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## Commodity Profile: Broccoli

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### Overview

Broccoli is said to have originated in the Mediterranean where it can still be seen today growing wild along the Mediterranean coast. The seeds which sprouted the U.S. industry came from Messina, Italy and were planted in 1923 near San Jose, California (Economic Research Service (ERS) 1999). Today, broccoli is grown in nearly every state, including Alaska and Hawaii, though California remains the major producer.

### Industry Structure

Broccoli is marketed as either a fresh or processed product. Processed broccoli is typically frozen for retail sale and marketed as either spears or chopped, while a limited amount is canned for soups. Typically, broccoli grown for processing is produced under contract between grower and processor. However, broccoli is considered a dual use vegetable because fresh varieties can be used for either the fresh or processing market. Therefore, processors will often purchase fresh broccoli when fresh market prices are low.

In more recent years, the broccoli industry has become highly concentrated with a smaller number of farms providing a larger share of production. From 1997 to 2002, the total number of farms has decreased from 2,751 to 2,493, and the share of the total broccoli acreage harvested on farms with 500 acres or more increased from 63 to 69 percent. According to the 2002 Census of Agriculture, California alone was home to just 21 percent of all U.S. growers and yet accounted for 85 percent of total harvested acreage. The higher concentration is partly attributed to the emergence of the value-added fresh sector, which includes pre-cut and bagged broccoli florets and broccoli coleslaw. The nature of the value-added sector requires larger volumes of product to allow processing plants to run efficiently year round, which encourages both growers and processors to become more concentrated (ERS 1999).

### Demand

U.S. per capita fresh broccoli consumption has followed a mostly increasing trend over the last two decades (Figure 1). Per capita, consumption of fresh broccoli increased 4.5

pounds from 1980 to 2004. Broccoli for processing grew more slowly, increasing by only 1.2 pounds within the same period. Fresh broccoli consumption has increased partly in response to the popularity of salad bars, however the majority of consumption is due to its use as a side dish or entrée component (ERS 1999). Broccoli has also been marketed as a nutritious dietary supplement due to its high fiber content, vitamin C, vitamin A, and mineral content, including calcium and iron, and cancer-preventing agents, which have spurred consumption among increasingly health-conscious consumers (ERS 1999).

### **Exports**

Exports of fresh broccoli totaled \$108 million in 2004, up from \$39 million in 1990. Exports of frozen broccoli, however, were negligible. The leading export market for U.S. broccoli is Canada, which accounted for 53 percent of the value of U.S. broccoli exports, followed by Japan at 35 percent and Taiwan, accounting for 9 percent (Figure 2). While total U.S. shipments of broccoli have increased by nearly \$70 million between 1989 and 2004, exports to Canada increased by less than \$24 million. The majority of the increase was from Japan, with Japanese imports of U.S. broccoli increasing by more than \$36 million between 1989 and 2004.

### **Supply**

California is the largest producer of both fresh and processing broccoli in the United States and was responsible for 92 percent of harvested acreage in 2004. Arizona is the second largest producing state accounting for slightly over 7 percent of harvested acres. Total broccoli acreage peaked in 1999 at 148 thousand acres and decreased to 138 thousand acres in 2004 (Figure 3). However, the U.S. value of production of fresh broccoli has continued to increase. Since 1979, production value of fresh broccoli has increased in nominal terms nearly nine-fold, reaching a high of \$640 million in 2004 (Figure 4).

### **Prices**

Prices received for broccoli used for processing are typically lower than prices received for fresh broccoli. The U.S. average price of fresh broccoli (in year-2000 inflation-adjusted dollars) has declined in the last two decades, with the greatest decline noticeable from 1980 to 1989. Since 1989, prices for fresh broccoli have been variable. The price for fresh broccoli reached a low point in 1999 when prices fell to \$24.6 per cwt and again in 2001 when they fell to \$25.8 (Figure 5). In 2004 the price of fresh broccoli was \$31.1 per cwt (in inflation-adjusted 2000 dollars). Prices for processing broccoli have also declined since 1989, dropping significantly in 2000 and rebounding in 2002 and 2003. In 2004, the price for processing broccoli was \$19.9 per cwt.

### **Imports**

The majority of fresh broccoli consumed in the United States comes from domestic production, with less than 10 percent of consumption coming from imports in 2004. However, over the last two decades, the percentage of consumption of processing broccoli produced domestically has decreased. In 2004, 80 percent of processed broccoli consumed in the United States came from imports compared to just 10 percent in 1980 (Figure 6). The majority of frozen broccoli imports come from Mexico, with a smaller

amount entering from Guatemala. In 2004, the value of imported (fresh and processed) broccoli amounted to \$206.5 million, making the United States a net importer of broccoli overall. The United States has come to rely largely on frozen broccoli imports because production of frozen broccoli florets is labor intensive and U.S. labor costs are higher than in other countries. In particular, Mexico's low cost of labor has allowed Mexico to provide the majority of both fresh and processed imports to the United States, accounting for 74 percent of total broccoli imports in 2004. Guatemala was the second largest source, accounting for 14 percent of total imports, the majority of which consists of frozen broccoli. The base tariff on Mexican frozen broccoli exports to the United States was phased out over 10 years following the North American Free Trade Agreement (NAFTA), and Guatemalan imports enter the country duty free under the Caribbean Basin Initiative (ERS 1999). Nevertheless, Mexico still faces a tariff during the period from January 1 to May 31 (the peak of Mexican production), which is being reduced over 15 years until 2008, when it will reach zero.

### **Sources**

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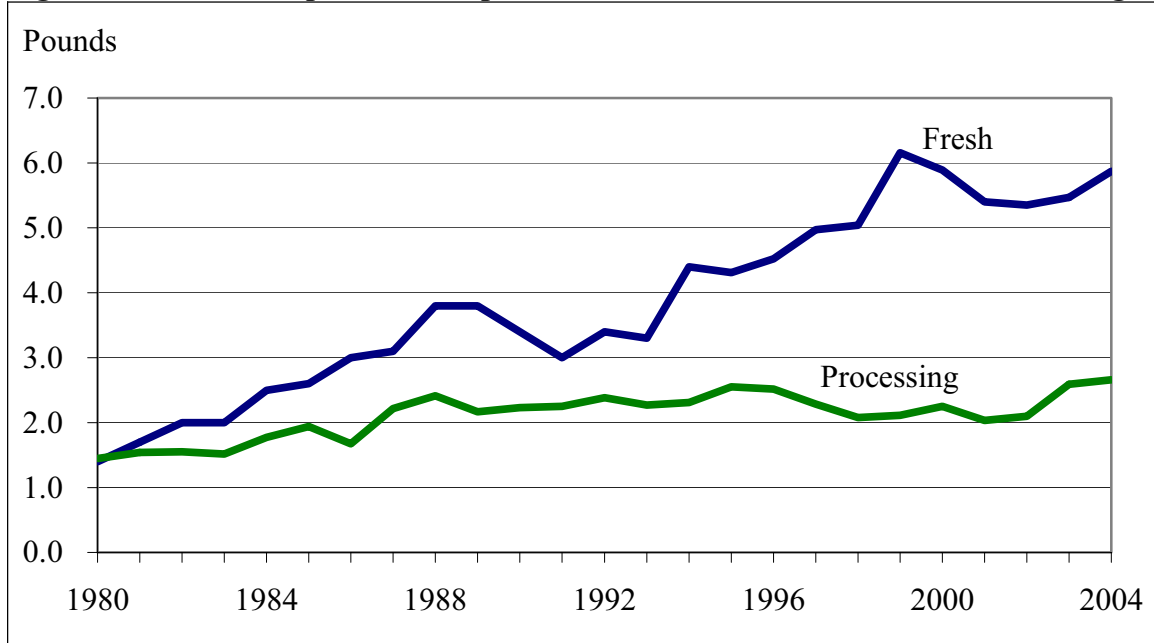
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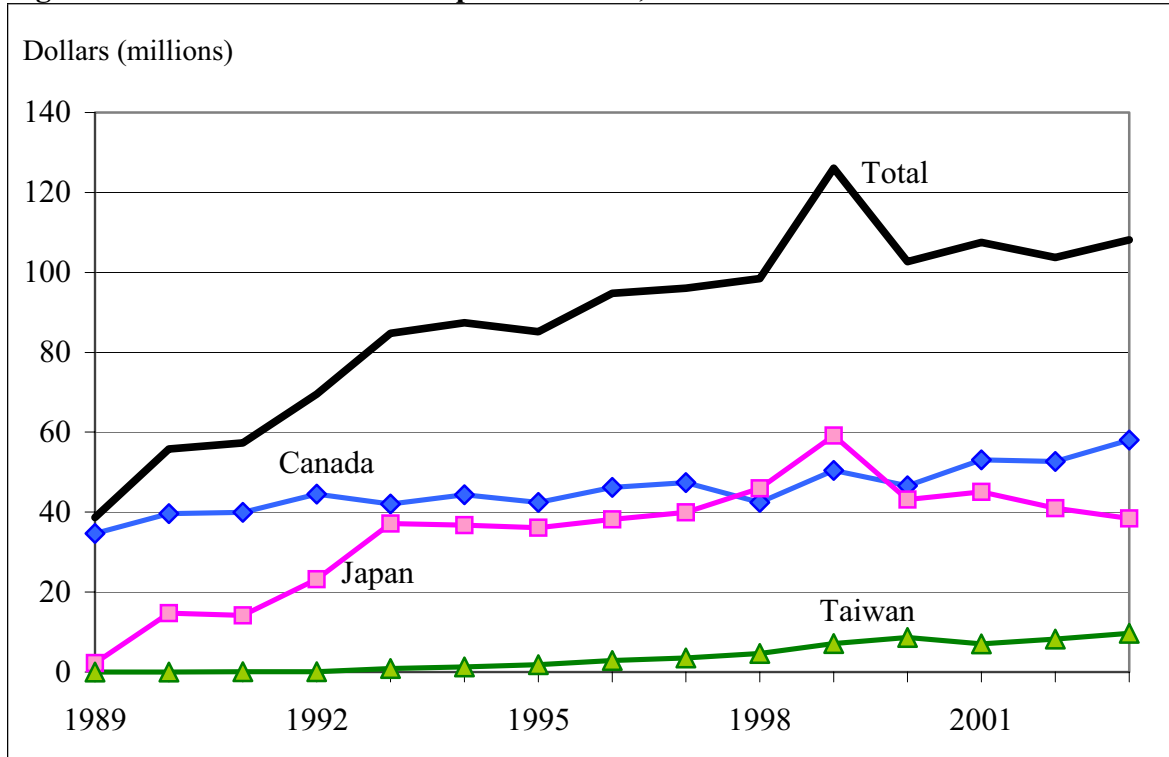
**FIGURES**

**Figure 1. U.S. Per Capita Consumption of Broccoli Fresh and used for Processing**



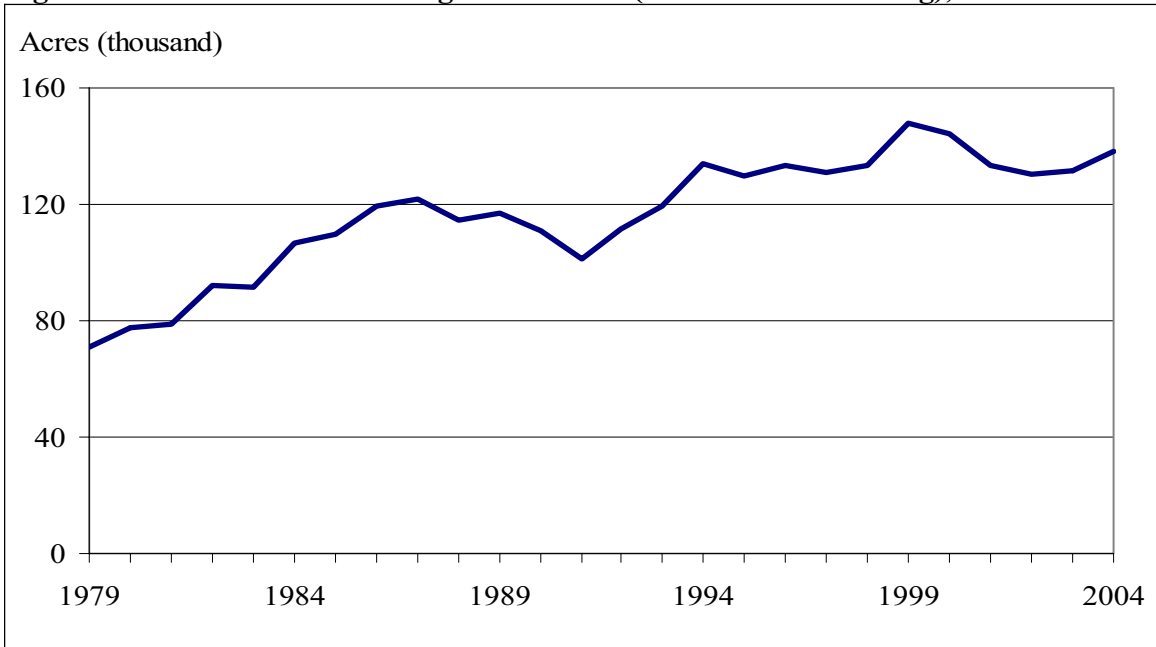
Source: USDA Economic Research Service Vegetable and Melons Yearbook

**Figure 2. U.S. Fresh Broccoli Export Markets, 1990-2004**



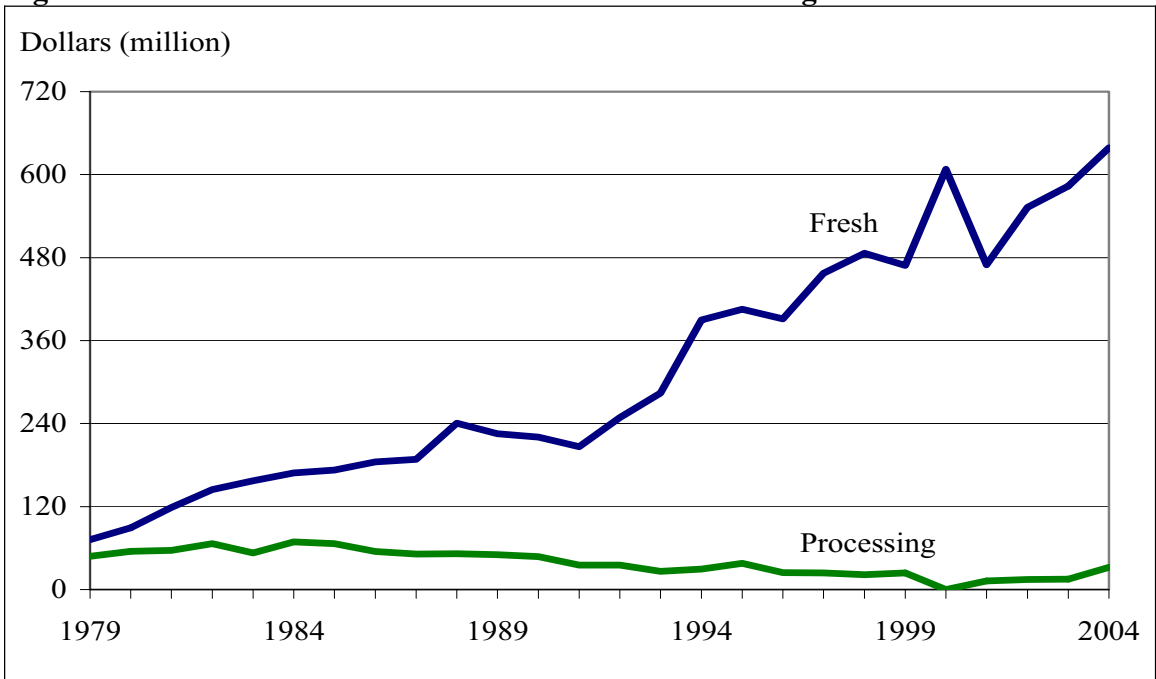
Source: USDA Foreign Agricultural Service

**Figure 3. Harvested U.S. Acreage of Broccoli (Fresh and Processing), 1979-2004**



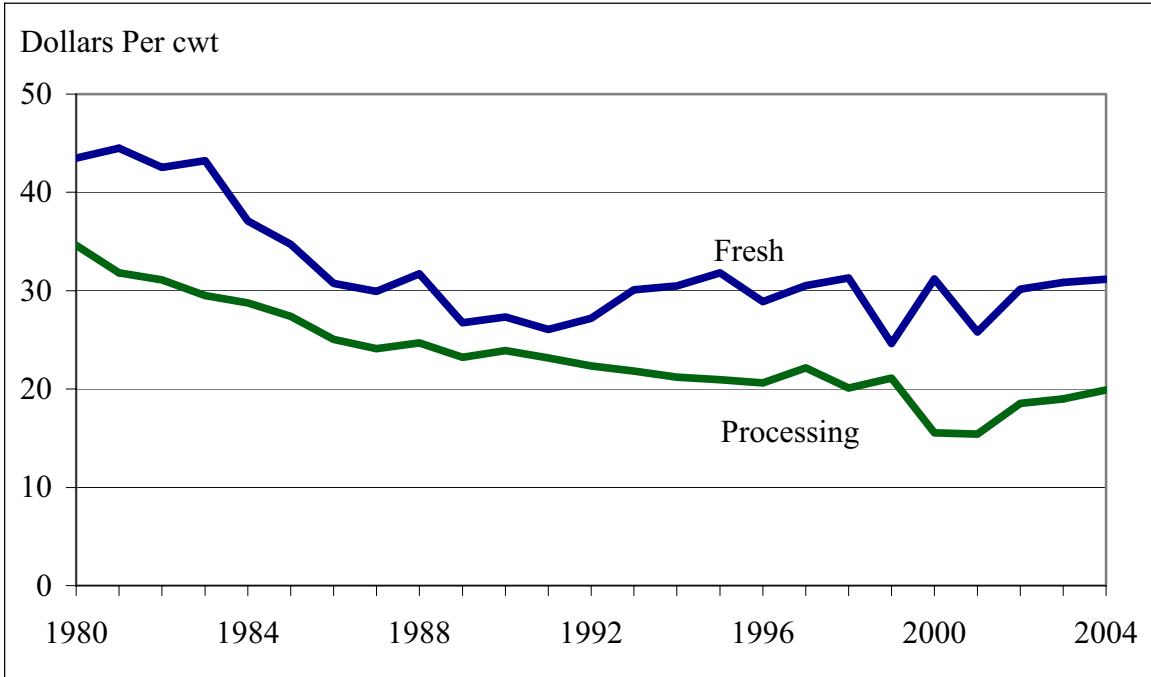
Source: USDA Economic Research Service Vegetables and Melons Yearbook

**Figure 4. Value of Production of U.S. Fresh and Processing Broccoli 1979-2004**



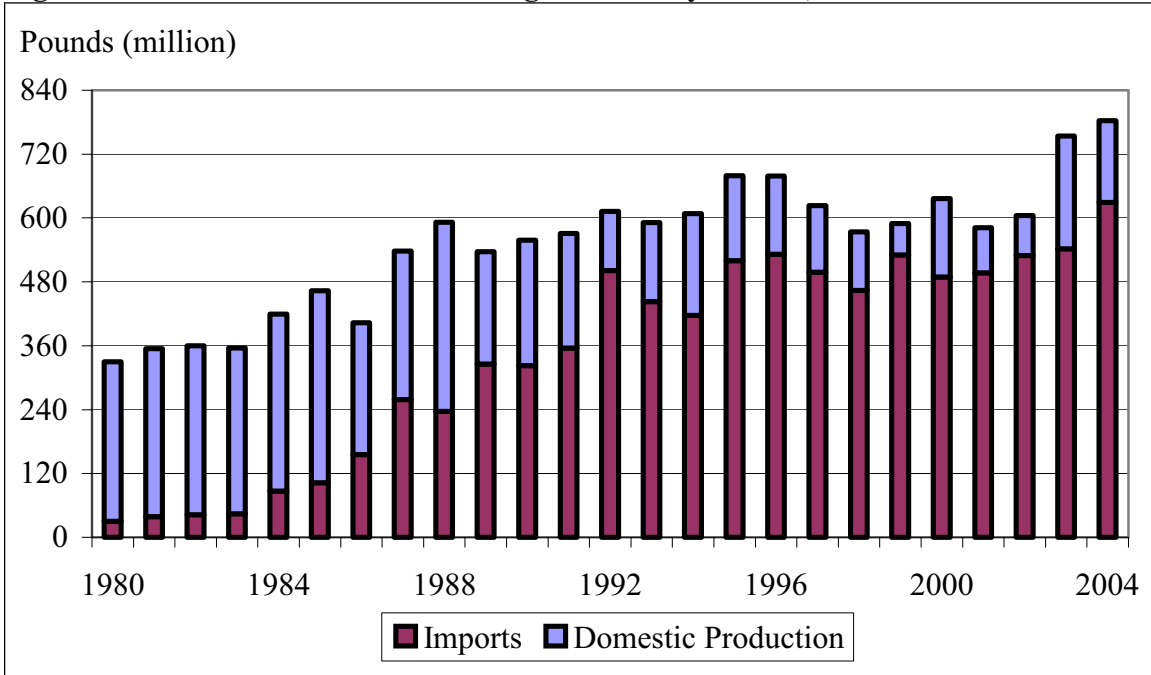
Source: USDA Economic Research Service Vegetables and Melons Yearbook

**Figure 5. Average U.S. Broccoli Price (year 2000 inflation-adjusted dollars), 1980-2004**



Source: USDA Economic Research Service, *Vegetables and Melons Yearbook*

**Figure 6. U.S. Utilization of Processing Broccoli by Source, 1980-2004**



Source: USDA Economic Research Service, *Vegetables and Melons Yearbook*