Commodity Spotlight

USDA photo: Bill Tarpenning

Fresh Snap Beans: No Strings Attached

Fannie Farmer published a recipe for string bean soup in *The Boston Cooking School Cook Book* in 1896. But snap beans, a native of the Americas, had already been on America's dinner plates for centuries. Today, on any given day, about 2 percent of Americans consume fresh snap beans, popularly known as green beans or string beans. Per capita use of fresh-market snap beans has been on the rise over the past decade, reaching 2.1 pounds in 2000.

The term "snap beans" refers to the crackling sound made when fresh beans are broken in two. They were once widely known as string beans because of their stringy pods. But over the past century the tough pod strings have been bred out of most of today's popular varieties. Snap beans may be various shades of green, yellow (called wax beans), or purple, and the bean pod shapes vary from round to flat. Snap beans are available year round, with the peak season from May through October.

In the U.S., snap beans are produced largely for three distinct markets—fresh, canning, and freezing. These markets operate fairly independently, with separate supply, demand, and price characteristics. Fresh-market production during 1998-2000 accounted for about 25 percent of the 2.1 billion pounds produced in the U.S.—the same share as for frozen snap beans. Canning is the most intensive use, with 50 percent of all snap beans destined for canneries. A small amount of snap beans is used for dehydrated products. Because of higher prices received for fresh-market beans, that segment commands two-thirds, or $250 million, of all farm cash receipts for snap beans.

Commercially, the two most important types of snap beans are bush beans and pole beans, with bush types accounting for the majority of commercial sales. While both types of plant produce beans of similar taste and texture, their differences are more notable in the field. Labor-intensive pole types, which have a longer bearing season, are popular in some regions and with home gardeners, but do not lend themselves to mechanical harvesting because plants must be supported by trellises. Pole beans (and bush beans in some growing areas) are generally harvested by hand several times a season, at intervals of 3 to 5 days. Many commercial fresh-market bush varieties have been specially bred to facilitate mechanical harvesting, which is accomplished in one pass over the field (the plants are destroyed in the process). Virtually all beans for processing are machine-harvested.

Snap beans are the most widely consumed species (*vulgaris*) of the genus *Phaseolus*. Thought to have originated in Central America, they include dozens of varieties. Snap beans are harvested and eaten at the immature pod stage—they are most tender and succulent before the seeds cause the pod walls to expand. In contrast, their closely related cousins, dry beans, are harvested after the seeds are fully developed and the pods are dry.

Many fresh-market snap beans have a higher pod fiber content than processing types, which helps withstand the rigors of mechanical harvest, packing, and transportation. While snap beans destined for canning and freezing are usually processed hours after harvest, fresh-market beans must remain merchantable for 7 to 10 days. At harvest, most fresh-market snap beans are trucked to packinghouses where they are washed, trimmed, graded, packed, and cooled for transport to market. Field-packing of snap beans, although less common, is done in some areas to reduce handling losses.

The volume of U.S. canning production has changed little over the past three decades, but fresh and frozen output has increased. Production of snap beans for frozen use has been on a slow upward trend during this period, while fresh market output began to rise in the early 1990s after remaining fairly stable for the previous two decades. Spurred by strong demand, fresh-market snap bean production in 1998-2000 was 90 percent higher than 1988-1990.

Florida Tops The Fresh Market

Some 9,118 farms in all 50 states (1997 Census of Agriculture) produce fresh and processing snap beans—down 16 percent from 1992. Like production of many agricultural commodities, snap bean operations are becoming more concentrated. According to the 1997 Census, just 8 percent of farms producing snap beans accounted for three-fourths of national snap bean harvested area. While area harvested and number of farms with less than

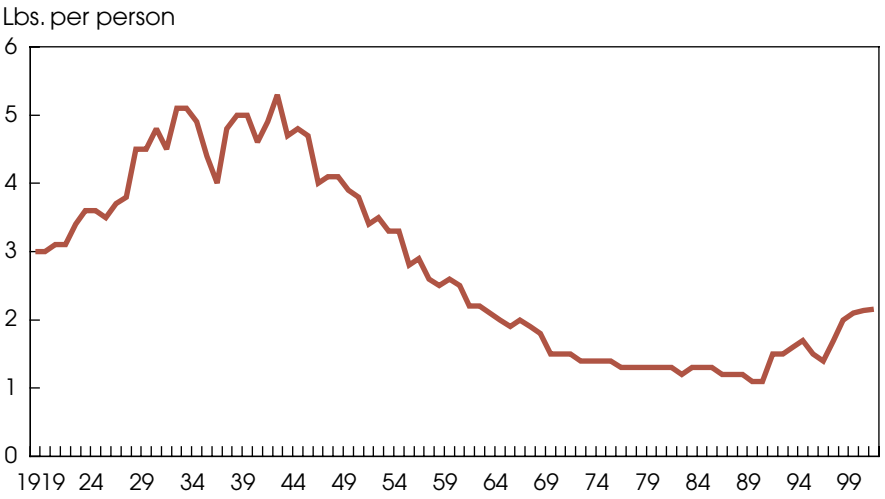
250 acres of snap beans have declined since 1992, area and numbers of farms with 250 acres or more have increased.

In the U.S., there is minimal overlap between the fresh and processing markets, largely because of differences in varieties and the geographic location of processing plants. Florida is the leading fresh-market source, growing nearly half of the fresh crop. Wisconsin tops all processing states, with 31 percent of production, followed by Oregon with 17 percent. Most canned and frozen snap beans are produced under processor contracts requiring specific product attributes.

According to the 1997 Census of Agriculture, 283 farms in Florida reported growing snap beans, with 24 percent harvesting 100 or more acres. Most of Florida's snap bean crop is destined for the fresh market, where the Sunshine State accounts for 48 percent of U.S. output. Mirroring national trends, Florida's production jumped 124 percent between 1988-90 and 1998-2000, after changing little during the 1970s and 80s. Its top three counties (Dade, Palm Beach, and Alachua) account for three-fourths of the crop, with Dade County alone producing half the state's $135 million in fresh snap beans. Florida has several regional in-state shipping seasons; commercial snap bean shipments generally begin in mid-October and continue through June. Major markets include cities along the east coast and in the Midwest. Florida is the primary domestic supplier from November to April, with volume supplemented by Mexican imports.

Georgia follows Florida in fresh-market snap bean production, accounting for 13 percent of the nation's output during 1998-2000. In 1997, 263 farms harvested snap beans in Georgia, 29 percent fewer than in 1992. However, snap bean acreage jumped 38 percent during this time, with most of the gain in Sumter County. Snap bean area in this southwestern county grew by a factor of 5 from 1992 to 1997; half of Georgia's snap bean crop is now grown there. Georgia ships fresh snap beans during the spring and fall and is the primary domestic supplier in May and June and again in October.

During the 1990s, Per Capita Use of Fresh Snap Beans Grew Snappier



Economic Research Service, USDA

With 9 percent of U.S. production, California is the third leading source of fresh-market snap beans. Acreage is spread among several counties, but San Luis Obispo (15 percent of state area) and Orange (13 percent) are the only two with over 1,000 acres. Although California's production and acreage declined from 1992 to 1997, the number of farms harvesting snap beans jumped 30 percent to 478 farms in 1997 as more small farms diversified their product lines. Production has increased by one-fourth since reaching a low in 1998. California ships snap beans from March until early December with peak volume from May to August.

New York is the fourth leading producer of fresh snap beans, growing 7 percent of national output. The fresh market accounts for about 20 percent of the state's snap bean crop, with the bulk of the crop earmarked for processing. Genesee County (26 percent of state acreage) in the western part of the state is the leading source of snap beans in New York, followed by Orleans (19 percent), Ontario (11 percent), and Oneida (11 percent) counties. Fresh-market production increased 64 percent between 1988-90 and 1998-2000, while processing output rose 24 percent over the same period. New York ships fresh-market snap beans during the summer, and supplies are strongest during August and September. All processing and most fresh-market snap bean acreage in New York is mechanically harvested.

North Carolina supplies nearly 7 percent of U.S. fresh-market snap beans and harvested a record-large crop in 2000. Hyde County on the central coast and Henderson County in the western mountain area produce two-thirds of the state's fresh snap bean crop, with acreage for both more than doubling since 1992. North Carolina ships snap beans from mid-May to early November, with volume strongest from June to August.

The Seasonal Role In Prices & Trade

With limited domestic supplies, fresh snap bean prices are generally higher from January to April and are lowest in June and July when supplies become available from multiple areas. Most fresh snap beans are priced on the daily spot market. In contrast, about 98 percent of snap beans destined for canning and freezing are produced under contract between growers and processors.

Although prices are generally higher in the winter than the summer, monthly shipping-point prices display weak seasonalities. This reflects the availability of relatively reliable year-round supplies. It could also reflect the short growing period for snap beans (45 to 60 days), which

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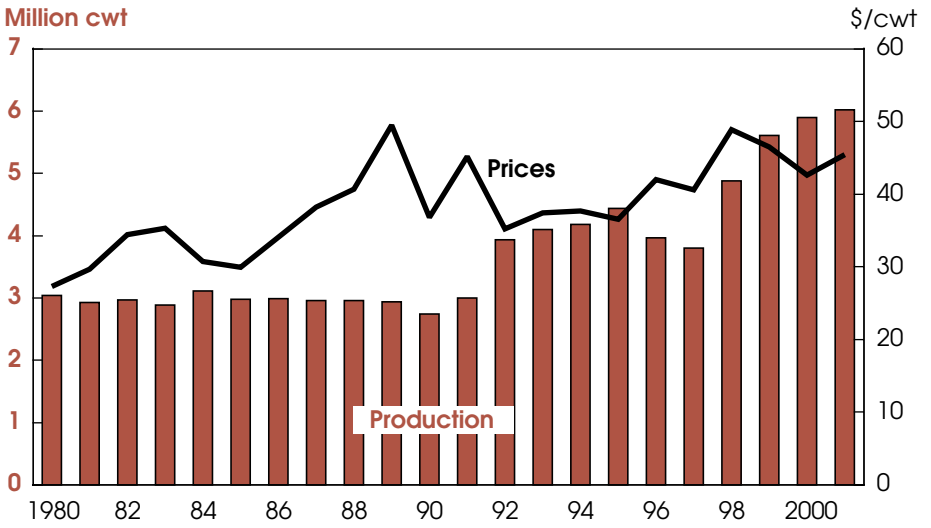
U.S. Fresh-Market Production of Snap Beans Has Recently Perked Up



Source: National Agricultural Statistics Service, USDA

Economic Research Service, USDA

allows for quick recovery following weather-related losses (frost, rains).

The season-average price received by growers during 1998-2000 was 14 percent lower than in 1988-90. Since production has been rising, real price declines may be a reflection of gains in productivity, i.e., increased efficiency in the market, hence more output per unit of input. Such efficiency gains may be partly associated with the increased prevalence of mechanical harvesting of fresh-market snap beans over the past decade. For example, machine harvest and marketing costs in south Florida were estimated to be about $20 per cwt in 1999/2000—virtually the same as manual harvest costs a decade earlier. During this time, variable labor costs more than doubled, likely pushing up manual harvesting costs.

Both exports and imports of fresh snap beans reflect a seasonal influence. The U.S. is the world's top producer of snap beans, with about 60 percent of output, according to the Food and Agriculture Organization of the United Nations. In addition, the U.S. is the world's leading importer as well as exporter of snap beans. While remaining a net importer in both the canned and frozen markets (where trade plays a smaller role), the U.S. is generally a net exporter of fresh snap beans. In the 1990s, the U.S. exported 11 percent of fresh-market supply, while imports supplied 9 percent of fresh consumption. Imports have trended higher over the past few decades (up 49 percent between 1998-2000 and 1988-90), and exports have more than kept pace (up 114 percent). U.S. export volume is generally steady from October through July, but declines sharply in August and September when Canadian snap bean production peaks.

Fresh imports are strongest in December through March, when U.S. production is limited by cool weather, and are weakest in the summer during the height of the domestic growing season. About 92 percent of import volume arrives from Mexico while about 80 percent of exports are normally shipped to Canada. Under the North American Free Trade Agreement, 2002 is the final year Mexico will face a tariff on fresh snap beans sent to the U.S. ($0.07/kg). That tariff is in place November 1 through May 31. Meanwhile, Canadian snap beans (6 percent of U.S. snap bean imports) enter duty-free.

Farms growing snap beans range from local small, family operations to large-scale multi-state growers. As is the case with many fresh-market vegetables, some large fresh-market growers have agreements or contracts to provide year-round supply to buyers like retail chain stores and wholesale distributors. This usually means the grower must have farms in several states or have agreements with growers in other states (or countries) to assure year-round supplies.

Fresh Consumption Makes a Comeback

U.S. consumption of fresh snap beans averaged 519 million pounds annually during 1998-2000, up a respectable 83 percent from 1988-90. Since tumbling to a record low of 1.1 pounds in 1990, per capita consumption of fresh-market snap beans has trended higher. Per capita use climbed to 2.1 pounds in 2000—the highest since 1964, but well below the record-high 5.3 pounds reached in 1943.

Since reaching its apex in 1943, fresh snap bean use in this country spiraled downward for nearly 50 years. But the 1990s brought several changes that snapped the market back to life. Some of these include

- a sustained economic boom with low unemployment and strong income growth;
- the popularity of cuisines viewed as natural and healthy;
- the drive toward use of low-fat foods such as fresh vegetables; and
- increased diversity in the Nation's population.

Low unemployment rates, strong income growth, and low price inflation during the past decade have supported consumer spending on a range of foods. This includes both food away from home and food at home prepared using basic ingredients like fresh snap beans. The strong trend in away-from-home eating helped boost consumption of ethnic cuisines from Asia and Mediterranean countries as consumers sought diversity in their diets.

The 1990s saw new emphasis on cuisines viewed as natural and healthy, such as the so-called "Mediterranean diet." Asian cuisines such as Chinese, Korean, Viet-

namese, and Indian offered unique dining experiences and new flavors. The use of snap beans in various stir-fry dishes abounded as the wok became a symbol for a healthy lifestyle as well as a principal cooking tool in the American kitchen, supported by a world of recipes readily available on the Internet.

Consumer awareness of the nutritional virtues of vegetables like snap beans has been rising. Snap beans provide Vitamins A and C, potassium, calcium, phosphorous, and fiber, with a one-cup serving containing just 34 calories. Snap beans can be served as a main dish (e.g., stir-fry with meat), a side vegetable, in casseroles and soups, and in a salad mixture with other vegetables. Popular recipes featuring snap beans include green bean casserole, Swiss-style green beans, three-bean salad, stir-fry chicken and beans, shepherd's pie, and pickled green beans.

The surge in snap beans' popularity may also have been boosted by immigration trends over the past two decades. A more diverse population has helped to increase demand for snap beans and expanded the use of snap beans in the diet through the introduction of new cuisines.

Most Snap Beans Consumed at Home

On a fresh-equivalent basis, Americans consumed 2.1 billion pounds of snap beans during 1998-2000. While canning accounted for 50 percent of this, fresh-market use amounted to 25 percent, or 519 million pounds. According to USDA's 1994-96 Continuing Survey of Food Intakes by Individuals (CSFII), fresh snap beans, like most other foods, are purchased largely at retail for home consumption (84 percent). This likely reflects the dearth of uses for fresh snap beans in fast foods (3 percent of use) as well as competition with less labor-intensive canned and frozen snap beans for restaurant menus and institutional meals.

In the away-from-home market, U.S. consumers eat snap beans most often in standard full-service restaurants (10 percent of use). As is the case with sweet corn and broccoli, shippers of both fresh and processed snap beans have had little success finding a niche in the expanding fast-food market. This market accounts for less than 3 percent of fresh snap bean consumption and less than 1 percent of canned and frozen snap beans.

Regionally, the South (a 16-state region defined by the Census Bureau) and Northeast (a 9-state region) consume more fresh-market snap beans than do other areas of the country. Southerners consume more than twice as much per capita as westerners and 81 percent more than residents of the Midwest. Based on distributors derived from the CSFII, regional per capita fresh-market snap bean use in 2000 was estimated as follows:

- South, 2.9 pounds per person;
- Northeast, 2.1 pounds;
- Midwest, 1.6 pounds; and
- West, 1.3 pounds.

Low snap bean consumption in the West may reflect the influence of Hispanics, who eat few fresh snap beans, as well as the West's status as national leader in fast-food and other restaurant spending—sectors where snap beans are not well represented.

Metropolitan areas, where 32 percent of the U.S. population resides, accounted for nearly 40 percent of all fresh snap beans consumption. The CSFII indicated that Americans in suburban and rural areas consume about 40 percent fewer fresh snap beans on a per capita basis than those in metro areas.

Asian Americans consume the greatest amount of fresh snap beans per capita. According to the survey, Hispanics were the only major racial/ethnic group that does not express a preference for fresh-market snap beans. Consumers in the survey's top income bracket report the highest per capita consumption, although the CSFII results suggest that the correlation between income and fresh snap bean use is weak.

Snap bean consumption is greatest among older Americans and weakest among teenagers. In general, there appears to be a positive correlation between age and per capita consumption with per capita use strongest for those 60 and over and weakest for teenagers. A similar pattern was noted for frozen snap bean consumption and canned consumption.

Although the near-term tide of consumption has been shifting higher for fresh-market snap beans, the longer run market appears less certain. At least part of the future success for this crop may be linked to the ability of the industry to entice more Hispanic consumers. With the population base for this ethnic group expected to expand substantially over the next several decades, their current low consumption rate may provide a challenge to the industry. Despite this potential longrun market gap, other factors favor increased consumption over the next several years. If consumer interest in nutrition and healthy lifestyles continues, this should support further growth in fresh snap bean consumption over the next several years. AO

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2002 Agricultural Prospects

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