

Commodity Spotlight



USDA photo: Bill Tarpenning

Sweet Peppers: Saved by the Bell

On any given day, 24 percent of Americans consume at least one food containing bell peppers. This compares with such popular foods as french fries (13 percent), catsup (16 percent), and fresh-market tomatoes (28 percent), according to data from USDA's 1994-96 Continuing Survey of Food Intakes by Individuals. Daily consumption may be even higher today than during the survey period—a reflection of the popularity of the foods in which bell peppers are used. Fresh-market bell peppers are used on any given day by 10 percent of consumers while processed peppers (frozen, canned, dried) appear on the plates of 16 percent of U.S. consumers daily.

Over the past two decades, consumption of most types of peppers has been on the rise in the U.S. However, after an apparent peak in the mid-1990s, the use of pungent chile peppers in America leveled off, while demand for their mild cousins, sweet peppers, climbed to a record high in 2000.

Bell peppers (green, red, purple, and yellow) are the most common sweet pepper and can be found in virtually every retail produce department and in many backyard gardens. Rapid growth in consump-

tion of sweet bell peppers has benefited both consumers (peppers contain a healthy dose of vitamin C) and producers (gross receipts from bell peppers have risen 32 percent over the past 5 years). From 1998 to 2000, annual farm cash receipts for sweet bell peppers averaged \$535 million—with an estimated retail value of over \$1.7 billion.

The genus *Capsicum* and species *annuum* includes most peppers grown in the U.S. These can be further grouped into two broad categories—chile peppers, which are pungent (hot), and sweet peppers, which are nonpungent (mild). The U.S. produces 4 percent of the world's capsicum peppers (sweet and hot), ranking sixth behind China, Mexico, Turkey, Spain, and Nigeria. Bell (sweet) peppers are a leading commercial and home garden vegetable in the U.S. Given continued strong demand, U.S. growers harvested 12 percent more bell pepper acreage in 2000 than a year earlier. Bell peppers, grown commercially in most states, are shipped by 6,271 farms (1997 Census of Agriculture) into the fresh and processing markets.

Although bell peppers are grown in 48 States, the U.S. industry is largely concentrated in California and Florida, together accounting for 78 percent of out-

put in 2000. New Jersey, Georgia, and North Carolina round out the top five producing states. According to the 1997 Census, about 4 percent of farms that produced sweet bell peppers accounted for 74 percent of the pepper area harvested. Each of these farms harvested at least 50 acres of sweet peppers. Concentration of output was up from 1992, when the top 4 percent of sweet pepper farms harvested 69 percent of pepper area.

Nonpungent types like bell peppers contain no capsaicin—the compound that gives the kick to chile peppers. Red bell peppers are actually the mature stage of green bell peppers that have been allowed to ripen on the vine. Pimento peppers, also sweet, are grown mostly for use in various processed products. Brighter colored peppers tend to be sweeter than green peppers because the sugar content increases as the pepper matures. As with onions, cooking (especially sautéing) green bell peppers releases stored sugars, making them sweet and removing bitterness.

Most Bell Peppers Picked Green, Sold Fresh

The U.S. produced 1.7 billion pounds of bell peppers for all uses during 1998-2000. There are no data specifically detailing fresh and processed production, but ERS estimates suggest less than 10 percent of production is earmarked for processed products. Bell pepper production has been trending higher, reaching a record high in 2000. Peppers are produced and marketed year-round, with domestic shipments peaking during May and June and import shipments highest during the winter months.

Although the majority of chile peppers such as jalapeno and Anaheim are processed, most bell peppers are sold commercially in the fresh market. A typical field of fresh-market peppers is harvested by hand every week or so over the course of about a month. Most of the crop is sold as mature green peppers, but growers receive a premium for a limited amount of other colors. The premium reflects the fact that bright colored bell peppers are more costly to produce (field losses are higher and yields are lower) than those harvested at the green stage. Shippers apply a food-grade wax to the

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majority of commercially produced peppers to reduce moisture loss and scuffing during marketing. This can also extend storage life, which under ideal conditions can range up to 3 weeks.

The major processing uses of sweet peppers include dehydrated products (such as paprika), jarred pickled bell peppers, sweet banana peppers, cherry peppers; and sliced or diced, red or green bell peppers for use in pizzas and other frozen foods. Use of processed peppers by pizza chains has declined over the last several years; most chains currently prefer to top pizzas with fresh vegetables, including fresh bell peppers.

For the most part, bell pepper varieties used in processing are identical to those entering the fresh-market. As such, the bell pepper market can be considered a dual-use market, with the same product able to move into either market. According to industry data, about 50 million pounds of frozen sweet bell peppers are packed annually. But data for canned and dehydrated bell peppers are very limited.

California Is Top Supplier

According to the 1997 Census of Agriculture, 460 farms produced sweet bell peppers in California—up 16 percent from 1992. During 1998-2000, the Golden State produced 46 percent of the nation's bell peppers, and the state's production is now 89 percent higher than in 1988-90. Although output is substantial in many counties, about 41 percent of California's bell peppers are shipped from San Benito, Riverside, and San Joaquin Counties. California's shipping season runs from April to December, with peak volume hitting the market May through July.

Florida follows California in bell pepper production, with 36 percent of the nation's output during 1998-2000. In 1997, there were 128 farms reported to be growing bell peppers in Florida, 36 percent fewer farms than in 1992. During this time, bell pepper acreage remained constant, with more than half of output coming from Palm Beach and Collier Counties. Florida's shipments run from October through the following July, with peak volume occurring during March and

April. During the winter season, imports, largely from Mexico, provide the only other source of field-grown bell peppers. Small volumes of both domestically produced and imported hothouse peppers are also available during the winter months (at higher prices).

New Jersey, with 6 percent of production, is a distant third in bell pepper production. Two-thirds of output comes from Gloucester, Salem, and Cumberland Counties. The 537 New Jersey farms that ship bell peppers market them July through early November, with peak volume in August. During summer and early fall, New Jersey is an important supplier of peppers to New York City. Farms growing bell peppers in that state have declined 10 percent since 1992, but output has more than doubled since 1988-90.

With 5 percent of U.S. production, Georgia is a fall and late-spring bell pepper supplier that helps fill market gaps. Georgia's bell pepper shipments are greatest in June, when it shares the national market with California. Production is dispersed over several counties, led by Atkinson (15 percent) and Colquitt (13 percent).

Like Georgia, North Carolina markets bell peppers during June, when Florida's crop is waning and California's summer production has not yet begun. Some 174 farms in North Carolina account for 4 per-

cent of national bell pepper output, with Sampson County producing nearly half the state's crop. Although North Carolina's season stretches from June to September, most volume is shipped during June and July.

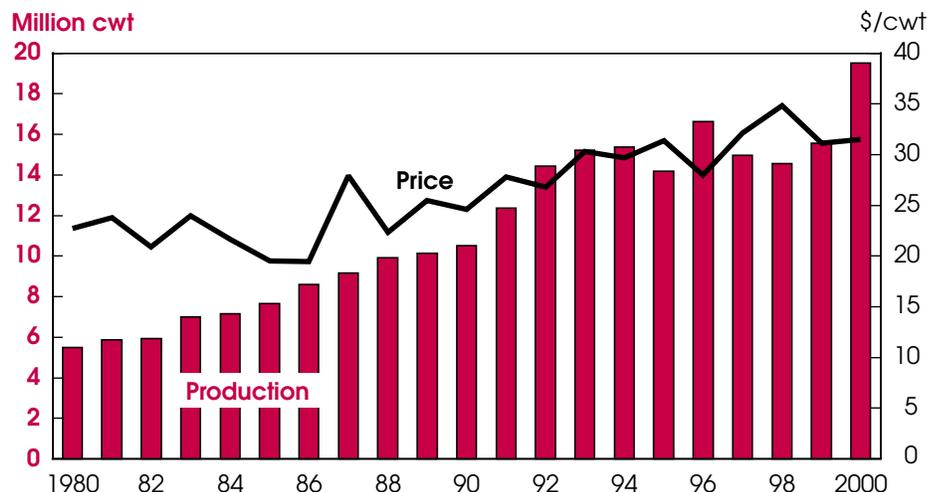
U.S. Trade: Peppers In, Peppers Out

Trade plays a key role in the U.S. fresh bell pepper market. About 7 percent of U.S. fresh-market supplies are exported, and 20 percent of fresh-market demand is satisfied by imports. Canada accounts for 98 percent of U.S. fresh-market export volume. The U.S. supplies about 79 percent of all fresh-market bell peppers imported by Canada, with Mexico supplying another 14 percent.

Until recently, U.S. imports of fresh-market bell peppers came primarily from Mexico. Two-thirds of all imports enter the country during December-April, with volume lightest in July and October (3 percent each month). About 45 percent of all fresh bell pepper imports enter through the land port of Nogales, Arizona. Most of the import volume during the summer and early fall likely consists of hothouse product from the Netherlands and Canada.

U.S. fresh-market exports and imports have both been trending upward in the past two decades. Average export volume

Salad Days for Bell Peppers as U.S. Farm Prices, Production Trend Upward



Source: National Agricultural Statistics Service, USDA. Economic Research Service, USDA

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during the 1990s rose 74 percent over the 1980s, while average imports were up 67 percent. The most opportune time for Mexican exports to the U.S. is January through April, when Mexican production is greatest. For Mexico, this market window is covered by a small tariff (1.1 cents per kg in 2001), which is being phased out over 10 years, starting in 1994. Imports from Canada enter duty-free, while the general tariff rate faced by many other U.S. trade partners, such as the Netherlands, is 4.7 cents per kg.

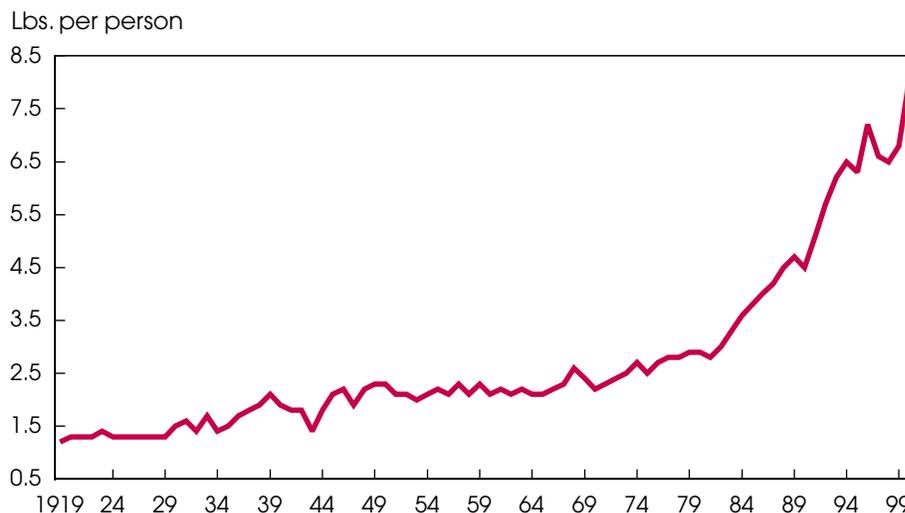
Given the well-supplied U.S. market and generally low tariffs, the North American Free Trade Agreement offered little additional economic incentive for Mexican bell pepper exporters following implementation of the agreement on January 1, 1994. However, the steep peso devaluation that began in December 1994 and the dollar's strength throughout the 1990s altered the balance of trade and likely provided part of the impetus for increased fresh-market bell pepper exports to the U.S. The rest of the incentive for rising imports of fresh bell peppers was demand-related as U.S. consumers generally began to favor high-quality (and higher priced) hothouse vegetables like peppers, tomatoes, and cucumbers.

The U.S. imported almost \$13 million in dried (unground) bell peppers in 2000, mainly from Chile (\$7 million) and China (\$3 million). In volume, this was over 7 million pounds of dried peppers—the equivalent of over 140 million pounds of fresh bell peppers. The U.S. also imported \$2 million in canned sweet bell pepper products in 2000 at a volume of 5 million pounds (fresh-weight equivalent of 12 million pounds). Most canned bell pepper imports come from Turkey, Egypt, and Spain.

Market Price Trends Are Up

Between 1960 and 2000, season-average bell pepper shipping-point prices (unadjusted for inflation) gained an average 67 cents per cwt a year. The price of bell peppers averaged \$31.50 per cwt (f.o.b. shipping point) during the 2000 season, up 1 percent from 1999 but 28 percent above 1990 as consumption continued to trend higher in the 1990s. During the mid-

U.S. Bell Peppers Ring Up Increases in Per Capita Use



Economic Research Service, USDA

1980s, pepper prices hit a lull, reflecting excess production as growers overreacted to increasing demand. However, demand soon “caught up” with the increasing supply and prices resumed their long-term upward trend. In 2001, nominal shipping-point prices for bell peppers have averaged 10-20 percent below a year earlier since the first quarter—weather-related reductions in supply caused prices to double during the first 3 months of the year.

Like prices of many agricultural crops, constant-dollar bell pepper prices (after adjusting for inflation) have trended lower over the last several decades. However, with rising demand keeping up with supplies recently, constant-dollar prices have risen 7 percent between 1988-1990 and 1998-2000.

The U.S. retail price for fresh-market bell peppers averaged \$1.41 per pound in 1999. This was the last full year that national bell pepper retail prices were reported by the U.S. Department of Labor. Largely reflecting continued strong demand, the retail price for fresh-market peppers rose 25 percent between 1994 and 1999. The marketing price spread—the difference between farm and retail price—for fresh-market bell peppers is very similar to that of tomatoes and onions. On average, grower/shippers received 34 percent of the retail value of bell peppers during the 1990s, up from 32

percent during the 1980s. The remaining portion of retail value covers marketing costs such as transportation, retail labor, and other selling costs.

Per Capita Use of Bell Peppers Rises

Americans consumed an estimated 2.2 billion pounds of bell peppers in 2000. On a per capita basis, this works out to about 8 pounds—80 percent higher than in 1990 and nearly 4 times the 1960 level. This level of consumption is similar to broccoli and snap beans. Since the early 1970's, per capita bell pepper use has gradually moved upward, reaching a record high in 2000. Consumer attraction to bell peppers likely reflects:

- the wider range of foods that include bell peppers as an ingredient;
- wider availability of high-quality hot-house and colored peppers;
- the economic prosperity of the nation over the past decade;
- increased away-from-home dining;
- consumer recognition of the nutritional qualities of vegetables; and
- increased diversity in the nation's population.

The best known main dish featuring bell peppers is perhaps stuffed peppers. However, bell peppers are used in a wide variety of foods such as green salads, pizza toppings, casseroles, pasta sauces, plate garnishes, dipping vegetables, salsas, relish trays, sautéed vegetable medleys, soups and stews, stir fry, and even as fried rings (*a la* onion rings). Some peppers are sliced, seeded, and bagged and sold in bulk, primarily to the food-service industry. In canned (glass-pack) form, such items as pickled sweet red bell peppers and sweet golden pickled banana peppers can be found in most retail stores.

The 1990s also saw the popularity of hot-house vegetables explode. Initially, a wide range of colored bell peppers was imported from the Netherlands. Other countries then entered the market, followed by several domestic hothouse producers. While some domestic producers have since left the hothouse pepper market to concentrate on other vegetables, imports remain popular, with volume from Canada surging at double-digit rates since 1997. Import volume from Canada was 4 times greater in 2000 than in 1996 and was up 43 percent from a year earlier during the first 7 months of 2001.

High U.S. employment rates and low price inflation of the past 10 years have encouraged consumer spending on a wide range of foods. This includes both food away from home and higher priced retail items such as imported and domestically grown hothouse peppers. The continued increase in meals away from home boosted consumption of foods such as pizza, pasta, mild salsas, and other ethnic foods containing bell peppers. Consumers procure some of these foods much more commonly from eating establishments (e.g. pizza) than make them at home—a boon to commodities like peppers which are rarely served as major plate vegetables.

Although many consumers may not know of the specific nutritional attributes of bell peppers, they may eat more simply because of an increased awareness over the past decade of the dietary value of vegetables in general. Bell peppers are high in vitamin C (one medium green bell pepper contains 177 percent of the RDA

for vitamin C), and as they mature and sweeten (turn color), the vitamin A content rises by a factor of 9 while the vitamin C content doubles. Peppers are also excellent sources of dietary fiber and provide small amounts of several other vitamins and minerals.

Over the past two decades, immigration trends may have boosted the popularity of bell peppers. A more diverse population has helped broaden the American dining experience by providing cuisine new to many and adding new flavors to the restaurant industry. U.S. consumers have been exposed to the cuisines of the world over the past 20 years, with many now represented in new restaurants and new retail foods, many of which feature vegetable-rich recipes, including bell peppers.

Who Eats Bell Peppers?

Bell peppers, like most foods, are largely consumed at home (63 percent). This partly reflects stepped up use of bell peppers as ingredients in processed foods, rather than simply their use in home cooking. In the away-from-home market, fast food accounts for 13 percent of bell pepper consumption, with other restaurants using another 18 percent. Many ethnic restaurants (e.g., Italian, Chinese, Lebanese, Korean, and Indian) use some form of bell peppers in their cuisine.

With the exception of the southern region, bell peppers are relatively popular in most of the country. Consumers in the East, West, and Midwest eat the most on a per capita basis. However, consumers residing in the South eat 28 percent fewer bell peppers per person than those in the East, where bell peppers are most popular. As defined by the U.S. Census, the South, with 35 percent of the nation's population, is the most populous region, yet this region accounted for only 29 percent of all bell pepper consumption.

The USDA food-intake survey also gauged bell pepper consumption by racial group. Consumption figures revealed some interesting variations by race, with white and Hispanic consumers generally exhibiting a greater preference for bell

peppers than other races. According to the survey, black consumers eat considerably fewer bell peppers than other races. Black consumers, who make up 13 percent of the U.S. population, accounted for less than 9 percent of U.S. bell pepper consumption—consuming fully one-third less per capita than other groups. This may partly explain the lower consumption in the South, where more than 50 percent of U.S. blacks reside.

Wealthier consumers appear to favor bell peppers most. While households with incomes at least 3.5 times greater than poverty level represent 39 percent of the U.S. population, they consume 44 percent of fresh and 48 percent of processed bell peppers. The 19 percent of the population earning the lowest incomes consume much less than their share of processed bell peppers but consume fresh bell peppers in proportion to their share of the population.

Bell peppers appear to be slightly more popular among men than women, with men consuming 53 percent of all bell peppers. Men aged 20-39, accounting for 16 percent of the population, consumed 24 percent of all bell peppers, with only minor differences between consumption levels of fresh and processed products. Children aged 2-11 eat very few fresh or processed bell peppers, and teenaged boys and girls also consumed proportionally fewer peppers. This suggests that a taste for bell peppers is acquired with maturity.

Although bell peppers were domesticated in the Americas before Columbus helped to make them popular in Europe, it has only been over the past 30 years that consumption in the U.S. has become widespread. Bell peppers are proving to be both a popular vegetable and a versatile seasoning. With a more diverse population, the enduring popularity of favorite foods such as pizza and pasta, and a strong trend toward away-from-home meals, production and consumption of bell peppers are expected to continue expanding over the next few years. **AO**

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