U.S. is a variant of the Pascal (green) type. Wild celery, called smallage and not found in the U.S., is prized for its seed that is marketed as celery seed, a popular flavoring agent and herbal remedy. The essential oil of celery seed contains several components currently under study for their medicinal properties.

A stalk of celery (sometimes called a head) consists of several individual fleshy leaf stems or ribs called petioles. "Celery hearts" are created by trimming off the outer ribs of a stalk, leaving the tender inner ribs. All portions of a celery stalk are edible, with the leaves and knobby tops useful for flavoring soups and stews.

Like white asparagus, white (blanched) celery is preferred in some European countries. (Blanching, which makes older varieties more palatable, is accomplished in the field before harvest by wrapping, covering, or shading the stalks to exclude light and force them to turn white.) In fact, during the early 1900's, white celery was in vogue in the U.S., and not until the 1940's did green celery become the industry standard. In some European countries today, either the golden (self-blanching) types are grown or green celery is blanched. For example, most celery consumed in the United Kingdom is white, and white celery is also favored in Italy. Other novelties in the celery world include varieties with pink or red stalks.

Celery root, also known as celeriac, is largely a specialty vegetable in the U.S. but enjoys a wider following in northern Europe. Celeriac does not originate from the same plant as fresh-market celery but belongs to another group.

From Waldorf salad to chow mein, celery's versatility is clear. Celery is also well known as a convenient, low-calorie, nutritious food. Combined, these characteristics have resulted in steady long-term demand that has proven celery to be a staple vegetable in American households. **AO**

*Gary Lucier (202) 694-5253 and
Biing-Hwan Lin (202) 694-5458
glucier@ers.usda.gov
blin@ers.usda.gov*