Industry & Trade Summary

Processed Vegetables

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PREFACE

In 1991 the United States International Trade Commission initiated its current *Industry and Trade Summary* series of informational reports on the thousands of products imported into and exported from the United States. Each summary addresses a different commodity/industry area and contains information on product uses, U.S. and foreign producers, and customs treatment. Also included is an analysis of the basic factors affecting trends in consumption, production, and trade of the commodity, as well as of those bearing on the competitiveness of U.S. industries in domestic and foreign markets.[1]

This report on fresh vegetables covers the period 1990 through 1994 and represents one of approximately 250 to 300 individual reports to be produced in this series during the first half of the 1990s. Listed below are the individual summary reports published to date on the agricultural and forest products sector.

USITC publication number	*Publication date*	*Title*
2459	November 1991	Live Sheep and Meat of Sheep
2462	November 1991	Cigarettes
2477	January 1992	Dairy Produce
2478	January 1992	Oilseeds
2511	March 1992	Live Swine and Fresh, Chilled, or Frozen Pork
2520	June 1992	Poultry
2524	August 1992	Fresh or Frozen Fish
2545	November 1992	Natural Sweeteners
2551	November 1992	Newsprint
2612	March 1993	Wood Pulp and Waste Paper
2615	March 1993	Citrus Fruit
2625	April 1993	Live Cattle and Fresh, Chilled, or Frozen Beef and Veal
2631	May 1993	Animal and Vegetable Fats and Oils
2635	June 1993	Cocoa, Chocolate, and Confectionery
2636	May 1993	Olives
2639	June 1993	Wine and Certain Fermented Beverages
2693	October 1993	Printing and Writing Paper
2702	November 1993	Fur Goods
2726	January 1994	Furskins
2737	March 1994	Cut Flowers
2749	March 1994	Paper Boxes and Bags
2762	April 1994	Coffee and Tea
2859	May 1995	Seeds
2865	April 1995	Malt Beverages
2875	May 1995	Certain Fresh Deciduous Fruit
2898	June 1995	Certain Miscellaneous vegetable Substances and Products
2918	August 1995	Printed Matter

[1] The information and analysis provided in this report are for the purpose of this report only. Nothing in this report should be construed to indicate how the Commission would find in an investigation conducted under statutory authority covering the same or similar subject matter.

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INTRODUCTION

The United States remains one of the world's largest producers of fresh vegetables, along with such other major competitor countries as China, India, Japan, and Italy.[1] U.S.-produced fresh vegetables covered in this report accounted for about 7 percent of the quantity of all processed vegetables produced worldwide in 1991.[2] The U.S. vegetable-processing industry has undergone considerable change during the past decade. Intense competition from domestic and foreign producers has resulted in many smaller firms going out of business. The industry as a whole has expanded shipments both for domestic and export markets. Changes in consumer preferences for certain vegetable preparations have resulted in greater shipments of frozen and canned vegetables.

This summary of industry and trade information on processed vegetables includes the following three major categories: (1) canned vegetables; (2) frozen vegetables; and (3) dried vegetables. All of these products are provided for in chapters 7, 11, and 20 of the *Harmonized Tariff Schedule of the United States* (*HTS*). The structure of U.S. and foreign processed vegetable industries, domestic and foreign tariff and nontariff measures, and recent trade patterns in the U.S. industry are presented here. The competitive condition of the U.S. processed-vegetable industry in domestic and foreign markets, for the period 1989-93, is also discussed in this summary.

The most important group of products covered in this summary, in terms of the value of domestic shipments, is canned vegetables (in metal or non-metal containers), accounting for 61 percent of total U.S. processed vegetable shipments in 1993 (figure 1). U.S. shipments of canned vegetables amounted to an estimated $11 billion in 1993.[3] The principal canned vegetables included here are canned tomatoes and tomato products, pickles and pickled products, canned dry beans, and miscellaneous canned vegetables, such as corn, peas, and mushrooms.

Frozen vegetables accounted for about 30 percent of total U.S. processed vegetable shipments in recent years, and dried vegetables for less than 10 percent. In 1993, U.S. shipments of frozen vegetables were valued at an estimated $5 billion.[4] The principal frozen vegetables domestically produced include french-fried potatoes and other frozen potato products, mixtures of two or more vegetables, sweet corn, and broccoli. U.S. shipments of dried vegetables were valued at about $2 billion in 1993.[5] The principal dried vegetables produced domestically include field-dried beans, peas, and lentils, and mechanically dried or dehydrated vegetables (including potato products, onions, garlic, and other miscellaneous vegetables). Also included in this summary are some imported items (such as bamboo shoots, waterchestnuts, and sweet ginger) that either are produced to a lesser extent domestically or are preserved by methods not commonly used here.

In 1993, U.S. imports of processed vegetables amounted to an estimated $745 million and imports of canned vegetables amounted to $371 million.[6] The most important imported canned vegetables, in terms of import value, were mushrooms, tomato products, and potato products; significant quantities of numerous other canned vegetables were also imported. In 1993, frozen vegetable imports amounted to about $281 million. The principal frozen vegetables imported in 1993 were broccoli, cauliflower, and peas. U.S. imports of dried vegetables amounted to $93 million in 1993 and were mainly dried leguminous vegetables, mushrooms, and other miscellaneous vegetables. Nearly all imported canned, frozen, and dried vegetables are similar in quality and appearance to those vegetables domestically produced.[7]

U.S. INDUSTRY PROFILE

Industry Structure

The U.S. processed vegetable industry exhibits a diverse structure both in terms of the number of processors and the types of products processed (figure 2). The canned vegetables included in this summary are covered primarily in part of Standard Industrial Classification (SIC) 2033, Canned Fruits and Vegetables; others are covered in SIC 2032, Canned Specialties, and in SIC 2035, Pickles, Sauces, and Salad Dressings. Frozen vegetables are covered partly in SIC 2037, Frozen Fruits and Vegetables, and most of the dried vegetables are covered in SIC 2034, Dehydrated Fruits, Vegetables, and Soups.

Number of firms, geographic distribution, and concentration ratios

The U.S. vegetable processing industry includes an estimated 630 firms that process canned vegetables, 310 firms that freeze vegetables, and about

[1] U.S. Department of Agriculture, Economic Research Service, *World Agriculture: Trends and Indicators, 1970-91*, Statistical Bulletin No. 861, Washington, DC, Nov. 1993.

[2] Ibid.

[3] Estimated by the Commission staff from data published in "Food and Beverages, *1993 U.S. Industrial Outlook*, U.S. Department of Commerce, Washington, DC, Jan. 1994, and the 1987 Census of Manufacturers, U.S. Department of Commerce, Bureau of the Census.

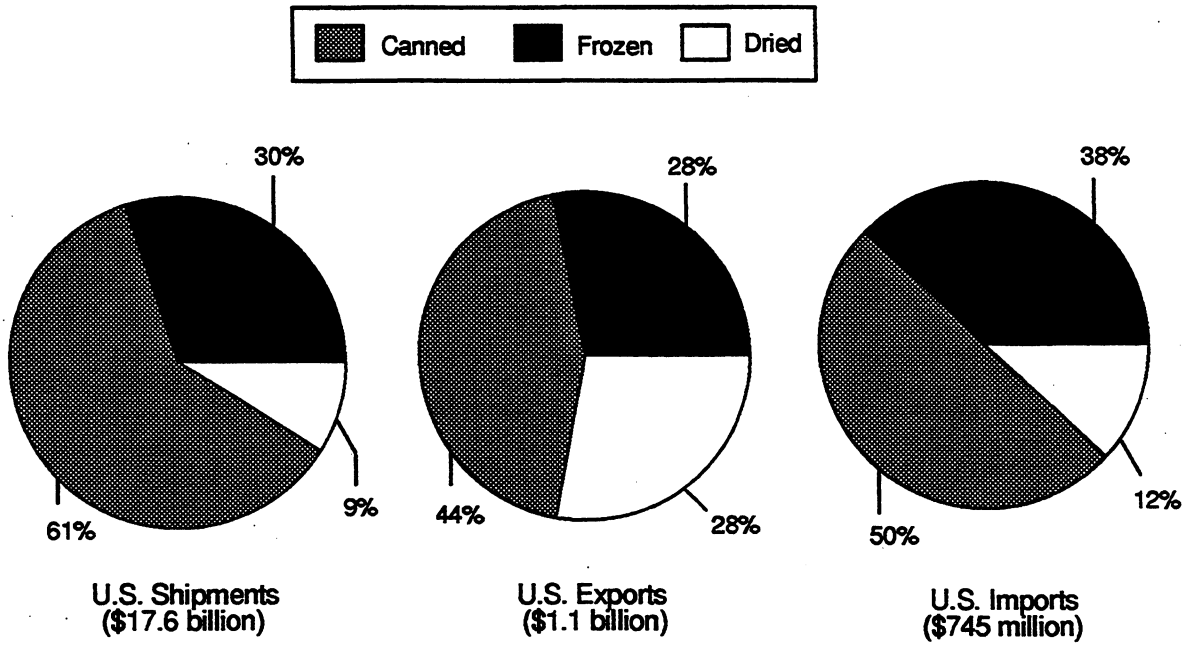
[4] Ibid.

[5] Ibid.

[6] Ibid.

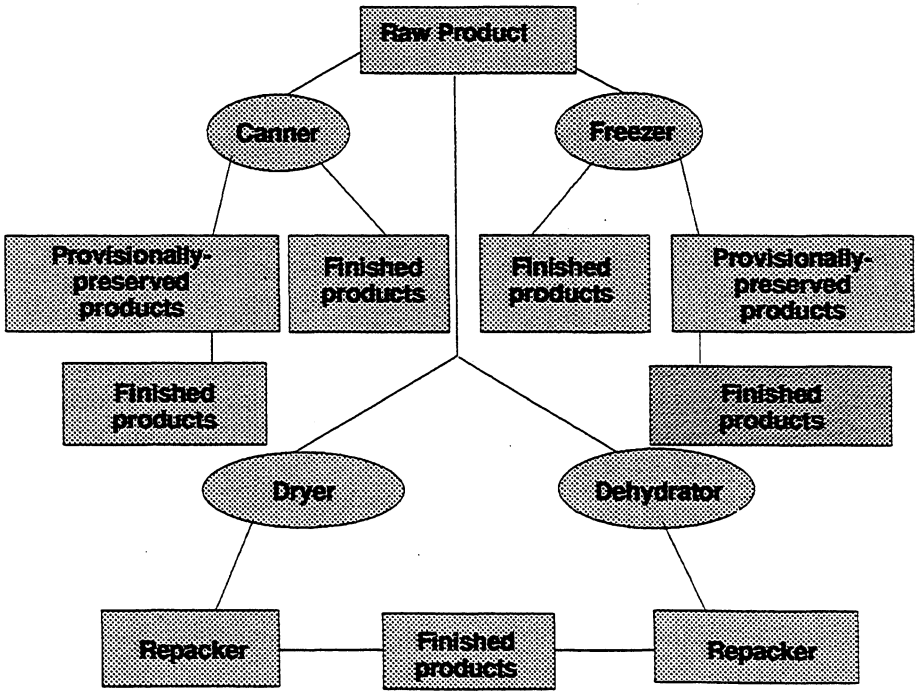
[7] Commission staff conversations with officials of the U.S. and foreign vegetable processing industries, 1992-94.

Figure 1
Processed vegetables: Share of U.S. shipments, exports, and imports, by type of product, 1993



Source: Compiled by Commission staff from official statistics of the U.S. Department of Agriculture, American Frozen Food Institute, and the U.S. Department of Commerce.

Figure 2
Processed vegetables: U.S. industry structure



Source: Constructed by staff of the U.S. International Trade Commission.

20 firms that dehydrate vegetables.[8] The overall number of vegetable canning, freezing, and dehydrating firms declined throughout the 1980s, with some small firms going out of business and others merging with larger firms. The decline in processing facilities reflected a growing consumer preference in the late 1980s for fresh vegetables.

Historically, processing facilities were located close to raw-product production areas, a proximity which helped to keep transportation costs down while insuring raw-product freshness. Subsequently, vegetable processors were distributed throughout most states. The number of vegetable processors declined during the 1980s, with an especially sharp drop in the number of those firms processing a limited number of locally-grown vegetables and operating only a few months each year. In recent years, a number of remaining firms have begun producing both processed raw and provisionally-preserved[9] products domestically grown hundreds of miles from the processing plant or imported. A number of domestically-owned firms also are believed to process both domestically-produced and imported raw and provisionally-preserved vegetables.[10]

Since 1989, most vegetable canners have been located primarily in the North Central and Pacific regions.[11] Many of these canners are located in California and are processors principally of tomatoes and tomato products. California has been the leading State in production value of these and other processed vegetables for many years.[12] Other concentrations of facilities are located in the Northeast and South Central regions.[13] In 1993, California was followed by Wisconsin, Oregon, Washington, and Minnesota as the leading processed-vegetable producing States.[14]

Vegetable-freezing firms are located principally in California and Washington, where the largest quantities of raw vegetables for freezing are grown. A significant number of firms are also located in the Northeast, North Central, and South Atlantic regions.[15] Many of the firms located outside the Pacific region are believed to be processing vegetables both locally grown and purchased for processing from other areas in the United States or Mexico, primarily on a seasonal basis. Vegetable dehydrating firms are located principally in California and Washington, where the main products processed are dried onions and garlic and dehydrated potato products. Also included among the vegetable dehydrating firms covered here are firms that process (clean, grade, and sort) field-dried peas, beans, and lentils, but they are not technically vegetable dehydrators.

In 1987, the latest year for which data are available, the share of production value for the four largest canning, freezing, and dehydrating firms accounted for 29, 31, and 39 percent, respectively, of total canned, frozen, and dehydrated vegetable processing output.[16] It is not known whether the concentration of firms in the vegetable canning, freezing, and dehydrating industries has changed in recent years. Many U.S. vegetable canners and freezers are major multi-national food processors and distributors, often of a broad line of vegetables and fruit. The following firms are reported to be among the largest vegetable processors on an international scale: H.J. Heinz Co.; Campbell Soup Co.; Pillsbury Co. (Green Giant); RJR Nabisco, Inc.; Ralston Purina Co.; and Hanover Foods, Inc.[17] A number of other firms, including ConAgra Frozen Foods, Beatrice Foods Co., Dean Foods Co., Tri-Valley Foods, and National Fruit Co., are also major producers or marketers of processed vegetables. Heinz, BirdsEye Frozen Foods Unit (Kraft Foods), and Campbell Soup Co. have

[8] Estimated by the Commission staff based on data from the U.S. Department of Commerce, "Preserved Fruits and Vegetables," *1987 Census of Manufacturers*, Industry Series (MC87-I-20C), Mar. 1990, pp. 20C-10 and 20C-11. The actual number of individual firms in each category is believed to be somewhat less, since the overall vegetable processing industry has been down-sized in recent years and many of the same firms are believed to process a number of different products and may be counted more than once.

[9] Provisionally-preserved vegetables are those vegetables initially processed in a form wherein they can be repacked into other container sizes or further processed into other finished products.

[10] Commission staff conversations with officials of the U.S. vegetable processing industry, 1992-94.

[11] North Central includes IA, IL, IN, KS, MI, MN, MO, ND, NE, OH, SD, and WI; Pacific includes CA, OR, and WA.

[12] U.S. Department of Agriculture, National Agricultural Statistics Service, *Vegetables: 1993 Summary*, Vg 1-2(94), Washington, DC, Jan. 1994, p. 63.

[13] Northeast includes CT, DE, MA, MD, ME, NH, NJ, NY, PA, RI, and VT; South Central includes AL, AR, KY, LA, MS, OK, TN, and TX.

[14] Compiled by Commission staff from data for lima and snap beans, beets, cabbage, sweet corn, cucumbers for pickles, peas, spinach, and tomatoes, intended for both canning and freezing, published in *Vegetables: 1993 Summary*, VG 1-2(94), Washington, DC, Jan. 1994.

[15] South Atlantic includes FL, GA, NC, SC, VA, and WV; Mountain includes AZ, CO, ID, MT, NM, NV, UT, and WY.

[16] Compiled by Commission staff from data published in U.S. Department of Commerce, Bureau of the Census, *1987 Census of Manufacturers*, Concentration Ratios in Manufacturing, MC87-S-6, p. 6-5. Canning data are for canned fruits and vegetables (SIC 2033), freezing data are for frozen fruits and vegetables (SIC 2037), and dehydrating data are for dehydrated fruits, vegetables, and soups (SIC 2034).

[17] American Institute of Food Distribution, "Nation's Top Food Processing Companies," *The Food Institute Report*, Fair Lawn, NJ, Jan. 11, 1992, p. 3.

processing plants located both in the United States and in a number of other countries as well.[18]

Large vegetable dehydrators include Basic American Foods, Durkee-French Foods, Gilroy Foods, Inc., McCormick & Co., Inc., and Rogers Foods.[19] Some of the dry pea and lentil processors include BNP Lentil Company, George F. Brocke & Sons, Inc., Continental Grain Company, and Spokane Seed Company.[20] Major dry bean processors/shippers include Agri Sales, Inc., ConAgra/Berger, Cooperative Elevator Company, and Valley Marketing, Inc.[21]

Vertical and horizontal integration

The U.S. vegetable processing industry is somewhat vertically integrated. Many vegetable processors rely on independent growers with whom they have entered into raw-product production contracts for the bulk of their raw-product requirements. In such industry sectors as the California processed tomato products sector, growers bargain with processors as a single unit in an effort to insure that growers receive better prices and are guaranteed outlets for their raw-product production. In other sectors, growers are more independent in negotiating raw-product prices and delivery schedules with processors.

Many processors contract with growers before planting for desired quantities of raw-product production at agreed-upon prices.[22] Most of these growers raise the same vegetables each year and have maintained historical buyer-and-seller relationships with the same processors for many years.[23] Most firms also process significant quantities of raw product purchased on the open market (for quantities and prices negotiated at, or soon after, harvest). Since most canned and frozen vegetables are specific varieties of vegetables with certain desirable processing characteristics (color, size, shape, and sugars and solids content) and grown specifically for processing, many growers raise vegetables strictly for processing and are not able to divert such product to the fresh market.[24] However, some growers raise vegetables for processing along with vegetables intended for fresh-market sales.[25]

Since the early 1980s, because U.S. vegetable processors have become more vertically integrated between their raw-product production and processing stages, a number of agricultural cooperatives have been formed.[26] The operation of the cooperatives was one in which growers had a ready processing market for all of their production, at a price agreed upon jointly by all coop members. Also, selling directly to the coop eliminated the costs of dealing with a broker or other middleman. However, some of these cooperatives were not able to operate successfully since their products were not differentiated enough to develop added consumer brand loyalty.[27] By 1993, there were 5 new cooperatives formed annually, the same as were formed each year since 1989.[28]

There are also a small number of grower-owned cooperative processing operations in many vegetable sectors, as part of which a processor is obliged to take a specified amount of raw-product production from member growers. In other instances, as with mushrooms, processing firms may own and operate growing facilities, either directly or through a cooperative agreement. Under such arrangements, processors have complete control over the price, availability, and utilization of raw-product production, and usually direct the product into fresh-market sales or process it, depending upon where the greatest demand and financial returns are expected.[29]

In an attempt to reduce their production risks and improve efficiency, raw-product producers and processors have become more interdependent in recent years.[30] Processors, in particular, are subject to varying availability and quality of raw product for processing. Through the use of production contracts, processors can better manage risk while, at the same time, reducing costs and increasing fixed plant capacity utilization. In return, processors are able to pass on to growers, for delivered raw product supplies, partial advance payments, generated from their sales, earlier in the processing season.

Certain segments of the U.S. vegetable processing industry also have become more horizontally

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[18] Various issues of *The Food Institute Report*, American Institute of Food Distribution, Fair Lawn, NJ, 1992-94.

[19] Commission staff conversations with officials of the American Dehydrated Onion and Garlic Association, San Francisco, CA, 1994.

[20] Commission staff conversations with officials of the American Dry Pea and Lentil Association, Moscow, ID, 1993.

[21] Commission staff conversations with officials of the Michigan Bean Shippers Association, Saginaw, MI, 1994.

[22] Commission staff conversations with officials of the U.S. vegetable growing and processing industries, 1992-94.

[23] Ibid.

[24] Ibid.

[25] Ibid.

[26] U.S. Department of Agriculture, Economic Research Service, *U.S. Fruit and Vegetable Processing Industries*, Staff Report No. AGES-880216, Washington, DC, Aug. 1988, pp. 60-70.

[27] Ibid.

[28] American Institute of Food Distribution, "Food Industry Mergers/Acquisitions Rise In 1993," *The Food Institute Report*, Fair Lawn, NJ, Mar. 7, 1994, p. 3.

[29] Commission staff conversations with officials of the U.S. mushroom growing and processing industries, 1989-93.

[30] U.S. Department of Agriculture, *U.S. Fruit and Vegetable Processing Industries*, Staff Report No. AGES-880216, Aug. 1988, pp.33-55.

integrated in recent years. Although some canning firms process primarily a single item (tomatoes, mushrooms, pimentos, or pickles), many other large- and medium-size canning firms process a broad assortment of vegetables.[31] Whereas most small firms generally process a smaller assortment of vegetables, often on a more regional and even seasonal basis, many larger canners process vegetables under their own private labels, as well as under a number of store brands. In other instances (as with mushrooms), canners may pack for other firms, processing vegetables in containers with labels supplied by the other firm.[32] Some vegetable-canning firms also process fruit, but are believed to depend on sales of processed vegetables for the bulk of their total income. Also, certain processors produce provisionally-preserved vegetables that can be stored and then repacked or shipped to a finishing plant elsewhere in the United States.[33]

Some large vegetable freezers are large-volume producers, sometimes processing only a limited assortment of vegetables such as potato products but in great quantities. Many other large- and medium-size firms process a broader assortment of frozen vegetables.[34] Some other firms discussed here process vegetables grown in other states or imported, whereas others repack frozen vegetables from bulk containers into smaller packages of individual or mixed vegetables.[35] In general, firms processing frozen vegetables operate more independently of growing operations than vegetable canners, although the bulk of raw product purchases are believed to be made on a contract basis.[36]

A few major U.S. vegetable dehydrators process a limited number of vegetables. The bulk of their raw product is grown on a contract basis.[37] Other firms dehydrate a broader assortment of vegetables and herbs. In addition, some dehydrators repackage dried vegetables into other package sizes or add them to such other products as soup mixes.[38] Processors of field-dried beans, peas, or lentils are not dehydrators as such, but rather provide cleaning, grading, packaging, and storage capacity for these vegetables. Usually, such firms are also involved in shipping finished products or in exporting as well.[39]

[31] Ibid.
[32] Ibid.
[33] Ibid.
[34] Commission staff conversations with officials of the U.S. vegetable growing and processing industry, 1992-94.
[35] Ibid.
[36] Ibid.
[37] Commission staff conversations with officials of the U.S. vegetable dehydrating industry, 1991-94.
[38] Ibid.
[39] Commission staff conversations with officials of the Michigan Bean Shippers Association and the American Dry Pea and Lentil Association, 1993-94.

Mergers and acquisitions

Many processing firms are believed to be solely vegetable processors, whereas others process a number of food products including vegetables.[40] Since the early 1980s, many U.S. vegetable processors (both canners and freezers) have merged with other firms or have acquired, or have been acquired by, other firms.[41] Since 1989, the bulk of acquisitions have involved either multi-product processing firms acquiring vegetable processing firms in an effort to expand their overall processed-food offerings, or vegetable processors purchasing processors of similar products to capitalize on economies of scale.[42] Merger and acquisition activity slowed considerably in 1990, but has been rising steadily ever since.[43] As a result, the industry currently has fewer, more diversified, generally larger vegetable processing firms.

Marketing, distribution, and pricing

The U.S. processed-food industry is composed principally of the food- processing and food-marketing and distribution sectors.[44] In recent years, processed fruits and vegetables accounted for an estimated 11 percent of aggregate processed food industry shipments, with processed vegetables accounting for about one-third of that amount.

The marketing and distribution sector for processed vegetables has undergone considerable change since the early 1980s. Significant increases have been reported in marketing and distribution productivity, profitability, and output.[45] The food distribution industry constitutes one of the most highly leveraged of all U.S. industries, following an extended period of numerous leveraged buyouts in recent years.[46] Competition among existing firms for an increasing share of food dollars and limited shelf space has resulted in a record number of new product introductions and escalating expenditures for advertising and promotions at the retail level.[47] An average of 287 new fruit and vegetable products have

[40] Commission staff conversations with officials of the U.S. vegetable processing industry, 1991-93.
[41] Ibid.
[42] Ibid.
[43] Various issues of *The Food Institute Report*, American Institute of Food Distribution, Fair Lawn, NJ, 1992-94.
[44] U.S. Department of Agriculture, Economic Research Service, *Food Marketing Review, 1991*, Agricultural Economic Report No. 657, Washington, DC, Mar. 1992, p. iii.
[45] U.S. Department of Agriculture, Economic Research Service, "The Food Marketing System," *FoodReview*, Vol. 14, issue 3, Washington, DC (July-September 1991), pp. 38-41.
[46] Food Marketing Review, 1991, Agricultural Economic Report No. 657, Mar. 1992, p. iii.
[47] Ibid.

been introduced annually since 1989 in an effort to reach a broader assortment of consumer markets.[48]

Since 1989, the bulk of processed vegetables has been sold through the use of a direct sales force employed by food processors, with most of the remaining products sold through independent food brokers.[49] In recent years, an increasing number of major processors (principally canners) have switched to the use of food brokers,[50] reportedly to boost lagging product lines or market segments and to reach more consumers.[51] The use of food brokers has also allowed processors to trim their own sales force, resulting in savings in health care costs and in a reduction in fixed costs.[52]

Nearly all processed vegetables are sold either in institutional, industrial, wholesale, or retail markets.[53] The bulk of the processed vegetables covered in this report are marketed by processors, their sales agents, and by brokers.[54] Independent distributors also are believed to account for a large share of the sale and distribution of processed vegetables.[55] There are some national marketing associations or organizations established principally for handling processed vegetables and some Federal or State government organizations involved in processed vegetable marketing or distribution.[56]

In recent years, increasing amounts of certain canned vegetables, especially tomatoes, have been provisionally preserved and placed in bulk storage for further processing and distribution at a later date.[57] Certain frozen and dehydrated vegetables are also processed and stored in bulk for further repacking, individually or in vegetable or other food mixtures, at a later date.[58] Since dehydrated vegetables are used in small amounts mainly as an ingredient in many other foods, they are sold in bulk principally to industrial or institutional users.

The bulk of the canned vegetables covered here (an estimated 66 percent) were packed in retail-sized containers in 1989 (the latest year for which complete statistics were available).[59] The share of total shipments of certain canned vegetables[60] in retail-sized containers is believed to have fallen slightly since 1989, as a result of greater amounts of certain vegetables (including mushrooms and tomatoes) provisionally-preserved in bulk. The remaining vegetables (all others excluding tomatoes and mushrooms) are shipped in industrial-sized or bulk packages for repacking at a later date, either into other institutional- or retail-size containers or for bulk sales to institutional users. Some firms also reprocess bulk quantities of provisionally-preserved vegetables (including corn, carrots, and beans) into other finished products. Other vegetables included here (such as asparagus, beans, peas, and pimentos) are packed principally in only retail-size containers for immediate use.

As with canners, freezers often process for many different markets. Some firms freeze principally raw products; other firms freeze both raw products and limited amounts of provisionally-preserved frozen vegetables; and still other firms repack frozen vegetables in bulk containers into institutional- and retail-size containers of individual or mixed vegetables.[61] Many firms freeze vegetables under their own private labels as well as under a number of store brands.[62]

The share of frozen vegetable shipments in institutional-sized containers has risen steadily in recent years to an estimated 69 percent of total frozen vegetable shipments (by value) in 1992.[63] Some of these shipments (including broccoli, corn, and cauliflower) were of individual frozen vegetables shipped in bulk to repackers that packed them into smaller containers of individual or mixed vegetables.[64] Some of the remaining vegetables (including onions, peas, and carrots) were various mixtures of two or more vegetables. Dehydrated vegetables are most often marketed to other manufacturers or repackers for

[48] American Institute of Food Distribution, "New Products Intros Up a Modest 4% in 1992," *The Food Institute Report*, Fair Lawn, NJ, Jan. 25, 1993, p. 3.

[49] Commission staff conversations with officials of the U.S. processed vegetable industry, 1991-93.

[50] American Institute of Food Distribution, "Heinz Completes Switch to Brokers," *The Food Institute Report*, Fair Lawn, NJ, June 6, 1992, p. 2.

[51] American Institute of Food Distribution, "Direct Sales Force Versus Brokers," *The Food Institute Report*, Fair Lawn, NJ, Jan. 18, 1993, p. 2.

[52] Ibid.

[53] U.S. Department of Agriculture, *U.S. Fruit and Vegetable Processing Industries*, Staff Report No. AGES-880216, Aug. 1988.

[54] Ibid.

[55] Ibid.

[56] Ibid.

[57] The Almanac of the Canning, Freezing, Preserving Industries, 76th ed., vol. 2 (Westminster, MD: Edward E. Judge & Sons, Inc., 1992), pp. 219-234.

[58] Ibid.

[59] Ibid.

[60] Including canned artichokes, asparagus, beans, broccoli, brussels sprouts, carrots, cauliflower, celery, collards, corn, kale, mixed vegetables, mushrooms, mustard greens, okra, onions, peas, peppers, pumpkin and squash, spinach, stew vegetables, succotash, sweet potatoes and yams, and turnips.

[61] Commission staff conversations with officials of the U.S. frozen vegetable industry, 1992-94.

[62] Ibid.

[63] Quick Frozen Foods International (Fort Lee, NJ: E.W. Williams Publications Co., Oct. 1990, Oct. 1991, Oct. 1992, and Oct. 1993), pp. A1-A18, pp. A1-A18, pp. A1-A23, and pp. A1-A24, respectively.

[64] Ibid.

further processing or packaging into other products.[65] Production of dehydrated vegetables is also marketed directly to retail consumers.[66]

Vegetables for processing generally are grown under contract between grower and processor, with raw-product quantities desired, terms of delivery, and price to the grower all agreed upon before planting.[67] Most processing vegetables are harvested mechanically, with prices generally lower and less variable than those for fresh-market vegetables.[68] Prices of the processed vegetables usually vary, depending upon such factors as quantity of product purchased, product container size, style of pack, transportation rates, and if purchases are made directly from the processor. While most processors may quote prices from a list of suggested prices, actual prices paid are often negotiated before shipment.[69] Prices may also vary depending upon prices of other processed vegetables available and upon the availability of the same products processed differently (fresh, frozen, or canned).[70]

Employment

In general, the processing of vegetables is very automated. Whether in the production of canned, frozen, or dehydrated vegetables, the labor skill levels of processing workers are generally high in this industry.[71] Productivity levels for all employees and for production workers in both the canned and frozen vegetable industry sectors have trended upward since 1988 (table 1).[72] A significant steady rise in canned vegetable productivity occurred throughout the 1988-91 period. Historically, the food processing industry has been very production oriented, concentrating more on the production of processed products to the exclusion of the marketing and distribution of such products.[73]

The total number of employees in the processed vegetable industry rose from an estimated 60,950 workers in 1988 to a high of 61,910 workers in 1990, before falling steadily to 60,660 workers in 1992 (table 2). Throughout this period, processors reduced employment through the utilization of more labor-saving equipment. Whereas employment in the canned vegetable sector rose during the 1988-92 period, the overall decline in employment during this period was somewhat more pronounced in the frozen vegetable industry, where rapidly rising imports are exerting downward pressure on domestic production of frozen vegetables.[74]

Annual wages paid to production workers rose steadily from about $985 million in 1988 to an estimated $1.1 billion in 1991, before dropping off slightly in 1992 (table 2). In 1992, the average annual wage per employee in the processed vegetable industry amounted to about $18,378, up 14 percent from $16,165 in 1988. The highest annual wages were reported for the canned and dried vegetable sectors. In these two sectors, processors are able to provisionally preserve products soon after harvest and then reprocess or repackage products at later dates throughout the year, since canned and dried vegetables have a normal shelf life of up to one year and are more economically stored for longer periods of time than are frozen vegetables. Thus, canned and dried vegetable processors are able to maintain a steady source of employment throughout the year.

Labor costs at major U.S. vegetable processing facilities are generally considered to be higher than those for principal foreign competitors.[75] Production workers at major U.S. processing facilities are believed to be unionized.[76] Production workers at smaller, regional processors, however, are not unionized and are generally believed to be paid less.[77] In addition, a greater share of production workers in regional processing operations are believed to be seasonal workers.[78]

Capital investment

During 1988-91, estimated total capital expenditures in the U.S. processed vegetable industry rose steadily, with total industry expenditures amounting to $738.2 million in 1991 (table 3). In 1991, expenditures for machinery and equipment in all vegetable sectors accounted for 75 percent of total

[65] Commission staff conversations with officials of the U.S. dehydrated vegetable industry, 1992-94.
[66] Ibid.
[67] Commission staff conversations with officials of the U.S. vegetable processing industry, 1992-94.
[68] Ibid.
[69] Ibod.
[70] Ibid.
[71] Ibid.
[72] Compiled by Commission staff from data published in *Productivity Measures for Selected Industries and Government Services*, Bureau of Labor Statistics, U.S. Department of Labor, Wash., DC, Bulletin 2440, Mar. 1994, pp. 16-17. Data for the dried or dehydrated vegetable industry sector are not available.
[73] A recent report on agribusiness in international trade stated that U.S. agribusiness's strong reliance on productivity and production-oriented ideas, to the exclusion of a more comprehensive approach to marketing, may be severely hampering the success of U.S. firms in international trade. See U.S. General Accounting Office, *U.S. Department of Agriculture: Strategic Marketing Needed to Lead Agribusiness in International Trade*, Report No. RCED-91-22, Washington, DC, Jan. 22, 1991, p. 1.
[74] Commission staff conversations with officials of the U.S. vegetable processing industry, 1991-93.
[75] U.S. Department of Agriculture, *U.S. Fruit and Vegetable Processing Industries*, Staff Report No. AGES-880216, Aug. 1988.
[76] Ibid.
[77] Ibid.
[78] Ibid.

Table 1
Processed vegetables[1] and fruits:[2] Indexes of output per employee hour for all employees and for production workers, by industry sector, 1988-92[3]

Output index (1987=100)

Employee type and sector	1988	1989	1990	1991	1992[4]
All employees:					
Canned vegetables	102.4	108.3	110.1	110.8	110.9
Frozen vegetables	101.6	103.1	103.5	103.1	102.7
Production workers:					
Canned vegetables	101.9	109.7	113.1	113.6	113.7
Frozen vegetables	101.2	103.5	102.6	102.3	102.2

[1] Includes data for canned specialty vegetable products, canned vegetables, dried vegetables, pickled vegetables, and frozen vegetables.
[2] Separate data for vegetables alone are not available.
[3] Data for 1992-93 are not available.
[4] Estimated by the Commission staff, based on trends of annual percentage changes in data for 1988-91.

Source: Compiled by Commission staff from data published in *Productivity Measures for Selected Industries and Government Services*, Bureau of Labor Statistics, U.S. Department of Labor, Wash., DC, Bulletin 2440, Mar. 1994, pp. 16-17.

Table 2
Processed vegetables: Average annual employment, hours worked, average annual wages, and average annual wages per employee, by industry sector, 1988-92[1]

Category and industry sector	1988	1989	1990	1991	1992[2]
Average annual employment (in number of workers):					
Canned vegetables	33,790	34,500	35,160	34,820	34,100
Frozen vegetables	24,430	23,660	23,240	23,600	23,320
Dried vegetables	2,730	3,330	3,510	3,300	3,240
Total	60,950	61,490	61,910	61,720	60,660
Hours worked (in thousands of hours):					
Canned vegetables	65,030	67,440	68,980	69,290	67,970
Frozen vegetable	45,130	44,120	44,300	45,480	44,930
Dried vegetables	5,010	6,120	6,840	6,420	6,300
Total	115,170	117,680	120,120	121,190	119,200
Average annual wages (in millions of dollars):					
Canned vegetables	603.0	633.5	668.8	694.2	681.0
Frozen vegetables	337.6	352.1	357.2	372.5	368.0
Dried vegetables	44.9	54.8	61.5	65.9	64.7
Total	985.5	1,040.4	1,087.5	1,132.6	1,113.7
Average annual wages per employee (in dollars):					
Canned vegetables	17,846	18,362	19,022	19,937	19,971
Frozen vegetables	13,819	14,882	15,370	15,784	15,780
Dried vegetables	16,447	16,456	17,521	19,970	19,969
Weighted average	16,165	16,925	17,559	18,361	18,378

[1] Data are for production workers.
[2] Estimated by the Commission staff, based on 1988-91 Census data and on estimated changes in employment data for 1991 and 1992 from the 1993 U.S. Industrial Outlook, Food and Beverages, p. 31-9, except as noted.

Source: Compiled by Commission staff from data published in the 1989, 1990, and 1991 Annual Survey of Manufacturers: Statistics for Industry Groups and Industries, Bureau of the Census, U.S. Department of Commerce, Wash., DC, Pub. Nos. M89(AS)-1 (June 1991), M90(AS)-1 (March 1992), and M91(AS)-1 (December 1992), pp. 1-10 and 1-11, except as noted.

Table 3
Processed vegetables: Capital expenditures, by industry sector and by type of expenditure, 1988-91

(Million dollars)

Industry sector/type of expenditure	1988	1989	1990	1991[1]
Canned vegetables:				
New:				
Machinery and equipment	246.7	279.2	335.0	385.7
Buildings and other structures	60.4	73.0	117.6	138.4
Subtotal	307.1	352.2	452.6	524.1
Used:				
Machinery and equipment	17.6	16.5	5.8	12.9
Buildings and other structures	6.9	4.1	2.2	5.1
Subtotal	24.5	20.6	8.0	18.0
Total:				
Machinery and equipment	264.3	295.7	340.8	398.6
Buildings and other structures	67.3	77.1	119.8	143.5
Total	331.6	372.8	460.6	542.1
Frozen vegetables:				
New:				
Machinery and equipment	85.0	106.2	133.2	122.8
Buildings and other structures	30.5	32.9	38.2	23.3
Subtotal	115.5	139.1	171.4	146.1
Used:				
Machinery and equipment	7.0	4.7	1.7	1.9
Buildings and other structures	.4	.3	1.5	.6
Subtotal	7.4	5.0	3.2	2.5
Total:				
Machinery and equipment	92.0	110.9	134.9	124.7
Buildings and other structures	30.9	33.2	39.7	23.9
Tota	122.9	144.1	174.6	148.6
Dehydrated vegetables:				
New:				
Machinery and equipment	15.2	34.0	29.5	29.8
Buildings and other structures	8.5	14.8	8.9	16.1
Subtotal	23.7	48.8	38.4	45.9
Used:				
Machinery and equipment	2.2	1.5	.9	.1
Buildings and other structures	1.9	1.8	1.6	1.5
Subtotal	4.1	3.3	2.5	1.6
Total:				
Machinery and equipment	17.4	35.5	30.4	29.9
Buildings and other structures	10.4	16.6	10.5	17.6
Total	27.8	52.1	40.9	47.5
Grand total	482.3	569.0	676.1	738.2

[1] The most recent year for which data are available.

Source: Estimated by the staff of the U.S. International Trade Commission based on official statistics reported in the *Annual Survey of Manufacturers: Statistics for Industry Groups and Industries*, Bureau of the Census, U.S. Department of Commerce, Wash., DC, Pub. No. M89(AS)-1 (June 1991), p. 1-46, Pub. No. M90(AS)-1 (March 1992), p. 1-46, and Pub. No. M91(AS)-1 (December 1992), p. 1-46.

capital expenditures. Nearly all of such expenditures went for new machinery and equipment, and most of the remaining expenditures for new plant construction. Capital expenditures were the greatest in the canned vegetable industry sector, where expenditures rose steadily throughout the 1988-91 period as processors opted to purchase new, more state-of-the-art machinery and equipment.[79]

Capital expenditures in the frozen vegetable industry sector rose steadily from 1988 to 1990, before falling off in 1991 following the closing of several freezing plants (table 3). As with canned vegetables, expenditures for machinery and equipment accounted for the bulk of total capital expenditures in this sector, with most expenditures also going for new machinery and equipment along with smaller capital expenditures for new buildings and other structures. Most of these

[79] Ibid.

expenditures are believed to have been for labor-saving equipment and improved packaging and labeling machinery.[80]

Capital expenditures in the dehydrated vegetable industry sector rose irregularly during 1988-91, with processors spending more for new machinery and equipment and for new buildings and other structures (table 3). This sector is a mature industry, with overall demand for dehydrated vegetables somewhat stagnant in recent years.[81] Some of the expenditures in this sector are believed to have been for the purchase of existing firms by others.[82]

Capital expenditures in the canned and frozen vegetable industries will likely continue at current or nearly current rates as demand for both industries' products are forecast to rise somewhat over the next 5 years.[83] There has been an overall rising export demand for canned and frozen vegetables in recent years and packaging is now geared more toward specific export markets. As U.S. firms become more successful in identifying and meeting foreign market demand, exports should continue to drive increasing capital expenditures.[84] Expenditures in the dehydrated vegetable industry sector are expected to remain about the same or decline somewhat as dehydrated vegetables face declining demand in both U.S. and foreign markets.[85]

Research and development

Data on recent aggregate industry-wide research and development (R&D) expenditures in the processed vegetable industry are not available. Historically, R&D expenditures as a percent of total U.S. sales of canned, frozen, or dried vegetables are believed to have averaged less than 1 percent annually.[86] Such expenditures have risen slightly in recent years, but may vary considerably each year among firms, often directly in response to existing economic conditions, with some firms reported to have spent considerably more proportionally than others on R&D.[87] In recent years, many firms have been forced to enact major cost-reduction strategies in the face of increasing competition from domestic and foreign firms and because of escalating debt levels.[88] According to industry sources, the first expense a firm cuts in order to reduce costs is R&D spending.[89]

A large amount of R&D expenditures have also been for the development of new, more technologically advanced machinery, with much of this effort and expense borne by the packaging machinery industry.[90] In some instances, processing machinery and equipment suppliers have entered into joint R&D programs with food processors,[91] in an effort to cut total costs borne by each partner, to improve production-line efficiency, and to reduce product development time.[92] Such programs also allow for the testing of new machinery under actual in-plant operating conditions, subsequently reducing product development time and the overall amount of time necessary to get new machinery on line.[93]

In recent years, R&D expenditures are believed to have risen in a number of other areas, including the area of new product development.[94] In response to changing patterns of consumption, technological innovations have been introduced to assure the production of high quality, low-caloric, nutritious, and flavorful foods in greater varieties and with greater convenience in preparation. Since 1989, vegetable processors have changed their production processes to better satisfy health-conscious consumers through the reduction of sugar, fats, sodium, and other additives in processed foods.[95] For many processors, however, high risk and capital costs associated with the introduction of a new product have restricted the development of new products and encouraged the extension of existing product lines.[96]

Packaging and labeling are additional areas of recent interest and activity among vegetable processors. Since 1989, a great deal of research has been conducted on aseptic packaging. With this process, foods are processed in such a manner that freshness, flavor, and quality are all retained in the

[80] Annual Survey of Manufactures: Statistics for Industry Groups and Industries, Bureau of the Census, U.S. Department of Commerce, Washington, DC, Pub. No. M91 (AS)-1 (December 1992).
[81] Ibid.
[82] Ibid.
[83] U.S. Department of Commerce, "Processed Fruits, Vegetables, and Specialties," *1992 U.S. Industrial Outlook*, Washington, DC, ch. 32, p. 32-13.
[84] Ibid.
[85] Commission staff conversations with officials of the U.S. dehydrated vegetable industry, 1991-93.
[86] U.S. Department of Agriculture, *U.S. Fruit and Vegetable Processing Industries*, Staff Report No. AGES-880216, Aug. 1988, pp. 49-52.
[87] Ibid.
[88] Food Marketing Review, 1992-93, Agricultural Economic Report No. 678, Apr. 1994, p. 5.
[89] Ibid.
[90] U.S. Department of Commerce, "Packaging Machinery," *1994 U.S. Industrial Outlook*, Washington, DC, Jan. 1994, ch. 17, p. 17-10.
[91] U.S. Department of Commerce, "Packaging Machinery," *1992 U.S. Industrial Outlook*, Washington, DC, Jan. 1993, ch. 17, p. 19-14.
[92] U.S. Department of Commerce, "Food Products Machinery," *1993 U.S. Industrial Outlook*, Washington, DC, Jan. 1993, ch. 17, p. 17-15.
[93] Ibid.
[94] "R&D=Retrenched & Diminished," Food Engineering, vol. 65, No. 9, (Radnor, PA: Chilton Co., Sept. 1993), pp. 97-107.
[95] Ibid.
[96] Ibid.

food preparation without the package having to be refrigerated. According to industry sources, advances in aseptic packaging have led to an increase in the consumption of certain vegetables, including tomato paste and sauce.[97]

Recently, industry officials have identified six very important areas of interest that will be targeted in future R&D spending: food safety; diet, nutrition, and health; biotechnology; environmental issues; molecular basis of food functionality; and engineering, processing, and packaging.[98] Since 1989, genetic engineering and food irradiation have created a great deal of concern among processors and consumers. These issues, however, have largely been replaced by other more current issues concerning food bacteria, food handling, and pesticide residues in foods.[99]

U.S. government regulations and regulatory issues

Numerous Federal and State laws and regulations apply to the processed vegetable industry. Many of the regulations, such as those issued by the U.S. Department of Agriculture (USDA) in the form of product grade standards, apply specifically to vegetables, whereas others, such as those issued by the Occupational Safety and Health Administration (OSHA), Food and Drug Administration (FDA), and Environmental Protection Agency (EPA), apply generally to the vegetable processing industry.[100] Some of the more important regulations include the following: (1) OSHA regulations defining worker safety and health, as well as safe working conditions; (2) FDA regulations that define acceptable product identity (including labeling), quality, and fill of containers; (3) EPA laws governing waste discharge and surrounding air and water pollution; and, (4) numerous USDA grades and standards for processed products.[101]

A number of other laws also affect the U.S. processed vegetable industry, including the Fair Packaging and Labeling Act[102] which requires that certain information regarding product contents be included on the package labels.[103] More recent legislation affecting the vegetable processing industry includes the Nutrition Labeling and Education Act (NLEA) enacted by Congress in 1990.[104] New regulations issued under the act, which became effective on May 8, 1993, replaced the existing U.S. Recommended Daily Allowance (USRDA) standards with Reference Daily Intake (RDI) values for all food components and nutrients currently required to be listed. A listing of the quantity and percentage of the RDI values is now required. In addition, daily reference values have been established for carbohydrates, fats, fatty acids, cholesterol, sodium, potassium, and dietary fiber.[105]

Under the Federal Food, Drug, and Cosmetic Act (FDCA),[106] the distribution of adulterated products (foods determined to be unsafe or produced under unsanitary conditions) or misbranded products (products labeled with text, designs, or pictures that are false, misleading, or lacking necessary information), whether domestically produced or imported, is prohibited. Under section 401 of the FDCA, standards of identity, of quality, and of fill are defined for all processed foods. Identity standards require that the label include such things as the food definition, a product name, and the listing of certain ingredients. Quality standards are minimum standards above which the quality of all processed vegetables must fall. Fill-of-container standards define how the container contents are measured and how full the container must be. Additional requirements that all food processors must meet include the conspicuous declaration of any or all food additives (such as preservatives and coloring) on the label.

U.S. government support programs

Few of the vegetables covered in this digest are provided with any type of direct government support for raw-product production, processing, or pricing. However, there are two programs specific to agricultural crops for which certain vegetables covered herein, grown in specific areas of the country, are eligible. The first is Federal Crop Insurance, which provides farmers with insurance against yield loss because of drought, excess moisture, frost, freeze, hail,

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[97] U.S. Department of Agriculture, *U.S. Fruit and Vegetable Processing Industries*, Staff Report No. AGES-880216, Aug. 1988, pp. 49-52.

[98] "Looking Ahead to New Technologies in Food Processing," *Food Production Management*, vol. 116-5, (Baltimore, MD: CTI Publications, Inc., Nov. 1993), p. 11.

[99] "Study Reveals Lack of Public Understanding of Food Safety," *Food Production Management*, vol. 117-3, (Baltimore, MD: CTI Publications, Inc., Sept. 1994), p. 12.

[100] U.S. Department of Agriculture, *U.S. Fruit and Vegetable Processing Industries*, Staff Report No. AGES-880216, Aug. 1988, p. 56.

[101] Ibid.

[102] P.L. 89-755, 80 Stat 1296, Nov. 3, 1966, 15 U.S.C. § 1451 et seq.

[103] U.S. Department of Agriculture, *U.S. Fruit and Vegetable Processing Industries*, Staff Report No. AGES-880216, Aug. 1988, p. 63.

[104] P.L. 101-535, 104 Stat. 2353, Nov. 8, 1990. The act was amended in 1993. See P.L. 103-80, 107 Stat 773, Aug. 13, 1993.

[105] "Proposed NLEA Regulations," *Food Production/Management*, vol. 115-8, (Baltimore, MD: CTI Publications, Inc., Feb. 1992), pp. 32-33.

[106] 21 U.S.C. § 301 et seq.

or other such occurrences.[107] The second is protection provided through the Farmer's Home Administration when a disaster (for instance, floods or earthquakes) has been declared by the Federal government. Disaster protection is also provided through the Commodity Credit Corporation for the restoration of damaged or impaired land.[108]

The USDA provides funding for some crop research programs through cooperative arrangements with certain U.S. state universities.[109] Although often limited in scope, these arrangements have provided much valuable information on crop production in such areas as seed and varietal development, pest control, and irrigation. The USDA also provides for product inspection on a fee basis.[110] In addition, the U.S. Army Corps of Engineers constructs and maintains certain U.S. transportation waterways, performing such tasks as lock maintenance and canal dredging on a regular basis.[111]

Dry beans, peas, and lentils benefit directly from government support for marketing efforts only, not for production. The principal support program is the Market Promotion Program (MPP), administered by the USDA Foreign Agricultural Service. This program, part of the Agricultural Trade Act of 1978, authorizes the USDA to use funds from the Commodity Credit Corporation to

> encourage the development, maintenance, and expansion of commercial export markets for agricultural commodities through cost share assistance to eligible trade organizations that implement a foreign market development program.[112]

The major vegetables receiving assistance and the amount of assistance received since 1989 are shown in table 4.

Dry peas and lentils also are affected indirectly by government production support in that they are grown as a rotation crop with wheat and barley, which receive government production support. These vegetables do not receive support themselves. Wheat and barley farmers are faced with the decision of whether to trade their returns from growing these program crops for the returns from growing peas and lentils, which have no price or income support available. Under the Food, Agriculture, Conservation, and Trade Act Amendments of 1991,[113] eligible farmers of crops provided government support are allowed to plant up to 20 percent of their wheat and feed grain base acreage into dry peas and lentils. In 1992/93, about 80 percent of the wheat and barley acreage planted in the primary producing areas of Washington and Idaho was enrolled in a crop support program.

Dry beans, peas, and lentils also are eligible for commercial export credit programs. Under the Export Credit Guarantee Program (GSM-102),[114] administered by the FAS, repayment of short-term loans is guaranteed for eligible countries that buy U.S. farm products. Although exports of dry beans, peas, and lentils under this program have been variable in recent years, U.S. exports of dry peas under this program amounted to $700,000 in crop year 1991/92, about the same amount as in past years. According to a General Accounting Office study,[115] the GSM-102 program probably results in increased U.S. agricultural exports because it helps to offset export credit programs of other exporting countries while enabling foreign buyers with limited hard currency to purchase U.S. products.

Environmental considerations

A number of environmental considerations, including issues concerning pesticide usage, have been raised in the processed vegetable industry since 1989. Some concerns include the overall use of pesticides in agricultural operations, pesticide exposure by farm workers, the effects of pesticide application on ground water quality, and the detection of pesticide residues in foods.[116] Pesticide usage on agricultural crops is tightly regulated. An increasing public awareness about pesticide usage in recent years has led to the removal of certain chemicals from the market or the restriction of usage for others, changes that in either case tend to raise raw-product production costs which are passed on through to processors.[117]

Industry and consumer attention has also been focused on the increasing accumulation of packaging materials in U.S. landfills since the early 1980s.

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[107] Joy Harwood, "Federal Crop Insurance: Issues and Possibilities," *Agricultural Outlook*, Nov. 1991, pp. 34-39.

[108] U.S. Department of Agriculture, Agricultural Stabilization and Conservation Service, *Agriculture Handbook No. 476*, Washington, DC, Jan. 1985.

[109] Commission staff conversations with officials of the U.S. processed vegetable industry, 1991-93.

[110] Ibid.

[111] Commission staff conversations with officials of the U.S. dehydrated vegetable industry, 1991-93.

[112] U.S. Department of Agriculture, Office of Public Affairs, "USDA Announces Market Promotion Program Allocations for Fiscal 1994," *NEWS*, Release No. 0371.94, Washington, DC, May 6, 1994.

[113] P.L. 102-237, Dec. 13, 1991, 105 Stat. 1818.

[114] Established under the Agricultural Trade Development and Assistance Act of 1954, July 10, 1954, 469, 68 Stat. 454.

[115] U.S. General Accounting Office, *Commodity Credit Corporation's Export Credit Guarantee Programs*, GAO/NSIAD-88-194, Washington, DC, June 1988.

[116] Commission staff conversations with officials of the U.S. processed vegetable industry, 1991-93.

[117] *Western Grower & Shipper* (Western Grower & Shipper Publishing Company: Irvine, CA), various issues, 1990-93.

Table 4
Processed vegetables: Market Promotion Program funds[1] allocated, by crop, 1989-93[2]

(In thousands of dollars)

Vegetable crop	1989	1990	1991	1992	1993
Asparagus[3]	(4)	(4)	(4)	210	340
Beans, dry	1,000	(4)	620	310	1,060
Corn	1,250	1,250	3,230	2,790	1,620
Peas and lentils	1,000	(4)	(4)	1,160	420
Potatoes[3]	4,700	4,800	3,930	5,600	2,670
Tomatoes	(4)	(4)	600	606	210

[1] During 1989-90, funds were allocated under the Target Export Assistance program.
[2] Data are for fiscal years.
[3] Includes fresh and processed.
[4] No funds allocated.

Source: Compiled by Commission staff from data reported in U.S. Department of Agriculture, Office of Public Affairs, "USDA Announces Market Promotion Program Allocations for Fiscal 1994," *NEWS*, Release No. 0371.94, Washington, DC, May 6, 1994.

According to industry sources,[118] most levels of government are trying to develop legislation that will help control future proliferation of solid wastes, extend the usable life of existing landfills, protect the environment from unlawful disposal of packaging materials, and develop workable and enforceable recycling programs. Consequently, processors have shifted toward the greater use of packaging materials that are recyclable or are more readily broken down (biodegradable) in landfills.[119] Processors are also switching to the use of stronger, lighter, more fibrous packaging materials that will displace the use of greater amounts of other packaging materials.[120]

Vegetable-processing operations are also subject to numerous local, State, and Federal regulations. In recent years, processors have had to install filtration and scrubber systems to clean their discharge air emissions. Any wastewater discharged from a processing plant into municipal sewers has to be treated to remove solid wastes and processing solvents. To cut back the amounts of solid waste, processors have encouraged the use of vegetable processing solid wastes for animal feeds and fertilizers with some success.[121]

Globalization

In recent years, U.S. vegetable processing firms have increased purchases of vegetables from foreign producers, especially those in Mexico. U.S. producers also are believed to have increased their purchases from foreign producers, both of finished products and of processed vegetables in bulk.[122] A renewed interest by domestic producers in increasing their domestic and global market share has led to the establishment of processing subsidiaries in foreign countries.

Some large-volume U.S. vegetable processors own processing operations in a number of other countries, although data on the extent of such operations are unavailable.[123] These operations process locally grown raw products principally for distribution in that country or geographic area (for instance in the EU).[124] In Mexico, however, there are a number of U.S. multinationals processing frozen vegetables for sale in U.S. markets, including Philip Morris/Kraft, Pillsbury Co. (Green Giant), H.J. Heinz, Dean Foods, McCormick & Company, and Campbell Soup Co.

The amount of direct U.S. investment in foreign operations of a non-controlling nature is unknown. Also, some U.S. firms have entered into joint ventures and licensing arrangements with foreign processors. Although the number of affiliates has fallen, sales by foreign affiliates of U.S. fruit and vegetable processing firms have risen in recent years and amounted to $5.5 billion in 1992 (the most recent year for which data are available).[125]

Since 1989, U.S. firms have both opened new processing facilities abroad and acquired existing ones.[126] Many of the purchases of existing foreign operations by U.S. firms have been of firms processing complementary goods or a more extensive line of some of the same products. Through such purchases, U.S. processors have been able to more readily access established channels of distribution in foreign markets

[118] "Packaging Machinery," *1994 U.S. Industrial Outlook*, p. 17-10.
[119] Ibid.
[120] Ibid.
[121] Commission staff conversations with officials of the U.S. vegetable processing industry, 1992-94.
[122] Ibid.
[123] Ibid.
[124] Ibid.
[125] Food Marketing Review, 1992-93, Agricultural Economic Report No. 678, Apr. 1994, p. 144.
[126] Ibid.

and to offer a more complete line of processed foods.[127] Also, the entry of U.S. processors into other countries has afforded U.S. products and producers greater visibility and improved their competitiveness in those markets. There also has been a recent trend of large U.S. holding companies acquiring smaller processing firms overseas.[128]

There has been a considerable amount of foreign investment in U.S. vegetable processing operations in recent years, primarily as a way for foreign firms to gain access to distribution channels in the United States.[129] The amount of direct foreign investment in U.S. operations is not known. The number of foreign acquisitions of U.S. fruit and vegetable processing firms has fallen in recent years to 27 in 1993.[130] The number of foreign acquisitions of U.S. firms' foreign operations amounted to four in 1993.[131]

Consumer Characteristics And Factors Affecting Demand

Overall market conditions

The overall U.S. market for canned vegetables is described as a mature market,[132] with most of the recent increase in production occurring as a result of increased exports and of the production of certain canned vegetables and other foods containing vegetables. An increase in U.S. ethnic populations, along with the increasing interest in nontraditional food preparations throughout the general population, has led to an increase in demand for various canned nontraditional vegetables (for example, sauces and dips).[133] Demand for these vegetables is expected to outpace demand for other nontraditional canned vegetables over the next few years.[134] Since most dehydrated vegetables are added to other foods in small amounts, the demand for dehydrated vegetables depends upon the demand for these other products and has trended slowly upward since 1989.

The overall U.S. market for frozen vegetables is growing, especially for frozen potato products and certain other vegetables that are major export items.[135] The demand for nontraditional style frozen vegetables also is rising, along with demand for certain higher valued-added vegetables and vegetable mixtures.[136] The demand for frozen vegetables continues to rise, especially for those families demanding a variety in frozen vegetable selection but with limited time for meal preparation. The demand for frozen, convenience foods also rises as the number of two-income families, women in the work force, and single-parent households rises.[137]

According to industry sources,[138] the greatest net change in food expenditures for individual items between 1980 and 2000 will be an increase in spending for vegetables. During the same period, the number of households with members between the ages of 35 and 54 is expected to increase the most. The highest daily per-capita food consumption occurs within the 35 to 50 and 50 to 64 years old age brackets. The resulting effect on the demand for processed food could be significant, both in terms of increasing total food demand and in creating demand for newer products or product formulations,[139] since this group tends to spend the most on food consumption both at home and away.[140]

Consumer characteristics and demand factors

The demand for processed vegetables is affected by a number of consumer characteristics and other factors. At the retail level, demand is influenced by such consumer demographic factors as overall U.S. population growth and the share of the population in specific age brackets, household size, the amount of food consumed at home as opposed to that consumed away from home, per-capita personal disposable income, regional population distribution, per-capita consumption.[141] Demand is also influenced by preferences for certain nontraditional styles or kinds of foods, the number of two-income families, the number of women in the labor force, overall availability of product, substitutability of other products, and product price. At the institutional/industrial level, demand is influenced more by price, availability and consistency of adequate supply, and product quality.[142]

Geographic distribution of U.S. households affects regional demand for processed vegetables.[143] In 1985, over one-half of all households were located in

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[127] Ibid.
[128] The Food Institute Report (American Institute of Food Distribution: Fair Lawn, NJ), various issues, 1990-93.
[129] Ibid.
[130] American Institute of Food Distribution, "Food Industry Mergers/Acquisitions Rise In 1993, *The Food Institute Report*, Fair Lawn, NJ, Mar. 7, 1994, p. 3.
[131] Ibid.
[132] U.S. Department of Commerce, "Food and Beverages," *1993 U.S. Industrial Outlook*, Washington, DC, Jan. 1993, ch. 31, p. 31-9.
[133] U.S. Department of Agriculture, *U.S. Fruit and Vegetable Processing Industries*, Staff Report No. AGES-880216, Aug. 1988, p. 51.
[134] "Food and Beverages," *1993 U.S. Industrial Outlook*, p. 31-11.
[135] Ibid.
[136] Ibid.
[137] Ibid.
[138] "Demographic Directions for Food Marketing: Household Food Expenditure Projections to 2000," *The Food Institute Report*, Sept. 1987, p. 2.
[139] Ibid., p. 5.
[140] Ibid., p. 17.
[141] Ibid.
[142] Ibid.
[143] Ibid.

10 States, with States along the Atlantic Seaboard accounting for over two-fifths of this 10-State total. Since 1980, the South and West regions have experienced the greatest increase in the number of households.[144] In these regions, the largest number of households are in the 45 to 64 years old age bracket or in the highest spending and consuming bracket, with the second largest number being in the 25 to 39 age group. Demand for processed vegetables is also affected by the amount of disposable personal income available.[145] In those geographic areas with a greater number of two-income families, homeowners generally have less time for home-prepared food but more disposable income available for purchasing higher-priced prepared foods.[146]

A number of other factors also have affected processed vegetable purchases in recent years. Demand for processed vegetables is often positively influenced by the number of new product introductions, even though in recent years most of these products were previously introduced foods with some flavor enhancement or other minor change made to them.[147] In 1993, the number of new processed-food products amounted to 12,897 and the number of new fruit and vegetable products amounted to 407.[148] These numbers have risen considerably since 1989. According to industry sources,[149] processors attempt to capture market share through the use of established brands for these new products.

Processors reportedly are also trying to capitalize on the rising demand of today's health-conscious consumers for foods that combine taste, nutrition, and convenience.[150] Such firms are emphasizing their healthful products and nutritional benefits on their product labels and in product advertising. According to industry information, "low" or "no fat" and "low" or "no cholesterol" were used on 17.5 and 14.6 percent, respectively, of new-product labels in 1991.[151] On other new product labels, 11.7 percent include "low" or "no salt;" 11.5 percent, "low calorie;" 7.2 percent, "low" or "no sugar;" and, 3.4 percent,"high fiber."

[144] Ibid., p. 19 and pp. 125-127.
[145] Ibid.
[146] U.S. Department of Commerce, "Private Residential Construction," *1992 U.S. Industrial Outlook*, Washington, DC, ch. 5, Jan. 1992, p. 5-5.
[147] "Demographic Directions for Food Marketing: Household Food Expenditure Projections to 2000," *The Food Institute Report*, Sept. 1987.
[148] American Institute of Food Distribution, "New Product Intros Finish Ahead in 1993," *The Food Institute Report*, Fair Lawn, NJ, Jan. 24, 1994, p. 3.
[149] American Institute of Food Distribution, "New Products Hit All-Time High in 1991," *The Food Institute Report*, Fair Lawn, NJ, Jan. 25, 1992, p. 3.
[150] American Institute of Food Distribution, "Health Claims Appearing on More New Products," *The Food Institute Report*, Fair Lawn, NJ, Feb. 1, 1992, p. 4.
[151] Ibid.

The level of demand for processed vegetables is also influenced by price. The average annual retail price index for prices of processed vegetables has risen steadily since 1989, as shown in the following tabulation (1982-84=100):[152]

Vegetable preparation	1989	1990	1991	1992	1993
Processed[1]	124.2	127.5	128.5	128.8	130.8
Frozen	122.5	127.4	129.6	130.9	133.5
Canned and dried	125.7	128.2	128.6	128.4	130.1

[1] Includes frozen, canned, and dried.

FOREIGN INDUSTRY PROFILE

The countries reporting the greatest amount of processed vegetable production in recent years included Germany, France, Italy, the United Kingdom, Spain, Canada, Mexico, Taiwan, Korea, Hong Kong, and Japan. Many foreign producers are global processors and are as technologically advanced in production processes as U.S. producers.[153] Many of these firms are solely foreign owned and operated; some are wholly-owned subsidiaries of U.S. firms or are operated as joint ventures. In addition, some foreign producers process vegetables for their home market under licensing agreements with major U.S., Asian, or European processors.[154] These processors all have access to labor and raw material supplies, and most employ the latest production technology.[155]

European Union

The countries in the European Union (EU) supplying the greatest amounts of processed vegetables include Germany, France, Italy, the United Kingdom, and Spain.[156] A number of other EU countries produce a more limited line of processed vegetables, or process mainly vegetables in bulk for repacking by other firms. In some instances, firms are processing in retail-size containers ready for sale, while other firms are processing both in retail-size containers and in bulk for bulk sales or for further repacking.[157] As with other global competitors, some major U.S. food processors are having products processed for sale through their subsidiaries in EU countries.[158]

[152] U.S. Department of Agriculture, Economic Research Service, *Vegetables and Specialties: Situation and Outlook Report*, VGS-263, Washington, DC, July 1994, p. 56.
[153] Commission staff conversations with officials of the U.S. vegetable processing industry, 1992-94.
[154] Ibid.
[155] Ibid.
[156] *FAO Yearbook of Trade and Commerce, 1992*, Food and Agriculture Organization of the United Nations, Rome Italy: 1993, vol. 46, 1993.
[157] Commission staff conversations with officials of the U.S. vegetable processing industry and the U.S. Department of Agriculture, 1992-94.
[158] Ibid.

The bulk of EU processed vegetable production in recent years has taken place in more industrialized countries.[159] European firms historically have acquired processing technology from U.S. and other global producers, as well as from each other, and have transferred the technology necessary for running these facilities from their domestic operations to their foreign subsidiaries.[160] Some EU suppliers that started as regional suppliers have increased in production volume and are now becoming important global competitors.[161]

An increasing supply of raw products in certain EU countries has led major U.S. processors to shift some of their production to these countries in recent years.[162] EU suppliers benefit also from a number of raw-product production and processing programs, and export support programs not available to non EU-producers.[163] As EU processors face increasing competition in global markets from producers in Central and South America as well as in Asia, however, the number of EU frozen vegetable processors is expected to decline in the near future with the remaining firms becoming larger and more competitive.[164]

Canada

Historically, dry bean, pea, and lentil producers and certain food processing firms in Canada have been U.S. firms' leading global competitors in world processed vegetable markets. In recent years, however, the number of firms in the vegetable canning and freezing industry in Canada has changed, with a few remaining freezers that compete globally and some vegetable canners.[165] Also, several Canadian processors are subsidiaries of U.S. firms. Although some Canadian-owned firms share some of the same export markets with U.S. canners and freezers (including in the EU and Asia), in general these firms are not thought to be as competitive or to be offering as large a selection of processed vegetables as U.S. firms.[166]

Vegetable farms in Canada are comparable in most respects to those in northern states in the United States, producing many of the same vegetables grown in those states.[167] In addition, many of the cost factors affecting the competitiveness of Canadian firms (that is, R&D levels, availability of raw materials and production technology, climate, and transportation infrastructure) are similar to those in the United States. However, U.S. processors appear to have greater access to reasonably priced capital and benefit from greater economies of scale.[168] Canadian consumption of processed vegetables in recent years has not been sufficient to sustain a larger Canadian processing industry, resulting in some firms selling out or going out of business. Consequently, a greater amount of Canadian production has shifted to subsidiaries of U.S. firms.[169]

Mexico and Central America

Many of the major vegetable processors in Mexico and Central America are subsidiaries of U.S. firms and process vegetables grown in those countries principally for sale in the United States.[170] Since 1989, there has been a return of capital to Central American countries, attributable to their growing economies and the greater privatization of state enterprises.[171] With the implementation of NAFTA, Mexico is expected to be the most competitive Central American country selling in the U.S. market, since its raw-product supplies and labor are plentiful and processed product quality high.[172]

Mexico

The vegetable-processing industry in Mexico has undergone a significant restructuring in the past decade. Mexico has a medium-sized, but growing, technologically developed vegetable-processing industry, primarily as a result of technology transfer from U.S. firms.[173] Also, Mexico has a diverse climate that varies from tropical in coastal areas to temperate in higher elevations and is able to grow a wide variety of vegetables for processing. It is expected that vegetables grown for processing in Mexico will increase substantially in the future.[174] With the recent change in the ejido program, which previously limited the amount of direct land ownership to 10 hectares per

[159] Ibid.
[160] "Processing Tomato Subsidies in the International Market," Trends in the Global Processing Tomato Industry, *California Tomato Grower*, May 1991, pp. 4-5.
[161] Commission staff conversations with officials of the U.S. processed vegetable industry, 1991-93.
[162] Ibid.
[163] "Europe '89," *FoodNews* (Kent, UK: The FoodNews Company, Sept. 1989), pp. 38-50.
[164] "News From Europe," *International Quick Frozen Foods*, vol. 36, No. 2 (Fort Lee, NJ: E.W. Williams Publishing Co., Oct. 1994), pp. 40-85.
[165] Commission staff conversations with officials of the U.S. Department of Agriculture, 1992-94.
[166] Ibid.
[167] Ibid.
[168] Ibid.
[169] Ibid.
[170] Commission staff conversations with officials of the U.S. processed vegetable industry, 1992-94.
[171] USITC Pub. 2521, "U.S. Market Access in Latin America: Recent Liberalization Measures and Remaining Barriers," June 1992, pp. 2-7 to 2-11.
[172] Commission staff conversations with officials of the U.S. processed vegetable industry, 1992-94.
[173] U.S. Department of Agriculture, Economic Research Service, "Food Processing in Mexico Attracts U.S. Investment," *FoodReview*, vol. 16, issue 1, Washington, DC, Jan.-Apr. 1993, p. 22.
[174] Ibid.

person, larger areas will likely be placed under single crop production, resulting in economies of scale more similar to those of farmers in the United States.[175]

In recent years, Mexico has become a major competitor in some U.S. market segments to U.S. vegetable processing firms. Currently, Mexico's comparative advantage over U.S. and other industrialized-nation producers in labor costs is offset in large part by a less well-developed transportation and distribution infrastructure. As infrastructure and production technology continue to improve, Mexican processors will likely become even more competitive in export markets.[176] Spurred by increasing demand from a growing population, Mexican producers are expected to produce more processed vegetables, for both domestic consumption and for export.[177]

The competitiveness of vegetable processors in Mexico has increased as a result of a number of other actions since 1989. The Government of Mexico has expressed its desire for its producers to become more export oriented and more competitive in foreign markets.[178] Recently, some Mexican processors and marketers have acquired production and distribution facilities in the United States, principally to support sales in U.S. markets. Mexico has liberalized its foreign investment regulations in recent years.[179] As a result, nearly 20 U.S. food processing firms (including vegetable processors) had 45 affiliates or joint-venture operations in Mexico in 1992.[180] Some of these firms, including Campbell Soup, BirdsEye Frozen Foods, and Green Giant, have operated in Mexico for many years. Other firms have begun operation only since about 1989. Since 1989, a number of U.S. firms, including J.R. Simplot and McCormick & Co., have acquired Mexican firms, entered into joint-venture agreements or licensing arrangements with Mexican firms, or have opened sales and distribution offices in Mexico.[181]

Central America

Guatemala and Honduras have been suppliers of limited amounts of certain processed vegetables for a number of years, principally for sale in the United States. Costa Rica has been a supplier of a few processed vegetables also. The number of vegetable processors both in Guatemala and Honduras is estimated at less than 10, with most of these firms believed to be subsidiaries of U.S. firms or locally-owned foreign producers processing U.S.-labeled vegetables under contract with larger U.S. firms.[182] These foreign producers have shared in technology transfer from their U.S. parent firms or working partners. Their advantage in lower labor costs has been offset by problems in growing sufficient raw product of adequate quality and consistency.[183] Also, processors in Guatemala and Honduras have faced increasing competition from processors in Mexico. Thus, the size of the vegetable processing industries in Guatemala and Honduras has not grown appreciably in the past decade.

South America

There are a growing number of major South American vegetable processors which now are competitive on a global scale.[184] The major processing countries are Argentina, Brazil, Chile, and Venezuela. Processors in these countries historically have lacked sufficient raw-product production and the production technology and investment needed to develop a viable industry.

Since 1989, the economic situation in many South American countries has improved, however. Governments in these countries have liberalized their foreign investment regulations[185] and established various government export support programs.[186] Processors in these countries have also benefitted from technology transfer. As a result, these processors have become significant producers of a limited number of vegetables, such as tomato paste, intended principally for sale in U.S. markets.[187] Chile, in particular, has instituted market-based economic policies and has become a world-class producer and exporter of an assortment of processed vegetables.

Asia

Major Asian competitors in global processed vegetable markets include Taiwan, Korea, Hong Kong, China, and Japan. Their exports are principally products not consumed in great quantities in their home countries.[188] Exports from Hong Kong were either transshipments from Taiwan or China, or finished products of provisionally-preserved vegetables

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175 Ibid.
176 Ibid.
177 Ibid.
178 Ibid., p. 21.
179 "U.S. Market Access in Latin America: Recent Liberalization Measures and Remaining Barriers," June 1992, pp. 2-7 to 2-10.
180 "Food Processing in Mexico Attracts U.S. Investment," Jan.-Apr. 1993, pp. 20-24.
181 Ibid.
182 Ibid.
183 Ibid.
184 U.S. Department of Agriculture, Economic Research Service, *Global Review of Agricultural Policies*, Staff Report No. AGES-880304, Washington, DC, May 1988, pp. 71-134.
185 "U.S. Market Access in Latin America: Recent Liberalization Measures and Remaining Barriers," June 1992, pp. vi-viii.
186 Global Review of Agricultural Policies, May 1988, p. 73.
187 Ibid., p. 72-74.
188 Commission staff conversations with officials of the U.S. processed vegetable industry, 1992-94.

from Taiwan.[189] In the early 1980s, China became a global exporter of processed vegetables, mainly of dried and canned vegetables to the United States.

Since 1989, the number of vegetable-processing firms in Taiwan, Korea, and Hong Kong has declined. Processors in Taiwan, in particular, have faced increased restrictions in the form of import quotas and minimum import prices in some foreign markets,[190] and preference purchase programs wherein locally produced products are purchased before their products are allowed to be sold.[191] Taiwan, Korea, and Hong Kong have also faced temporarily increased duties in the United States. Subsequently, many processors in these countries have shifted to the production of other crops. At the same time, producers in these countries have faced growing competition from processors in China and Japan.

China is the leading Asian country competitor to U.S processors.[192] Only in a few areas (for instance, canned mushrooms and dehydrated onions and garlic) does China approach the level of technological advancement of U.S. processors.[193] But the raw-product and processed vegetable industry sectors in China are both growing, with their primary emphasis on production of processed vegetables for export markets.[194] As with Taiwan and Korea in recent years, China has faced the imposition of sanctions and restrictive import-licensing requirements for Chinese exports in certain markets. The lack of unified export policies, wherein the volume and timing of exports is controlled or tracked by some association or governing body, on shipments to such markets as the EU[195] and the United States has led to such problems.[196] With the help of a more orderly, industry- or government-controlled export promotion program, the acquisition of advanced processing technology, and a nearly limitless supply of hand labor for raising vegetables for processing, China is expected to become a more serious global competitor within the next 5 years.[197] Japan is also a major producer and exporter of some processed vegetables.

[189] Ibid.

[190] "China Recovers from Setback to Mushroom Sales," *FoodNews* (Kent, UK: The FoodNews Company, Aug. 7, 1992), p. 7.

[191] "Global Review of Agricultural Policies," Staff Report AGES 880304, pp. 334-340.

[192] "Frozen Food Star Rises Over China As Modernizing Economy Heats Up," *Quick Frozen Foods International*, vol. 35, No. 3 (Fort Lee, NJ: E.S. Williams Publishing Co., Jan. 1994), pp. 148-156.

[193] Ibid.

[194] Commission staff conversations with officials of the U.S. processed vegetable industry, 1992-94.

[195] "China Recovers From Setback to Mushroom Sales," *FoodNews* (Kent, UK: The FoodNews Company, Aug. 7, 1992), p. 7.

[196] U.S. Department of Health and Human Services, letter from Hugh Cannon to Honorable Arlen Specter concerning Food and Drug Administration inspection and retention of canned mushrooms from China, Apr. 17, 1991.

U.S. TRADE MEASURES

Tariff Measures

Table B-1 (Appendix B) sets out the pre-Uruguay Round column 1-general rate of duty and preferential rates of duty as of January 1, 1994, the duty rates agreed to under the Uruguay Round, and U.S. exports and imports for 1993, for each 8-digit processed vegetable subheading of the *Harmonized Tariff Schedule (HTS)*.[198] The current most-favored-nation (MFN) rates of duty range from zero for some of the processed vegetables included here to a high of 35 percent ad valorem for dehydrated onions. About half of all processed vegetables covered here entered the United States with a duty of less than 5 percent ad valorem equivalent in 1993. Duties on canned vegetables ranged from zero to 17.5 percent ad valorem, with most of the duties between 7.5 and 12 percent ad valorem. Duties on frozen vegetables ranged from zero to 25 percent ad valorem with about half of the duties above 10 percent; duties on dehydrated vegetables were predominately less then 5 percent ad valorem. The aggregate trade-weighted average rate of duty for all processed vegetables based on 1993 data was 5.6 percent ad valorem. Under the Uruguay Round, duties on all processed vegetable imports are to be reduced by 20 to 55 percent from the 1994 MFN rates, with most rates declining by about 25 percent.

There have been few classification problems or substantive changes for processed vegetables as a result of the conversion from the *Tariff Schedules of the United States (TSUS)* to the *HTS*. None of these changes significantly affected U.S. trade.

Nontariff Measures

In general, there are no U.S. nontariff import restrictions currently in effect on processed vegetables. Also, there are no such barriers as embargoes or restrictions on establishment or investment. However, the United States maintains strict Food and Drug Administration (FDA) regulations and U.S. Customs rules for inspection of imported processed vegetables. FDA laws and regulations are believed to be some of the most comprehensive in the world and are considered by some foreign competitors as unusually

[197] "Frozen Food Star Rises Over China As Modernizing Economy Heats Up," *Quick Frozen Foods International*, vol. 35, No. 3 (Fort Lee, NJ: E.S. Williams Publishing Co., Jan. 1994), pp. 148-156.

[198] Appendix A includes an explanation of tariff and trade agreement terms.

restrictive relative to such regulations in other countries.[199] These regulations are applied to U.S. produced and imported products alike.

In recent years, a segment of the U.S. frozen vegetable industry has advocated enactment of legislation that would require the labeling of packages of imported frozen vegetables with the country of origin in large letters and in a conspicuous place on the label.[200] On December 23, 1993, the U.S. Customs Service issued a decision (Treasury Decision 94-5) that required country-of-origin markings on all processed vegetable imports to appear on the package front or somewhere on the principal package display panel.[201] The new rule was to take effect on May 8, 1994.[202] The American Frozen Food Institute, among other parties with an interest in this issue, challenged the decision in court in February 1994.[203] In June 1994, the Court of International Trade determined that the procedures followed by Customs in issuing T.D. 94-5 did not meet the notice and comment requirements of the Administrative Procedure Act.[204] T.D. 94-5 was therefore null and void. The court declined to rule on the substance of the Customs decision.

U.S. Government Trade-Related Investigations

There has been one government trade-related investigation on processed vegetables since 1989. On September 14, 1992, at the request of the Committee on Ways and Means (Committee), U.S. House of Representatives, the Commission instituted investigation No. 332-335, *Dry Peas and Lentils: Conditions of Competition Between the United States and Canada in Third-Country Markets*, under section 332(g) of the Tariff Act of 1930 (19 U.S.C. 1332(g)). The Committee asked that the Commission investigate and report on the competitive conditions of the U.S. and Canadian dry pea and lentil industries in overseas markets and on the effect of Canadian Government programs on those competitive conditions.[205] The Commission reported the results of its investigation on April 20, 1993.

[199] Commission staff conversations with officials of foreign vegetable growing and processing industries, 1991-94.

[200] Commission staff conversations with officials of the California vegetable processing industry, 1989-91.

[201] T.D. 94-5, 58 F.R. 68746 (Dec. 29, 1993).

[202] "Processors Oppose Proposed Country of Origin Rules Change," *Food Production/Management*, vol. 117-2 (Baltimore, MD: CTI Publications, Inc., Aug. 1994), p. 19.

[203] Ibid.

[204] American Frozen Foods, Inc. vs. United States, Slip Op. 94-97 (U.S. Court of International Trade, June 9, 1994).

[205] USITC, *Dry Peas and Lentils: Conditions of Competition Between the United States and Canada in Third-Country Markets*, Inv. No. 332-335, USITC Publication 2627, April 1993.

FOREIGN TRADE MEASURES

Tariff Measures

The major U.S. trading partners for processed vegetables include Canada, Japan, the EU, and Mexico. U.S. exports of processed vegetables enter these countries at duty rates significantly higher than those for imports entered into the United States (table B-2, Appendix B). Following implementation of the U.S.-Canada Free Trade Agreement, remaining Canadian duties on imports of U.S. processed vegetables are being phased out, and by 1998 all such imports will be eligible to enter Canada duty free. Under the Uruguay Round, U.S. exports are expected to increase significantly because of a general tariffication of nontariff barriers and a reduction in duties in most countries.[206]

Under the Japanese tariff system, duties on U.S. shipments of processed vegetables range from zero to 20 percent, with most at a level of 10 percent or greater. Duties on U.S. shipments into the EU generally range from zero to 24 percent, with most duties in the 10 to 20 percent range. The Mexican general tariff rates applicable to U.S. exports of processed vegetables range from zero to 20 percent ad valorem, with rates for most of the processed vegetables in the 15 to 20 percent ad valorem range. Under the NAFTA, duties are to be phased out by 2008, at which time all U.S. exports will be eligible to enter Mexico duty free, provided they meet the country of origin requirements contained in the agreement.

Nontariff Measures

In recent years, U.S. processors have identified a number of foreign nontariff barriers, including foreign government sanitary and phytosanitary regulations, packaging and labeling requirements, and import licensing regulations, that they believe affect their ability to successfully compete abroad in trade in processed vegetables.[207] The sale of U.S.-produced processed vegetables in foreign markets is also believed to be hampered somewhat by lack of uniformity in product standards among individual countries and by the frequency of changes made to such standards.[208] In the EU, for example, the flow of processed vegetables from the United States to various EU country markets is slowed by EU

[206] U.S. Department of Agriculture, Economic Research Service, "New Global Trade Rules to Benefit U.S. Agriculture," *Agricultural Outlook*, AO-213, Nov. 1994, pp. 24-26.

[207] U.S. Department of Agriculture, Foreign Agricultural Service, "Agriculture and the GATT: New Rules of the Road for Trade," *AgExporter*, vol. VI, No. 6 (June 1994), Washington, DC, pp. 4-8.

[208] Ibid.

regulations on product specifications which vary from country to country within the EU.[209]

In Japan, U.S. exports are hampered by government restrictions on U.S. approved food additives and fumigation practices used in the United States.[210] Other countries are reported to be providing aid and development funds to lesser developed countries, principally through subsidized credit, in return for allowing the entry of their exports to the exclusion of other countries.[211] In some South American countries, imports have been controlled through import license requirements, although in most countries such restrictions are being lifted.[212]

Recent global efforts toward greater standardization are expected to lead to increased U.S. sales in foreign markets.[213] The recently signed Uruguay Round Agreement, negotiated under the General Agreement on Tariffs and Trade (GATT), provides for increased market access and limitations on export subsidies and internal supports, and contains a new agreement on sanitary and phytosanitary measures.[214] Under the agreement, all nontariff measures are to be replaced by tariffs, or tariffied.

U.S. MARKET

Consumption

Consumption of processed vegetables occurs generally either at the retail or institutional/industrial level. Retail consumers purchase processed vegetables through a variety of intermediate sources such as grocery stores, retail/wholesale club stores, convenience stores, and food warehouse stores; few, if any, retail purchases are made directly from the processor.[215] Most products sold at the retail level are packaged in container sizes of 32 ounces or less, usually in a form ready for immediate home consumption after cooking or reheating.[216] However, sales in bulk containers at food warehouse stores have increased steadily in recent years.[217] More customers are becoming cost conscious, although brand loyalty for certain processed vegetables remains important.[218]

The overall consumption of processed vegetables varies at both the institutional/industrial and the retail levels. Institutional/industrial customers, including such purchasers as individual and chain restaurants, hospital, educational, or other institutional purchasers, and government purchasers, are generally large-volume purchasers and buy in bulk containers.[219] Historically, these consumers are more price conscious and less brand or company loyal.

Apparent U.S. consumption of processed vegetables rose steadily from an estimated $15.0 billion in 1989 to $17.3 billion in 1993, or by 15 percent (table 5). The bulk of overall consumption was in the form of canned vegetables, but most of the increase was in consumption of frozen vegetables. U.S. imports of canned and frozen vegetables continued to account for a significant but small share of U.S. consumption. Import penetration declined from 4.8 percent in 1989 to 4.3 percent in 1993, and imports averaged about 4.5 percent of consumption during the 5-year period.

Historically, the bulk of U.S.-produced processed vegetables have been consumed domestically. Many U.S. firms source provisionally-preserved foreign processed vegetables, such as frozen broccoli and cauliflower and canned pickles, for repacking in the United States, as well as source finished product overseas for distribution in the United States.[220] Consumer spending for processed vegetables, in general, has shifted steadily away from more traditional canned items, such as canned corn, carrots, or squash, to canned specialty foods such as canned ethnic foods, tomato products, and aseptically packaged foods, and from canned vegetables in general to fresh or frozen vegetables.[221]

Most global competitors processing canned or frozen vegetables share similar technology for processing, packaging, and storing vegetables. Also, since both canned and frozen vegetables can be stored for extended periods of time when handled properly,[222] both domestically produced and imported processed vegetables can be processed, transported, and stored in more-centrally located distribution centers and readily purchased from inventories whenever needed.

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[209] U.S. Department of Agriculture, Foreign Agricultural Service, *Trade Policies and Market Opportunities for U.S. Farm Exports: 1993 Annual Report*, Aug. 1994.

[210] Ibid.

[211] Ibid.

[212] Ibid.

[213] Ibid.

[214] "Agriculture and the GATT: New Rules of the Road for Trade," *AgExporter*, vol. VI, No. 6, June 1994, pp. 4-8.

[215] Commission staff conversations with officials of the U.S. processed vegetable industry, 1992-94.

[216] The Almanac of the Canning, Freezing, Preserving Industries, 76th ed., vol. 2 (Westminster, MD: Edward E. Judge & Sons, Inc., 1992), pp. 219-234.

[217] Food Marketing Review, 1992-93, Agricultural Economic Report No. 678, Apr. 1994, p. 28.

[218] "Shoppers Bagging More Store Brands," *The Food Institute Report*, Apr. 19, 1993, p. 2.

[219] Ibid.

[220] Commission staff conversations with officials of the U.S. processed vegetable industry, 1992-94.

[221] "Food and Beverages," *1992 U.S. Industrial Outlook*, p. 32-9.

[222] Frozen vegetables can generally be stored for up to 6 months and canned vegetables up to 12 months.

Table 5
Processed vegetables: U.S. producers' shipments, exports of domestic merchandise, imports for consumption, and apparent consumption, 1989-93

Year	Producers' shipments[1]	Exports	Imports	Apparent consumption	Ratio of imports to consumption
	Million dollars				*Percent*
1989	14,947	630	725	15,042	4.8
1990	15,795	803	721	15,713	4.6
1991	15,810	866	728	15,672	4.6
1992	17,048	931	747	16,864	4.4
1993	17,595	1,052	745	17,288	4.3

[1] Estimated by the Commission staff from published data in "Food and Beverages," *1993 U.S. Industrial Outlook*, U.S. Department of Commerce, Wash., DC, January 1994, pp. 31-9 to 31-10, and the 1987 Census of Manufactures, U.S. Department of Commerce, Bureau of the Census, pp. 4-12.

Source: Compiled from official statistics of the U.S. Department of Commerce, except as noted.

Apparent U.S. consumption of canned vegetables rose steadily from $9.3 billion in 1989 to $10.7 billion in 1993, or by 15 percent (table 6). The bulk of overall consumption and most of the rise in consumption over the 5-year period was accounted for by consumption of canned tomato products and canned dry beans. Import penetration was 3.5 percent in 1993, down from 4.7 percent in 1989 and averaging about 4.0 percent throughout the 5-year period. Distribution of most canned vegetables, both domestically produced and imported, occurs through many of the same channels.[223] Demand for certain foreign products such as processed tomato products, of comparable price and quality to those products domestically produced, continues to rise.[224]

Apparent U.S. consumption of frozen vegetables rose from an estimated $4.5 billion in 1989 to $5.2 billion in 1993, or by 15 percent (table 7). The bulk of overall consumption and most of the rise in consumption over the 5-year period was accounted for by frozen potato products.[225] Import penetration was 5.4 percent in 1993, up from 4.2 percent in 1989 as imports of frozen broccoli and cauliflower continue to rise. As with canned vegetables, imported frozen vegetables, often processed by foreign subsidiaries of U.S. processors, are of comparable quality and price to those domestically produced, are packaged similarly, and are distributed through most of the same distribution channels.[226]

Consumption of frozen vegetables, which have a higher per unit price than canned vegetables, in general tends to closely follow changes in the overall economy. Rising incomes generally result in an increase in consumer expenditures for more expensive foods or food preparations.[227] Consumption is also affected by consumer demand for convenience and quality in foods prepared at home and by changes in the number of meals eaten at home. The seasonal availability of fresh vegetables, the price of alternative canned vegetables, and changes in consumer preferences for purchasing frozen vegetables relative to fresh or canned vegetables also affect the consumption of frozen vegetables.[228]

Apparent U.S. consumption of dried vegetables rose steadily from an estimated $1.2 billion in 1989 to $1.4 billion in 1993, or by 17 percent (table 8). The bulk of overall consumption and most of the rise in consumption over the 5-year period was accounted for by consumption of dry beans, peas, and lentils, together with dried onions, garlic, and miscellaneous other dried vegetables. Import penetration was 6.6 percent in 1993, down from 7.9 percent in 1989 and averaging about 7.6 percent throughout the 5-year period. U.S. imports of dried vegetables continued to account for a significant albeit declining share of U.S. consumption as foreign processors targeted shipments to U.S. markets. Distribution of both domestically-produced and imported dried vegetables occurs through the same channels. Demand for foreign dried vegetable products of comparable price and quality to those products domestically produced remains steady.[229]

Shipments

Shipments of processed vegetables, in general, are influenced by such factors as changes in consumer incomes and spending habits, fluctuations in government or military bulk-quantity purchases, and

[223] Commission staff conversations with officials of the U.S. processed vegetable industry, 1992-94.
[224] Ibid.
[225] Commission staff estimates based on official U.S. Department of Commerce data.
[226] Commission staff conversations with officials of the U.S. processed vegetable industry, 1992-94.
[227] "Demographic Directions for Food Marketing: Household Food Expenditure Projections to 2000," *The Food Institute Report*, Sept. 1987.
[228] Ibid.
[229] Commission staff conversations with officials of the U.S. processed vegetable industry, 1992-94.

Table 6
Canned vegetables: U.S. producers' shipments, exports of domestic merchandise, imports for consumption, and apparent consumption, 1989-93

Year	Producers' shipments[1]	Exports	Imports	Apparent consumption	Ratio of imports to consumption
	Million dollars				*Percent*
1989	9,053	174	442	9,321	4.7
1990	9,550	253	403	9,700	4.2
1991	9,911	311	415	10,015	4.1
1992	10,598	385	382	10,595	3.6
1993	10,778	461	371	10,688	3.5

[1] Estimated by the Commission staff from published data in "Food and Beverages," *1993 U.S. Industrial Outlook*, U.S. Department of Commerce, Wash., DC, January 1994, and the 1987 Census of Manufactures, Bureau of the Census, U.S. Department of Commerce, Wash., DC, pp. 4-12.

Note.—Because of rounding, figures may not add to totals shown in table 8.

Source: Compiled from official statistics of the U.S. Department of Commerce, except as noted.

Table 7
Frozen vegetables: U.S. producers' shipments, exports of domestic merchandise, imports for consumption, and apparent consumption, 1989-93

Year	Producers' shipments[1]	Exports	Imports	Apparent consumption	Ratio of imports to consumption
	Million dollars				*Percent*
1989	4,535	209	188	4,514	4.2
1990	4,811	256	201	4,756	4.2
1991	4,411	256	215	4,370	4.9
1992	4,859	274	271	4,856	5.6
1993	5,199	292	281	5,188	5.4

[1] Estimated by the Commission staff from published data in "Food and Beverages," *1993 U.S. Industrial Outlook*, U.S. Department of Commerce, Wash., DC, January 1994, and the 1987 Census of Manufactures, Bureau of the Census, U.S. Department of Commerce, Wash., DC, pp. 4-12.

Note.—Because of rounding, figures may not add to totals shown in table 8.

Source: Compiled from official statistics of the U.S. Department of Commerce, except as noted.

Table 8
Dried vegetables: U.S. producers' shipments, exports of domestic merchandise, imports for consumption, and apparent consumption, 1989-93

Year	Producers' shipments[1]	Exports	Imports	Apparent consumption	Ratio of imports to consumption
	Million dollars				*Percent*
1989	1,359	246	95	1,208	7.9
1990	1,434	294	117	1,257	9.3
1991	1,488	299	93	1,282	7.3
1992	1,591	272	94	1,413	6.7
1993	1,618	298	93	1,413	6.6

[1] Estimated by the Commission staff from published data in "Food and Beverages," *1993 U.S. Industrial Outlook*, U.S. Department of Commerce, Wash., DC, January 1994, and the 1987 Census of Manufactures, Bureau of the Census, U.S. Department of Commerce, Wash., DC, pp. 4-12.

Note.—Because of rounding, figures may not add to totals shown in table 8.

Source: Compiled from official statistics of the U.S. Department of Commerce, except as noted.

overall export demand.[230] Shipments of processed vegetables are also facing strong competition from other processed foods for a limited amount of available shelf space in retail food stores.[231] Future shipments are expected to increase as a result of improved labeling, marketing, and advertising of new products and better delivery service.[232] Producers also report a shift in the overall distribution of processed vegetables toward greater shipments through large regional distribution centers and through mass warehouse merchandise centers.[233]

U.S. producers' shipments of all processed vegetables rose steadily from an estimated $14.9 billion in 1989 to an estimated $17.6 billion in 1993, or by 18 percent (table 5). About three-fifths of total shipments throughout this period were accounted for by canned vegetables, with about 30 percent of shipments accounted for by frozen vegetables and the remainder dried vegetables. Shipments of both canned and frozen vegetables have been rising at a faster rate than shipments of dried vegetables.

U.S. shipments of canned vegetables rose 19 percent from an estimated $9.1 billion in 1989 to an estimated $10.8 billion in 1993 (table 6), and are expected to continue a slight upward trend in the near future.[234] In recent years, tomatoes and tomato products, pickles and pickled products, and canned dry beans, together, accounted for the largest share (about 60 percent) of total U.S. canned vegetable shipments, followed by shipments of sweet corn, other canned beans, and peas with 11, 8, and 5 percent, respectively. According to industry sources,[235] the share of total canned- vegetable shipments packed in retail-sized containers has risen slightly in recent years to about 80 percent of total production. A significant amount of U.S. shipments of these canned vegetables are for export.

U.S. shipments of frozen vegetables rose about 15 percent from an estimated $4.5 billion in 1989 to an estimated $5.1 billion in 1993 (table 7), and are expected to rise by about 4 percent annually over the next couple of years.[236] In recent years, frozen french fried potatoes and other frozen potato products accounted for about half of total U.S. frozen vegetable shipments, followed by frozen corn and frozen vegetable mixtures with 8 and 7 percent, respectively. According to industry sources,[237] the share of total frozen-vegetable shipments packed in retail-sized containers has fallen steadily in recent years and accounted for about 36 percent of total shipments in 1993. As with canned vegetables, some U.S. shipments of frozen vegetables are for export.

U.S. shipments of dried vegetables rose about 19 percent, from an estimated $1.4 billion in 1989 to an estimated $1.6 billion in 1993 (table 8). In recent years, dry beans, peas, and lentils accounted for the bulk of total U.S. dried vegetable shipments, followed by shipments of dehydrated onions and garlic. Shipments packed in institutional-sized containers are believed to have accounted for about 80 percent of total dried vegetable shipments in recent years.

Imports

Products imported

During 1989-93, all of the processed vegetables covered in this summary were imported into the United States, with such items as canned mushrooms, canned tomatoes and tomato products, miscellaneous canned vegetables, and frozen potato products, broccoli, and cauliflower accounting for the bulk of the products imported.[238] Import trends for the products covered here have been mixed since 1989, with imports of such items as frozen potato products, canned bamboo shoots, and miscellaneous canned vegetables up considerably. During the same period, imports of canned tomato products, canned mushrooms, and a number of other canned vegetables, as well as frozen corn, peas, and beans, have fluctuated widely.[239] Throughout the 1989-93 period, the product mix of imported processed vegetables has been similar to the bulk of domestic production.

Import levels and trends

Total U.S. imports of processed vegetables rose 3 percent from $724.8 million in 1989 to $ 744.7 million in 1993 (table 9), principally as a result of rising imports of frozen broccoli, cauliflower, and potato products.[240] In 1993, about one-half of total imports were of canned vegetables, followed by frozen and

[230] "Food and Beverages," *1992 U.S. Industrial Outlook*, p. 32-10.
[231] U.S. Department of Agriculture, Economic Research Service, *Food Marketing Review, 1989-90*, Agricultural Economic Report No. 639, Washington, D.C., Nov. 1990, p. iii.
[232] Ibid.
[233] "Frozen Food at Membership Clubs: Limited Selection, Great Prices," *Quick Frozen Foods International*, vol. 33, No. 2 (Fort Lee, NJ: E.W. Williams Publishing Co., Oct. 1991), pp. 123-126.
[234] "Food and Beverages," *1992 U.S. Industrial Outlook*, pp. 32-1 to 32-13.
[235] The Almanac of the Canning, Freezing, Preserving Industries, 75th ed., vol. 1 (Westminster, MD: Edward E. Judge & Sons, Inc., 1990-91), pp. 566-581.
[236] "Food and Beverages," *1992 U.S. Industrial Outlook*, pp. 32-1 to 32-13.
[237] American Frozen Food Institute, *1993 Frozen Food Pack Statistics*, McLean, VA, 1994, pp. 34-60.
[238] Compiled by Commission staff from official U.S. Department of Commerce data.
[239] Ibid.
[240] Ibid.

Table 9
Processed vegetables:[1] U.S. imports for consumption, by principal sources, 1989-93

Source	1989	1990	1991	1992	1993
	Quantity *(1,000 kilograms)*				
Mexico	190,314	215,600	234,869	264,859	262,406
Canada	73,347	111,047	130,952	151,871	203,716
China	59,836	44,668	60,161	54,354	63,968
Spain	45,385	38,790	26,844	31,854	30,614
Thailand	39,990	40,096	50,183	45,403	47,301
Indonesia	4,312	8,760	12,003	15,414	12,662
Gautemala	23,915	28,216	36,032	37,290	36,059
Hong Kong	15,463	15,588	18,652	14,433	13,739
All other	275,233	223,068	180,725	168,880	160,057
Total	727,795	725,831	750,422	784,358	830,522
	Value *(1,000 dollars)*				
Mexico	123,886	161,111	174,153	198,417	203,668
Canada	52,281	70,909	78,941	90,644	119,964
China	89,270	49,526	68,518	61,533	73,322
Spain	81,781	74,444	48,229	60,025	51,882
Thailand	32,894	36,490	51,480	46,325	43,365
Indonesia	11,294	25,896	37,399	41,147	27,907
Gautemala	17,842	21,054	25,693	29,574	26,346
Hong Kong	24,989	27,648	31,890	24,083	19,340
All other	290,566	253,443	211,768	195,356	178,929
Total	724,803	720,521	728,070	747,103	744,723
	Unit value *(dollars per kilogram)*				
Mexico	$0.65	$0.75	$0.74	$0.75	$0.78
Canada	.71	.64	.60	.60	.59
China	1.49	1.11	1.14	1.13	1.15
Spain	1.80	1.92	1.80	1.88	1.69
Thailand	.82	.91	1.03	1.02	.92
Indonesia	2.62	2.96	3.12	2.67	2.20
Gautemala	.75	.75	.71	.79	.73
Hong Kong	1.62	1.77	1.71	1.67	1.41
All other	1.06	1.14	1.17	1.16	1.12
Average	1.00	.99	.97	.95	.90

[1] Includes canned, frozen, and dried, vegetables.

Source: Compiled from official statistics of the U.S. Department of Commerce.

dried vegetables at 38 and 12 percent, respectively. A drop of 11 percentage points in the share of imports accounted for by canned vegetables since 1989 was offset by a gain of 12 points in the share of frozen vegetable imports. The respective share of total imports accounted for by dried vegetables has remained about the same since 1989.

U.S. imports of canned vegetables fell 16 percent, from $442.2 million in 1989 to $371.3 million in 1993 (table 10).[241] Imports were unusually high in 1989 due to a global oversupply of processed tomato products, much of which was shipped to the United States.[242] In 1993, about one-fourth of total canned vegetable imports were of canned mushrooms, followed by processed potato products and miscellaneous processed vegetables with an estimated 20 and 16 percent, respectively, of the total. The respective share of total imports accounted for by each of these categories has remained about the same in recent years.

U.S. imports of frozen vegetables rose 50 percent, from $187.7 million in 1989 to $280.7 million in 1993 (table 11). Imports slowed somewhat in 1990 and 1991 from the 1989 level because of weather-damaged foreign production.[243] In 1993, about one-half of total frozen vegetable imports were of broccoli, cauliflower, and peas. The respective share of total imports accounted for by each of these categories has remained about the same in recent years.

[241] Ibid.

[242] Commission staff conversations with officials of the U.S. vegetable processing industry, 1992-94.

[243] Ibid.

Table 10
Canned vegetables: U.S. imports for consumption, by principal sources, 1989-93

Source	1989	1990	1991	1992	1993
	Quantity *(1,000 kilograms)*				
Mexico	30,432	59,431	83,715	68,660	79,806
China	52,984	31,975	44,825	40,092	44,750
Spain	39,464	35,121	24,780	29,016	28,043
Thailand	30,211	35,916	47,312	42,963	44,139
Indonesia	4,299	8,755	12,003	15,403	12,657
Hong Kong	14,811	14,869	17,394	13,459	13,000
Taiwan	39,346	28,514	20,069	11,501	7,258
Chile	29,216	34,342	23,248	25,879	19,040
All other	149,579	117,206	100,604	93,806	106,734
Total	390,342	366,129	373,950	340,779	355,427
	Value *(1,000 dollars)*				
Mexico	22,875	50,916	68,855	61,124	76,387
China	79,589	29,785	47,691	41,585	45,201
Spain	64,822	58,704	39,802	49,164	43,568
Thailand	26,771	33,719	48,971	43,352	40,320
Indonesia	11,258	25,889	37,396	41,124	27,842
Hong Kong	23,467	26,127	29,569	22,156	17,715
Taiwan	54,490	48,058	38,932	22,848	13,303
Chile	23,192	26,308	15,877	13,555	12,759
All other	135,736	103,679	87,995	87,415	94,243
Total	442,200	403,185	415,088	382,323	371,338
	Unit value *(dollars per kilogram)*				
Mexico	$0.75	$0.86	$0.82	$0.89	$0.96
China	1.50	.93	1.06	1.04	1.01
Spain	1.64	1.67	1.61	1.69	1.55
Thailand	.89	.94	1.04	1.01	.91
Indonesia	2.62	2.96	3.12	2.67	2.20
Hong Kong	1.58	1.76	1.70	1.65	1.36
Taiwan	1.38	1.69	1.94	1.99	1.83
Chile	.79	.77	.68	.52	.67
All other	.91	.88	.87	.93	.88
Average	1.13	1.10	1.11	1.12	1.04

[1] Includes canned vegetables (HTS 0711.10.0000, 0711.30.0000-0711.90.60000, 2001.10.0000-2001.90.3900, 2002.10.0020-2002.90.0050, 2003.10.0090, 2003.20.0000, 2005.10.0000-2005.60.0000, and 2005.80.0000-2005.90.9500).

Source: Compiled from official statistics of the U.S. Department of Commerce.

U.S. imports of dried vegetables have fallen steadily from a high of $116.6 million in 1990 to $92.7 million in 1993 (table 12). Imports reportedly declined because of weather-damaged foreign production.[244] In 1993, about three-fourths of total dried vegetable imports were of mushrooms and truffles, tomatoes, and miscellaneous leguminous vegetables. The respective share of total imports accounted for by each of these categories has remained about the same in recent years.

[244] Ibid.

Principal import suppliers

In recent years, imports of processed vegetables were entered principally from Mexico, Canada, and China, the leading suppliers throughout this 5-year period.[245] Other important suppliers included Spain, Thailand, Indonesia, Guatemala, and Hong Kong. Imports from Taiwan and Spain have fallen steadily in recent years, primarily because of decreasing imports

[245] Compiled by Commission staff from official U.S. Department of Commerce data.

Table 11
Frozen vegetables: U.S. imports for consumption, by principal sources, 1989-93

Source	1989	1990	1991	1992	1993
	Quantity *(1,000 kilograms)*				
Mexico	141,586	137,071	136,400	185,243	169,606
Canada	40,786	80,292	112,823	128,024	175,864
Guatemala	22,342	26,445	34,204	35,876	34,472
China	1,851	4,007	6,318	9,672	11,336
Dominican Rep.	3,910	2,987	1,599	3,815	2,224
Taiwan	4,238	2,801	3,567	3,292	1,774
Costa Rica	1,471	2,399	3,393	3,779	3,756
El Salvador	3,952	3,373	4,049	2,836	2,082
All other	32,675	15,838	6,601	9,033	9,657
Total	252,811	275,213	308,954	381,570	410,771
	Value *(1,000 dollars)*				
Mexico	90,556	95,091	93,661	127,633	117,107
Canada	34,692	54,448	67,701	77,797	105,379
Guatemala	16,703	19,755	24,159	28,151	24,551
China	2,11	5,464	8,554	12,375	14,017
Dominican Rep.	4,339	3,241	3,091	4,929	2,790
Taiwan	8,185	4,563	5,275	5,032	2,643
Costa Rica	853	1,526	1,910	2,061	2,067
El Salvador	2,669	2,347	2,809	2,237	1,563
All other	27,599	14,261	7,505	10,561	10,574
Total	187,712	200,696	214,665	270,776	280,691
	Unit value *(dollars per kilogram)*				
Mexico	$0.64	$0.69	$0.69	$0.69	$0.69
Canada	.85	.68	.60	.61	.60
Guatemala	0.75	.75	0.71	.78	.71
China	1.14	1.36	1.35	1.28	1.24
Dominican Rep.	1.12	1.08	1.93	1.29	1.25
Taiwan	1.93	1.63	1.48	1.53	1.49
Costa Rica	.58	.64	.56	.55	.55
El Salvador	.68	.70	.69	.79	.75
All other	.84	.90	1.14	1.17	1.09
Average	.74	.73	.69	.71	.68

[1] Includes frozen vegetables (HTS 0710.10.0000-0710.90.9000 and 2004.10.4000-2004.90.9080).

Source: Compiled from official statistics of the U.S. Department of Commerce.

of processed mushrooms and tomato products, respectively. Imports from Indonesia and Guatemala have risen significantly since 1989, with products from each of these countries including vegetables processed for U.S. multinational firms.[246]

Major import suppliers of canned vegetables during 1989-93 included Mexico and China, with significant supplies also received from Spain, Thailand, and Indonesia.[247] As with processed vegetable imports in general, imports of canned vegetables from Spain and Taiwan have fallen in recent years, whereas those from Indonesia have risen considerably.[248] During the same period, U.S. imports of frozen vegetables were supplied principally by Mexico, Canada, and Guatemala, with imports also including frozen vegetables processed for U.S. multinationals for sale in U.S. markets.[249]

Finally, imports of dried vegetables were supplied mainly from China and Mexico in recent years, with products from China mostly dehydrated onions and garlic, and products from Mexico principally dry beans

[246] Commission staff conversations with officials of the U.S. vegetable processing industry, 1992-94.

[247] Compiled by Commission staff from official U.S. Department of Commerce data.

[248] Ibid.

[249] Commission staff conversations with officials of the U.S. vegetable processing industry, 1992-94.

Table 12
Dried vegetables: U.S. imports for consumption, by principal sources, 1989-93

Source	1989	1990	1991	1992	1993
	Quantity *(1,000 kilograms)*				
China	7,565	14,278	12,272	7,572	14,104
Mexico	10,455	15,104	11,636	9,660	10,174
Spain	15,097	15,225	8,054	10,757	8,170
Japan	4,031	5,695	7,636	6,740	6,218
Canada	9,346	7,982	4,832	7,147	6,123
Morocco	3,523	7,598	6,040	7,643	5,969
Chile	2,682	5,574	2,839	2,678	4,399
France	1,906	1,816	3,396	2,574	3,911
All other	40,286	43,368	41,613	39,233	33,626
Total	94,891	116,640	98,318	94,004	92,694
	Value *(1,000 dollars)*				
China	5,002	8,686	9,018	4,590	7,882
Mexico	18,296	19,098	14,753	10,955	12,995
Spain	4,254	3,270	1,903	2,787	2,155
Japan	497	584	798	547	697
Canada	21,647	21,548	11,481	16,831	13,924
Morocco	875	1,644	1,481	1,967	1,622
Chile	2,324	5,635	2,716	1,415	1,749
France	620	483	601	647	943
All other	31,127	23,541	24,766	22,270	22,358
Total	84,642	84,489	67,517	62,009	64,325
	Unit value *(dollars per kilogram)*				
China	$1.51	$1.64	$1.36	$1.65	$1.79
Mexico	.57	.79	.79	.88	.78
Spain	3.55	4.66	4.23	3.86	3.79
Japan	8.66	9.75	9.57	12.33	8.92
Canada	.43	.37	.42	.42	.44
Morocco	4.03	4.62	4.08	3.89	3.68
Chile	1.15	.99	1.05	1.89	2.51
France	3.07	3.76	5.65	3.98	4.15
All other	.77	.54	.60	.57	.66
Average	1.12	1.38	1.46	1.52	1.44

[1] Includes dried vegetables (HTS 0712.10.0000-0712.90.1000, 0712.90.4000-0712.90.8080, 0713.10.2000-0713.10.4080, 0713.20.2000, 0713.31.2000-0713.31.4000, 0713.32.2000, 0713.33.2000-0713.33.4090, 0713.39.1500-0713.39.4070, 0713.40.2000, 0713.50.2000, 0713.90.5000-0713.90.8000, and 1105.10.0000-1106.20.0000).

Source: Compiled from official statistics of the U.S. Department of Commerce.

and peas.[250] Imports of dried vegetables from Canada and Spain have fallen in recent years, whereas imports from Japan and Morocco have risen.

Imports of processed vegetables from Eastern Europe[251] have been insignificant for a number of years. Processors in these countries, although less technologically developed than their U.S., Japanese, or European counterparts, are expected to increase their production capability significantly.[252] Agriculture currently accounts for an estimated 15 percent of gross domestic product and accounts for about 15 percent of employment in these countries.[253] In recent years, nearly all of the land used for crop production in Eastern Europe was part of large collective farms.[254] The future privatization of this land is expected to

[250] Compiled by Commission staff from official U.S. Department of Commerce data.

[251] Including the Czech Republic, Slovakia, Hungary, Poland, Bulgaria, and Romania.

[252] U.S. Department of Agriculture, Economic Research Service, *Agricultural Outlook*, AO-205, Mar. 1994, pp. 22-25.

[253] Ibid.

[254] Ibid.

result in numerous farms comparable in size and productivity to small farms common in many EU countries.[255]

U.S. importers

The principal U.S. importers of processed vegetables in 1993 included independent customs brokers and U.S. processed-food distributors, along with both U.S.- and foreign-owned distributors of principally foreign-processed vegetables.[256] A number of leading U.S. vegetable processors currently sell foreign-processed vegetables under their own company or brand name.[257] A few European, Japanese, and other foreign firms also have U.S. distributors or other distribution arrangements in the United States for importing their products.[258]

FOREIGN MARKETS

Foreign Market Profile

Historically, Japan and Canada have been the leading foreign markets for U.S.-produced processed vegetables.[259] Overall demand for many canned and frozen vegetables in both countries has risen steadily for a number of years, but has been heightened for some products in more recent years. The demand for items such as french-fried potatoes has been growing as a result of rising consumption of meals in fast-food outlets.[260] Demand for U.S.-produced processed vegetables in Canada has risen significantly in recent years, in part because of the reduction of duties negotiated in the United States-Canada Free Trade Agreement.[261] U.S. exports of processed vegetables to Canada are expected to rise through 1995.[262]

U.S. processed vegetable exports are believed to be competitive in Japan, Canada, and numerous other countries where markets are well developed and expanding.[263] U.S.-produced processed vegetables are perceived to be of comparable, if not superior, quality and generally are comparably priced.[264] An increasing number of U.S. firms are believed to be looking toward export sales to both traditional and new markets either directly or through subsidiaries and joint venture agreements, in an effort to increase sales.[265]

Vegetable processors in many industrialized countries are as technologically developed as those in the United States.[266] Subsequently, U.S. processed vegetables face stiff competition from foreign-produced goods in major export markets. Although the quality of U.S. exports is generally considered high, demand for such goods is affected by their price and availability and by competitors' products.[267] Shipping costs and foreign tariffs generally increase the price at which U.S. goods must be sold in a foreign market. Many U.S. multinational food processors operate facilities in a number of countries in an effort to counter such added costs.[268]

The removal of internal frontier controls in the European Union in 1993, coupled with more uniform sanitary and phytosanitary regulations, is expected to increase intra-EU trade in processed food and make for a more competitive market.[269] Processed food consumption throughout the EU is expected to rise and should result in reduced excess European inventories and higher prices.[270] Demand for processed foods is also expected to increase in former East Bloc countries as these countries move away from centrally planned economies toward more market-driven ones.[271]

Over the long term, however, demand for U.S.-produced processed foods in Central and East European country markets may wane.[272] These countries have extensive amounts of natural resources and an abundance of workers available.[273] A number of U.S. firms are reported to have entered into production arrangements with foreign processors in these countries, providing mainly production technology and management expertise. With the transfer of new production technology from the United States and other industrialized nations, together with the use of improved management practices and the infusion of capital, these countries are expected to boost their own agricultural productivity considerably, thereby reducing demand for foreign products.[274]

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[255] Ibid.
[256] Commission staff conversations with officials of the U.S. processed vegetable industry, 1992-94.
[257] Ibid.
[258] Ibid.
[259] Determined by Commission staff based on official U.S. Department of Commerce data.
[260] Commission staff conversations with officials of the U.S. and foreign processed vegetable industries, 1992-94.
[261] Ibid.
[262] Ibid.
[263] Ibid.
[264] Ibid.
[265] "Food and Beverages," *1992 U.S. Industrial Outlook*, pp. 32-1 to 32-2.
[266] Ibid.
[267] Ibid.
[268] Ibid.
[269] U.S. Department of Agriculture, Economic Research Service, *EC 1992: Implications for World Food and Agricultural Trade*, Washington, DC, Oct. 1991, p. 243.
[270] Ibid.
[271] U.S. Department of Agriculture, Economics Research Service, *Agricultural Outlook-Central Europe: Agriculture in the New Market Economies*, Washington, DC, Nov. 1991, pp. 28-34.
[272] Ibid.
[273] Ibid.
[274] Ibid.

Also, these countries are strategically located for future trade with West European, Middle Eastern, and Asian countries and are expected to become major competitors for U.S. firms in these and other markets sometime in the future.[275]

The processed vegetable markets in Asia are growing rapidly with most of the demand expected to be for foods commonly grown and processed in that area.[276] As a result, a significant portion of the products available in these markets is expected to come from Asian food processors.[277] Demand is also increasing in Mediterranean markets and markets in Central and South America, but demand in these markets is expected to be satisfied by processors in those areas.

U.S. Exports

Products exported

In recent years, the bulk of U.S. processed vegetable exports were processed potato products and canned vegetables, especially canned tomato products, canned sweet corn, and miscellaneous canned vegetables.[278] The bulk of the frozen vegetable exports included french fries and other frozen potato products, frozen corn, and miscellaneous frozen vegetables.[279] Dried leguminous vegetables, dried onions and garlic, and dried potato products accounted for the bulk of dried vegetable exports in recent years. U.S. exports of processed vegetables have been important to U.S. processors in recent years and are becoming even more so, rising steadily from about 4 percent of domestic production in 1989 to 6 percent in 1993.[280] The U.S. vegetable-processing industry is considered a world leader in processing technology and product quality, and its products are preferred worldwide for their generally high quality.[281]

Export levels and trends

During 1989-93, U.S. exports of processed vegetables rose 67 percent, from $630.1 million in 1989 to $1.1 billion in 1993 (table 13).[282] In 1993, about 44 percent of total exports were of canned vegetables, up considerably from 28 percent in 1989.[283] Frozen vegetables accounted for 28 percent of total exports in 1993, down from 33 percent in 1989, and dried vegetables accounted for the remainder. Since 1989, most of the major markets for U.S. processed vegetable exports have remained about the same, although the share of total exports accounted for by each market has changed somewhat.[284] Dried leguminous vegetables, in particular, have lost considerable market share in historical markets including the Middle East and Asia, principally because of increased competition from Canada.[285]

U.S. exports of canned vegetables rose 165 percent from $174.3 million in 1989 to $461.4 million in 1993 (table 14).[286] Historically, the principal export markets for canned vegetables have been Canada and Japan, with significant other markets in Asia (such as Taiwan, Hong Kong, and South Korea) and in Europe (the United Kingdom and West Germany).[287] U.S. exports of frozen vegetables rose 40 percent from $209.3 million in 1989 to $292.4 million in 1993, with Japan accounting for over half of total exports in recent years (table 15). U.S. dried vegetable exports rose 21 percent from $246.4 million in 1989 to $298.4 million in 1993, with the EU (the United Kingdom, Italy, Spain, and West Germany), Japan, and Canada accounting for over half of total dried exports (table 16).[288] Demand for certain U.S. processed vegetables, especially frozen potato products, canned corn, and canned tomato products, continues to be high in Japan and in a number of European and South American countries.[289]

U.S. exporters

The principal U.S. exporters of processed vegetables are unknown, but are believed to include some multinational food processors and distributors, major food wholesalers and retailers, and grocery chains, as well as a number of smaller volume independent exporting firms.[290] Some of these firms currently process or distribute processed foods in other countries through subsidiary or joint-venture operations. In some instances, exports are of products intended to fill out an otherwise incomplete line of products offered in the foreign market. In other cases, exporters ship products to compete directly with comparable foreign-produced products.

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[275] Ibid.
[276] Commission staff conversations with officials of the U.S. and foreign processed vegetable industries, 1992-94.
[277] Ibid.
[278] Compiled by Commission staff from official U.S. Department of Commerce data.
[279] Ibid.
[280] Commission staff conversations with officials of the U.S. processed vegetable industry, 1992-94.
[281] Ibid.
[282] Compiled by Commission staff from official U.S. Department of Commerce data.
[283] Ibid.
[284] Ibid.
[285] Commission staff conversations with officials of the U.S. dry pea and lentil industry, 1992-94.
[286] Compiled by Commission staff from official U.S. Department of Commerce data.
[287] Ibid.
[288] Ibid.
[289] Ibid.
[290] Commission staff conversations with officials of the U.S. and foreign vegetable processing industries, 1992-94.

Table 13
Processed vegetables:[1] U.S. exports of domestic merchandise, by principal markets, 1989-93

Market	1989	1990	1991	1992	1993
	Quantity *(1,000 kilograms)*				
Japan	251,167	258,293	275,098	287,561	310,353
Canada	59,457	123,166	123,643	159,192	185,065
United Kingdom	82,325	108,335	110,183	96,486	111,573
Taiwan	26,147	30,122	28,389	37,260	40,325
Mexico	23,823	40,609	31,647	51,546	55,202
Australia	14,536	14,401	11,789	18,649	34,346
Hong Kong	29,184	24,530	33,213	37,915	43,564
South Korea	7,294	12,633	24,912	31,750	34,013
All other	317,496	369,673	372,775	365,089	379,116
Total	811,429	981,762	1,011,649	1,085,448	1,193,557
	Value *(1,000 dollars)*				
Japan	211,391	224,423	229,291	238,111	266,640
Canada	54,714	130,733	147,827	170,596	186,921
United Kingdom	58,345	68,421	71,225	72,259	80,856
Taiwan	18,081	27,277	29,940	38,816	46,614
Mexico	17,948	31,459	25,133	39,214	41,606
Australia	14,554	16,266	15,003	22,837	40,935
Hong Kong	18,654	18,903	23,885	27,902	37,408
South Korea	6,130	12,309	23,150	27,514	32,274
All other	230,234	273,667	300,105	293,356	319,010
Total	630,051	803,458	865,559	930,605	1,052,264
	Unit value *(dollars per kilogram)*				
Japan	$0.84	$0.87	$0.83	$0.83	$0.86
Canada	.92	1.06	1.20	1.07	1.01
United Kingdom	.71	.63	.65	.75	.72
Taiwan	.69	.91	1.05	1.04	1.16
Mexico	.75	.77	.79	.76	.75
Australia	1.00	1.13	1.27	1.22	1.19
Hong Kong	.64	.77	.72	.74	.86
South Korea	.84	.97	.93	.87	.95
All other	.73	.74	.81	.80	.84
Average	.78	.82	.86	.86	.88

[1] Includes canned, frozen, and dried vegetables.

Source: Compiled from official statistics of the U.S. Department of Commerce.

Table 14
Canned vegetables:[1] U.S. exports of domestic merchandise, by principal markets, 1989-93

Market	1989	1990	1991	1992	1993
	Quantity *(1,000 kilograms)*				
Canada	23,754	57,816	88,689	120,314	140,198
Japan	46,778	52,875	48,074	58,422	70,132
Taiwan	12,063	17,285	14,830	21,455	23,060
United Kingdom	9,470	14,763	19,173	28,835	23,243
Hong Kong	7,323	10,028	16,839	17,178	20,985
Mexico	7,278	16,118	10,289	21,977	20,439
South Korea	3,705	6,750	7,814	12,537	14,630
Australia	1,583	1,970	1,193	3,775	12,170
All other	68,078	80,723	96,551	102,352	121,781
Total	180,032	258,328	303,452	386,845	446,638
	Value *(1,000 dollars)*				
Canada	20,781	65,568	99,790	119,248	128,454
Japan	42,966	43,642	41,084	48,331	62,383
Taiwan	10,853	17,611	19,839	28,701	35,171
United Kingdom	7,344	11,187	17,447	28,163	24,602
Hong Kong	6,408	6,627	10,134	12,686	20,918
Mexico	7,349	13,117	9,924	20,430	20,417
South Korea	3,402	7,345	11,248	13,290	18,733
Australia	1,239	1,989	1,456	6,843	17,975
All other	77,991	86,199	99,670	107,456	132,794
Total	174,333	253,285	310,592	385,148	461,447
	Unit value *(dollars per kilogram)*				
Canada	$0.87	$1.13	$1.13	$0.99	$0.92
Japan	.92	.83	.85	.83	.89
Taiwan	.90	1.02	1.34	1.34	1.53
United Kingdom	.78	.76	.91	.98	1.06
Hong Kong	.88	.66	.60	.74	1.00
Mexico	1.01	.81	.96	.93	1.00
South Korea	.92	1.09	1.44	1.06	1.28
Australia	.78	1.01	1.22	1.81	1.48
All other	1.15	1.07	1.03	1.05	1.09
Average	.97	.98	1.02	1.00	1.03

[1] Includes canned vegetables (Sch. B No. 0711.10, 0711.30.0000-0711.90.0000, 2001.10.0000-2001.90.0000, 2002.10.0000-2002.90.0080, 2003.10.0000-2003.20.0000, 2005.10.0000-2005.60.0000, and 2005.80.0000-2005.90.0000).

Source: Compiled from official statistics of the U.S. Department of Commerce.

Table 15
Frozen vegetables:[1] U.S. exports of domestic merchandise, by principal markets, 1989-93

Market	1989	1990	1991	1992	1993
	Quantity *(1,000 kilograms)*				
Japan	172,063	176,291	193,135	194,941	205,616
Canada	11,895	48,689	19,425	21,175	25,821
Hong Kong	21,323	14,015	15,961	19,972	21,716
Mexico	4,567	5,351	8,664	16,512	20,893
Australia	7,936	6,348	5,378	9,420	16,436
South Korea	3,513	5,485	11,910	16,345	17,073
Taiwan	7,030	7,630	8,813	10,086	11,126
Singapore	8,412	6,075	6,489	8,089	7,952
All other	41,820	46,055	44,006	51,578	47,615
Total	278,559	315,939	313,781	348,117	374,248
	Value *(1,000 dollars)*				
Japan	130,617	138,197	150,438	149,468	157,987
Canada	9,614	37,706	18,793	19,452	24,281
Hong Kong	11,571	11,555	13,167	14,020	15,411
Mexico	2,426	4,045	6,609	10,954	13,817
Australia	5,878	5,352	5,111	8,012	13,436
South Korea	2,568	3,976	9,255	12,894	12,118
Taiwan	3,814	6,524	7,303	7,705	8,162
Singapore	4,894	4,714	5,064	6,178	6,063
All other	37,944	43,806	40,356	45,141	41,118
Total	209,326	255,875	256,096	273,824	292,393
	Unit value *(dollars per kilogram)*				
Japan	$0.76	$0.78	$0.78	$0.77	$0.77
Canada	.81	.77	.97	.92	.94
Hong Kong	.54	.82	.82	.70	.71
Mexico	.53	.76	.76	.66	.66
Australia	.74	.84	.95	.85	.82
South Korea	.73	.72	.78	.79	.71
Taiwan	.54	.86	.83	.76	.73
Singapore	.58	.78	.78	.76	.76
All other	.90	.95	.92	.88	.86
Average	.75	.81	.82	.79	.78

[1] Includes frozen vegetables (Sch. B No. 0710.10-0710.90 and 2004.10-2004.90.9080).

Source: Compiled from official statistics of the U.S. Department of Commerce.

Table 16
Dried vegetables:[1] U.S. exports of domestic merchandise, by principal markets, 1989-93

Market	1989	1990	1991	1992	1993
	Quantity *(1,000 kilograms)*				
United Kingdom	67,596	87,890	84,525	62,315	86,097
Japan	32,326	29,126	33,889	34,198	34,605
Canada	23,808	16,661	15,529	17,704	19,046
Italy	12,748	12,118	12,146	8,891	17,579
Spain	12,112	14,679	17,281	25,857	20,626
West Germany	6,972	8,809	14,539	13,412	4,815
Australia	5,017	6,083	5,219	5,453	5,740
Peru	7,911	17,406	18,650	21,119	20,812
All other	184,348	214,722	192,639	161,537	163,351
Total	352,838	407,494	394,417	350,486	372,671
	Value *(1,000 dollars)*				
United Kingdom	46,812	52,440	50,150	40,923	54,330
Japan	37,808	42,583	37,770	40,313	46,270
Canada	24,319	27,460	29,244	31,896	34,186
Italy	9,396	8,016	8,455	5,019	13,332
Spain	6,653	7,467	10,357	14,433	10,480
West Germany	10,366	12,386	18,236	15,434	10,113
Australia	7,437	8,926	8,435	7,983	9,525
Peru	3,120	7,458	9,134	8,696	8,627
All other	100,481	127,562	127,090	106,935	111,561
Total	246,392	294,298	298,871	271,632	298,424
	Unit value *(dollars per kilogram)*				
United Kingdom	$0.69	$0.60	$0.59	$0.66	$0.63
Japan	1.17	1.46	1.11	1.18	1.34
Canada	1.02	1.65	1.88	1.80	1.79
Italy	.74	.66	.70	.56	.76
Spain	.55	.51	.60	.56	.51
West Germany	1.49	1.41	1.25	1.15	2.10
Australia	1.48	1.47	1.62	1.46	1.66
Peru	.39	.43	.49	.41	.41
All other	.54	.59	.66	.66	.68
Average	.70	.72	.76	.78	.80

[1] Includes dried vegetables (Sch. B No. 0712.10-0713.10.4080, 0713.20.2000, 0713.31.6000, 0713.32.2000, 0713.33.3000-0713.33.5060, 0713.40.2000, 0713.50.2000, 0713.90.9000, and 1105.10.0000-1106.20.0000).

Source: Compiled from official statistics of the U.S. Department of Commerce.

U.S. TRADE BALANCE

The United States had a trade deficit in processed vegetables of $95 million in 1989, but had a surplus in 1990-93 (table 17).[291] The surplus was highest at $308 million in 1993. In recent years, imports of processed vegetables from Mexico have increasingly surpassed U.S. exports to Mexico.[292] Although Canada has also been a major source of processed vegetable imports, the United States has had a significant trade surplus with Canada since 1990. The United States has had a substantial trade surplus in processed vegetables with Japan during the entire period covered by this summary. The current U.S. trade surplus for processed vegetables with most major markets is expected to fall during the next few years as more foreign markets, traditionally supplied by U.S.-produced products, are increasingly supplied by other developed and some developing nations expanding their production capacity.[293]

The U.S. trade balance in canned vegetables has improved steadily from a deficit of $268 million in 1989 to a surplus of $90 million in 1993 (table 18). U.S. exports of canned vegetables to Canada, Japan, and Taiwan have increased steadily since 1989, while imports from these same countries have leveled off or declined.[294] Imports of canned vegetables from Mexico have risen at a faster rate than U.S. exports to Mexico in recent years, resulting in an increasing trade deficit through 1993.

The United States has had a significant, although fluctuating, trade surplus in frozen vegetables since 1989. The surplus fell irregularly from a recent high of $55 million in 1990 to $3 million in 1992, before rising to $11 million in 1993 (table 19).[295] In recent years, exports of frozen vegetables (principally frozen potato products) to Japan have risen while imports from Japan have remained negligible. Although Mexico and Canada have been increasing in importance as U.S. export markets, the United States has had a significant and rising trade deficit in frozen vegetables with both countries in recent years.

The U.S. trade surplus in dried vegetables rose irregularly from $151 million in 1989 to $205 million in 1993 (table 20).[296] In recent years, U.S. dried vegetable exports to the United Kingdom, Japan, and Canada, the principal export markets, have risen slightly, primarily as a result of increasing foreign demand for high quality U.S. dehydrated vegetables, comparably priced with dehydrated vegetables from other foreign suppliers.[297]

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[291] Compiled by Commission staff from official U.S. Department of Commerce data.

[292] Ibid.

[293] Commission staff conversations with officials of the U.S. and foreign processed vegetable industries, 1992-94.

[294] Compiled by Commission staff from official U.S. Department of Commerce data.

[295] Ibid.

[296] Ibid.

[297] Commission staff conversations with officials of the U.S. and foreign processed vegetable industries, 1992-94.

Table 17
Processed vegetables:[1] U.S. exports of domestic merchandise, imports for consumption, and merchandise trade balance, by selected countries, 1989-93

(Million dollars)

Item	1989	1990	1991	1992	1993
U.S. exports of domestic merchandise:					
Canada	55	131	148	171	187
Japan	211	224	229	238	267
Mexico	18	31	25	39	42
United Kingdom	58	68	71	72	81
China	(2)	1	(2)	(2)	(2)
Taiwan	18	27	30	39	47
All other	269	324	362	371	429
Total	630	803	866	931	1,052
U.S. imports for consumption:					
Canada	52	71	79	91	120
Japan	10	13	17	17	16
Mexico	124	161	174	198	204
United Kingdom	7	2	1	1	1
China	89	50	69	62	73
Taiwan	68	57	49	31	17
All other	374	367	339	348	313
Total	725	721	728	747	745
U.S merchandise trade balance:					
Canada	2	60	69	80	67
Japan	201	212	212	222	251
Mexico	-106	-130	-149	-159	-162
United Kingdom	51	66	70	71	80
China	-89	-49	-68	-61	-73
Taiwan	-50	-30	-19	8	29
All other	-104	-46	23	23	116
Total	-95	83	137	184	308

[1] Includes canned, frozen, and dried vegetables.
[2] Less than $500,000.

Note.—Because of rounding, figures may not add to the totals shown.

Source: Compiled from official statistics of the U.S. Department of Commerce.

Table 18
Canned vegetables:[1] U.S. exports of domestic merchandise, imports for consumption, and merchandise trade balance, by selected countries, 1989-93

(Million dollars)

Item	1989	1990	1991	1992	1993
U.S. exports of domestic merchandise:					
Canada	21	66	100	119	128
Mexico	7	13	10	20	20
Japan	43	44	41	48	62
Taiwan	11	18	20	29	35
China	(2)	1	(2)	(2)	(2)
Spain	1	(2)	1	2	1
All other	91	111	139	167	115
Total	174	253	311	385	461
U.S. imports for consumption:					
Canada	8	8	6	6	8
Mexico	23	51	69	61	76
Japan	6	7	9	9	9
Taiwan	54	48	39	23	13
China	80	30	48	42	45
Spain	65	59	40	49	44
All other	206	203	204	192	176
Total	442	403	415	382	371
U.S merchandise trade balance:					
Canada	13	57	93	114	120
Mexico	-16	-38	-59	-41	-56
Japan	37	37	32	39	53
Taiwan	-44	-30	-19	6	22
China	-79	-29	-48	-42	-45
Spain	-64	-58	-39	-47	-42
All other	-115	-119	-65	-25	-61
Total	-268	-150	-104	3	90

[1] Includes canned, frozen, and dried vegetables.
[2] Less than $500,000.

Note.—Because of rounding, figures may not add to the totals shown.

Source: Compiled from official statistics of the U.S. Department of Commerce.

Table 19
Frozen vegetables:[1] U.S. exports of domestic merchandise, imports for consumption, and merchandise trade balance, by selected countries, 1989-93

(Million dollars)

Item	1989	1990	1991	1992	1993
U.S. exports of domestic merchandise:					
Japan	131	138	150	149	158
Mexico	2	4	7	11	14
Canada	10	38	19	19	24
Guatemala	1	(2)	(2)	(2)	(2)
Hong Kong	12	12	13	14	15
All other	53	64	67	81	81
Total	209	256	256	274	292
U.S. imports for consumption:					
Japan	1	(2)	1	(2)	(2)
Mexico	91	95	94	128	117
Canada	35	54	68	78	105
Guatemala	17	20	24	28	25
Hong Kong	(2)	(2)	(2)	(2)	(2)
All other	44	32	28	37	34
Total	188	201	215	271	281
U.S merchandise trade balance:					
Japan	130	138	150	149	158
Mexico	-88	-91	-87	-117	-103
Canada	-25	-17	-49	-58	-81
Guatemala	-16	-19	-24	-28	-24
Hong Kong	11	11	13	14	15
All other	-9	32	41	44	47
Total	21	55	41	3	11

[1] Includes frozen vegetables.
[2] Less than $500,000.

Note.—Because of rounding, figures may not add to the totals shown.

Source: Compiled from official statistics of the U.S. Department of Commerce.

Table 20
Dried vegetables:[1] U.S. exports of domestic merchandise, imports for consumption, and merchandise trade balance, by selected countries, 1989-93

(Million dollars)

Item	1989	1990	1991	1992	1993
U.S. exports of domestic merchandise:					
United Kingdom	47	52	50	41	54
Japan	38	43	38	40	46
Canada	24	27	29	32	34
Spain	7	7	10	14	10
Mexico	8	14	9	8	7
Italy	9	8	8	5	13
All other	113	143	155	132	134
Total	246	294	299	272	298
U.S. imports for consumption:					
United Kingdom	1	(2)	(2)	(2)	(2)
Japan	4	6	8	7	6
Canada	9	8	5	7	6
Spain	15	15	8	11	8
Mexico	10	15	12	10	10
Italy	3	4	3	5	3
All other	53	69	62	54	60
Total	95	117	98	94	93
U.S merchandise trade balance:					
United Kingdom	46	52	50	41	54
Japan	34	37	30	34	40
Canada	15	19	24	25	28
Spain	-8	-8	2	4	2
Mexico	-2	-1	-3	-2	-3
Italy	7	4	5	(2)	11
All other	60	74	93	78	74
Total	151	177	201	178	205

[1] Includes dried vegetables.
[2] Less than $500,000.

Note.—Because of rounding, figures may not add to the totals shown.

Source: Compiled from official statistics of the U.S. Department of Commerce.

APPENDIX A
EXPLANATION OF TARIFF AND TRADE AGREEMENT TERMS

The ***Harmonized Tariff Schedule of the United States*** (HTS) replaced the *Tariff Schedules of the United States* (TSUS) effective January 1, 1989. Chapters 1 through 97 are based upon the internationally adopted Harmonized Commodity Description and Coding System through the 6-digit level of product description, with additional U.S. product subdivisions at the 8-digit level. Chapters 98 and 99 contain special U.S. classification provisions and temporary rate provisions, respectively.

Rates of duty in the ***general*** subcolumn of HTS column 1 are most-favored-nation (MFN) rates; for the most part, they represent the final concession rate from the Tokyo Round of Multilateral Trade Negotiations. Column 1-general duty rates are applicable to imported goods from all nonembargoed countries except those enumerated in general note 3(b) to the HTS—Afghanistan, Azerbaijan, Cuba, Kampuchea, Laos, North Korea, and Vietnam—whose goods are dutiable at the rates set forth in ***column 2***. Goods from Albania, Armenia, Belarus, Bosnia, Bulgaria, the People's Republic of China, Croatia, the Czech Republic, Estonia, Georgia, Hungary, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Macedonia, Moldova, Mongolia, Poland, Romania, Russia, Slovakia, Slovenia, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan are now eligible for MFN treatment. Among goods dutiable at column 1-general rates, particular products of enumerated countries may be eligible for reduced rates of duty or for duty-free entry under one or more preferential tariff programs. Such tariff treatment is set forth in the ***special*** subcolumn of HTS column 1. Where eligibility for special tariff treatment is not claimed or established, goods are dutiable at column 1-general rates.

The ***Generalized System of Preferences*** (GSP) affords nonreciprocal tariff preferences to developing countries to aid their economic development and to diversify and expand their production and exports. The U.S. GSP, enacted in title V of the Trade Act of 1974 and renewed in the Trade and Tariff Act of 1984, applies to merchandise imported on or after January 1, 1976 and before September 30, 1994. Indicated by the symbol "A" or "A*" in the special subcolumn of column 1, the GSP provides duty-free entry to eligible articles the product of and imported directly from designated beneficiary developing countries, as set forth in general note 4 to the HTS.

The ***Caribbean Basin Economic Recovery Act*** (CBERA) affords nonreciprocal tariff preferences to developing countries in the Caribbean Basin area to aid their economic development and to diversify and expand their production and exports. The CBERA, enacted in title II of Public Law 98-67, implemented by Presidential Proclamation 5133 of November 30, 1983, and amended by the Customs and Trade Act of 1990, applies to merchandise entered, or withdrawn from warehouse for consumption, on or after January 1, 1984; this tariff preference program has no expiration date. Indicated by the symbol "E" or "E*" in the special subcolumn of column 1, the CBERA provides duty-free entry to eligible articles, and reduced-duty treatment to certain other articles, which are the product of and imported directly from designated countries, as set forth in general note 7 to the HTS.

Preferential rates of duty in the special subcolumn of column 1 followed by the symbol "IL" are applicable to products of Israel under the ***United States-Israel Free Trade Area Implementation Act*** of 1985 (IFTA), as provided in general note 8 to the HTS. Where no rate of duty is provided for products of Israel in the special subcolumn for a particular provision, the rate of duty in the general subcolumn of column 1 applies.

Preferential nonreciprocal duty-free or reduced-duty treatment in the special subcolumn of column 1 followed by the symbol "J" or "J*" in parentheses is afforded to eligible articles the product of designated beneficiary countries under the ***Andean Trade Preference Act*** (ATPA), enacted in title II of Public Law 102-182 and implemented by Presidential Proclamation 6455 of July 2, 1992 (effective July 22, 1992), as set forth in general note 11 to the HTS.

Preferential rates of duty in the special subcolumn of column 1 followed by the symbol "CA" are applicable to eligible goods of Canada, and those followed by the symbol "MX" are applicable to eligible goods of Mexico, under the ***North American Free Trade Agreement***, as provided in general note 12 to the HTS, effective January 1, 1994.

Other special tariff treatment applies to particular ***products of insular possessions*** (general note 3(a)(iv)), goods covered by the ***Automotive Products Trade Act*** (APTA) (general note 5) and the ***Agreement on Trade in Civil Aircraft*** (ATCA) (general note 6), and ***articles imported from freely associated states*** (general note 10).

The ***General Agreement on Tariffs and Trade*** (GATT) (61 Stat. (pt. 5) A58; 8 UST (pt. 2) 1786) is a multilateral agreement setting forth basic principles governing international trade among its signatories. The GATT's main obligations relate to most-favored-nation treatment, the maintenance of scheduled concession rates of duty, and national (nondiscriminatory) treatment for imported products; the GATT also provides the legal framework for customs valuation standards, "escape clause" (emergency) actions, antidumping and countervailing duties, and other measures. Results of GATT-sponsored multilateral tariff negotiations are set forth by way of separate schedules of concessions for each participating contracting party, with the U.S. schedule designated as Schedule XX.

Officially known as "The Arrangement Regarding International Trade in Textiles," the ***Multifiber Arrangement*** (MFA) provides a framework for the negotiation of bilateral agreements between importing and producing countries, or for unilateral action by importing countries in the absence of an agreement. These bilateral agreements establish quantitative limits on imports of textiles and apparel, of cotton and other vegetable fibers, wool, man-made fibers and silk blends, in order to prevent market disruption in the importing countries—restrictions that would otherwise be a departure from GATT provisions. The United States has bilateral agreements with many supplying countries, including the four largest suppliers: China, Hong Kong, the Republic of Korea, and Taiwan.

APPENDIX B
STATISTICAL TABLES

Table B–1
Processed vegetables: Harmonized Tariff Schedule subheading; description; U.S. col. 1 rate of duty as of Jan. 1, 1994; U.S. exports, 1993; U.S. imports, 1993

HTS subheading	Description	Col. 1 rate of duty as of Jan. 1, 1994		Bound duty Uruguay Round[2]	U.S. exports, 1993	U.S. imports, 1993
		General	Special[1]		1,000 dollars	
0710	Vegetables (uncooked or cooked by steaming or boiling in water), frozen:					
0710.10.00	Potatoes	17.5%	Free (E,IL,J); 7% (CA);14% (MX)	14%	8,499	347
0710.21.20	Peas *(Pisum sativum)*, shelled or unshelled, if entered during the period from July 1 to September 30, inclusive, in any year	2.2¢/kg	Free (A,E,IL,J,MX) 0.8¢/kg (CA)	1¢/kg	6,250	4,975
0710.21.40	Peas *(Pisum sativum)*, shelled or unshelled, nesi	4.4¢/kg	Free (A,E,IL,J,MX) 1.7¢/kg (CA)	2¢/kg	(3)	9,938
0710.22.10	Lima beans, shelled or unshelled, not reduced in size, if entered during the period from November 1 in any year to the following May 31, inclusive	5.2¢/kg	Free (A,E,IL,J,MX) 2¢/kg (CA)	2.3¢/kg	3,482	69
0710.22.15	Lima beans, shelled or unshelled, not reduced in size, nesi	7.7¢/kg	Free (A,E,IL,J,MX) 3¢/kg (CA)	4.9¢/kg	(4)	62
0710.22.20	Cowpeas (other than black-eye peas), shelled or unshelled, not reduced in size	Free	Free	(4)		11
0710.22.25	String beans (snap beans), shelled or unshelled, not reduced in size	7.7¢/kg	Free (A,E,IL,J,MX) 3¢/kg (CA)	4.9¢/kg	(4)	703
0710.22.37	Other beans, shelled or unshelled, not reduced in size, nesi	7.7¢/kg	Free (E,IL,J); 3¢/kg (CA); 6.1¢/kg (MX)	4.9¢/kg	(4)	1,854
0710.22.40	Beans, shelled or unshelled, reduced in size	17.5%	Free (E,IL,J); 7% (CA); 14% (MX)	11.2%	(4)	2,047
0710.29.05	Chickpeas (garbanzos), shelled or unshelled	2.2¢/kg	Free (A,E,IL,J,MX) 0.8¢/kg (CA)	1¢/kg	701	50
0710.29.15	Lentils, shelled or unshelled	0.22¢/kg	Free (A,CA,E,IL,J, MX)	0.1¢/kg	(5)	37
0710.29.25	Pigeon peas, shelled or unshelled, if entered during the period from July 1 to September 30, inclusive, in any year	Free		Free	(5)	304

See footnotes at end of table.

Table B-1—*Continued*
Processed vegetables: Harmonized Tariff Schedule subheading; description; U.S. col. 1 rate of duty as of Jan. 1, 1994; U.S. exports, 1993; U.S. imports, 1993

HTS subheading	Description	Col. 1 rate of duty as of Jan. 1, 1994		Bound duty Uruguay Round[2]	U.S. exports, 1993	U.S. imports, 1993
		General	Special[1]		*1,000 dollars*	
0710	Vegetables (uncooked or cooked by steaming or boiling in water), frozen—Continued:					
0710.29.30	Other pigeon peas, shelled or unshelled, nesi	1.8¢/kg	Free (A,E,IL,J,MX) 0.7¢/kg (CA)	0.8¢/kg	([5])	2,014
0710.29.40	Other leguminous vegetables, shelled or unshelled, nesi	7.7¢/kg	Free (E,IL,J); 3¢/kg (CA); 6.1¢/kg (MX)	3.5¢/kg	([5])	2,589
0710.30.00	Spinach, New Zealand spinach and orache spinach (garden spinach)	17.5%	Free (E,IL,J,MX) 7% (CA)	14%	3,387	99
0710.40.00	Sweet corn	17.5%	Free (E,IL,J); 7% (CA); 14% (MX)	14%	42,629	5,804
0710.80.10	Bamboo shoots or water chestnuts	Free		Free	19,572	7,136
0710.80.20	Mushrooms	7.1¢/kg +10%	Free (E,IL,J) 2.8¢/kg + 4% (CA) 6.3¢/kg + 9% (MX)	5.7¢ + 8%	([6])	1,525
0710.80.40	Tomatoes, if entered during the period from March 1 to July 14, inclusive, or the period from September 1 to November 14, inclusive, in any year	4.6¢/kg	Free (E,IL,J,MX) 1.8¢/kg (CA)	2.9¢/kg	([6])	463
0710.80.45	Tomatoes, if entered during the period from July 15 to August 31, inclusive, in any year	3.3¢/kg	Free (E,IL,J,MX) 1.3¢/kg (CA)	2.1¢/kg	([6])	45
0710.80.50	Tomatoes, if entered during the period from November 15 in any year to the last day of the following February, inclusive	3.3¢/kg	Free (A,E,IL,J,MX) 1.3¢/kg (CA)	2.1¢/kg	([6])	383
0710.80.60	Fiddlehead greens, not reduced in size	10%	Free (E,IL,J,MX) 4% (CA)	8%	([6])	13
0710.80.65	Brussels sprouts, not reduced in size	25%	Free (A,E,IL,J,MX) 5% (CA)	12.5%	([6])	2,817
0710.80.70	Other vegetables, nesi, not reduced in size	25%	Free (A*,E,IL,J,MX) 10% (CA)	11.3%	([6])	10,601
0710.80.85	Brussels sprouts, reduced in size	17.5%	Free (E,IL,J) 2.8% (CA) 15.7% (MX)	14%	([6])	866
0710.80.93	Okra, reduced in size	17.5%	Free (A,E,IL,J,MX) 7% (CA)	14.9%	([6])	2,771

See footnotes at end of table.

Table B-1—*Continued*
Processed vegetables: Harmonized Tariff Schedule subheading; description; U.S. col. 1 rate of duty as of Jan. 1, 1994; U.S. exports, 1993; U.S. imports, 1993

HTS subheading	Description	Col. 1 rate of duty as of Jan. 1, 1994		Bound duty Uruguay Round[2]	U.S. exports, 1993	U.S. imports, 1993
		General	Special[1]			
					1,000 dollars	
0710	Vegetables (uncooked or cooked by steaming or boiling in water), frozen— Continued:					
0710.80.97	Other vegetables, nesi, reduced in size	17.5%[7]	Free (E,IL,J) 7% (CA)	14.9%	(6)	134,145
0710.90.10	Mixtures of pea pods and water chestnuts	17.5%	Free (A,E,IL,J,MX) 7% (CA)	7.9%	21,742	36
0710.90.90	Other mixtures of vegetables, nesi	17.5%	Free (E,IL,J) 7% (CA) 14% (MX)	14%	(8)	5,917
0711	Vegetables provisionally preserved (for example, by sulfur dioxide gas, in brine, in sulfur water or in other preservative solutions), but unsuitable in that state for immediate consumption:					
0711.10.00	Onions	8%	Free (A,E,IL,J,MX) 3.2% (CA)	5.1%	967	191
0711.30.00	Capers	8%	Free (A,E,IL,J,MX) 3.2% (CA)	8%	80	1,573
0711.40.00	Cucumbers including gherkins	12%	Free (A,E,IL,J,MX) 4.8% (CA)	7.7%	217	2,551
0711.90.20	Leguminous vegetables and mixtures of leguminous vegatables	Free		Free	1,590	45
0711.90.40	Mushrooms and mixtures of mushrooms	7.1¢/kg on drained weight + 10%	Free (E,IL,J) 2.8¢/kg on drained weight + 4% (CA) 5.6¢/kg on drained weight + 8% (MX)	5.7¢/kg on drained weight + 8%	(9)	611
0711.90.60	Other vegetables, nesi; mixtures of vegetables, nesi	12%[10]	Free (A,E,IL,J,MX) 4.8% (CA)	7.7%	(9)	6,989
0712	Dried vegetables, whole, cut, sliced, broken or in powder, but not further prepared:					
0712.10.00	Potatoes whether or not cut or sliced but not furthur prepared	2.9¢/kg	Free (A,CA,E,IL,J) 2.3¢/kg (MX)	2.3¢/kg	9,658	115
0712.20.20	Onion powder or flour	35%	Free (CA,E,IL,J) 32.6% (MX)	29.8%	16,733	881
0712.20.40	Other onions, nesi	25%	Free (CA,E,IL,J) 23.3% (MX)	21.3%	39,251	2,752

See footnotes at end of table.

Table B-1—*Continued*
Processed vegetables: Harmonized Tariff Schedule subheading; description; U.S. col. 1 rate of duty as of Jan. 1, 1994; U.S. exports, 1993; U.S. imports, 1993

HTS subheading	Description	Col. 1 rate of duty as of Jan. 1, 1994		Bound duty Uruguay Round[2]	U.S. exports, 1993	U.S. imports, 1993
		General	Special[1]			
					1,000 dollars	
0712	Dried vegetables, whole, cut, sliced, broken or in powder, but not further prepared—Continued:					
0712.30.10	Air dried or sun dried mushrooms	2.9¢/kg + 4%	Free (A,E,IL,J,MX) 1.1¢/kg + 1.6% (CA)	1.3¢/kg + 1.8%	1,092	13,279
0712.30.20	Other mushrooms, nesi	2.9¢/kg + 4%	Free (E,IL,J) 1.1¢/kg + 1.6% (CA) 2.3¢/kg + 3.2% (MX)	1.9¢/kg + 2.6%	([11])	7,767
0712.30.40	Truffles	Free		Free	([11])	62
0712.90.10	Carrots or mixtures of carrots	5.2%	Free (A,E,IL,J,MX) 2% (CA)	1.3%	0	1,893
0712.90.40	Garlic or mixtures of garlic	35%	Free (CA,E,J) 32.6% (MX)	29.8%	18,882	5,471
0712.90.60	Crude or not manufactured fennel, marjoram, parsley, savory, and tarragon, or mixtures thereof, nesi	Free		Free	0	4,296
0712.90.65	Other parsley or other mixtures of parsley, nesi	6%	Free (A,E,IL,J,MX) 2.4% (CA)	3.8%	0	2,203
0712.90.70	Other fennel, marjoram, savory, and tarragon, or mixtures thereof, nesi	7.5%	Free (A,E,IL,J,MX) 3% (CA)	1.9%	0	242
0712.90.75	Tomatoes or mixtures thereof	13%	Free (E,IL,J,MX) 5.2% (CA)	8.7%	0	24,512
0712.90.80	Other vegetables or mixtures of vegetables, nesi	13%	Free (A,E,IL,J,MX) 5.2% (CA)	8.3%	[12]50,601	1,681
0713	Dried leguminous vegetables, shelled, whether or not skinned or split:					
0713.10.20	Split peas, other than seeds of a kind used for sowing	Free		Free	1,957	1,354
0713.10.40	Peas, nesi, other than seeds of a kind used for sowing	0.9¢/kg	Free (A,CA,E, IL, J, MX)	0.4¢/kg	24,487	2,939
0713.20.20	Chickpeas (garbanzos), nesi, other than seeds of a kind used for sowing	3.1¢/kg	Free (A,CA,E, (IL,J,MX)	1.4¢/kg	1,587	7,432
0713.31.20	Beans, nesi, other than seeds of a kind used for sowing, if entered for consumption during the period from May 1 to August 31, inclusive, in any year	Free		Free	1,055	1,462

See footnotes at end of table.

Table B-1—*Continued*
Processed vegetables: Harmonized Tariff Schedule subheading; description; U.S. col. 1 rate of duty as of Jan. 1, 1994; U.S. exports, 1993; U.S. imports, 1993

HTS subheading	Description	Col. 1 rate of duty as of Jan. 1, 1994		Bound duty Uruguay Round[2]	U.S. exports, 1993	U.S. imports, 1993
		General	Special[1]		*1,000 dollars*	
0713	Dried leguminous vegetables, shelled, whether or not skinned or split—Continued:					
0713.31.40	Beans, nesi, other than seeds of a kind used for sowing, if entered for consumption outside the above stated period, or if withdrawn for consumption at any time	1.1¢/kg	Free (A*,CA,E,IL, J,MX)	0.3¢/kg	([13])	1,543
0713.32.20	Small red (adzuki) beans *(Phaseolus* or *Vigna angularis)*, nesi, other than seeds of a kind used for sowing	2.6¢/kg	Free (A,CA,E, IL,J,MX)	1.2¢/kg	8,131	1,267
0713.33.20	Kidney beans, including white pea beans *(Phaseolus vulgaris)*, nesi, other than seeds of a kind used for sowing, if entered for consumption during the period from May 1 to August 31, inclusive, in any year	2.2¢/kg	Free (A,CA,E, IL,J,MX)	1¢/kg	45,213	368
0713.33.40	Kidney beans, including white pea beans *(Phaseolus vulgaris)*, nesi, other than seeds of a kind used for sowing, if entered for consumption outside the above stated period, or if withdrawn for consumption at any time	3.3¢/kg	Free (A,CA,E, IL,J,MX)	1.5¢/kg	23,158	2,724
0713.39.15	Cowpeas, other than seeds of a kind used for sowing ...	Free		Free	([14])	380
0713.39.20	Beans, nesi, other than seeds of a kind used for sowing, if entered for consumption during the period from May 1 to August 31, inclusive, in any year	1.7¢/kg	Free (A,CA,E IL,J,MX)	0.8¢ /kg	([14])	1,120
0713.39.40	Beans, nesi, other than seeds of a kind used for sowing, if entered for consumption outside the above stated period, or if withdrawn for consumption at any time	3.3¢/kg	Free (A,CA,E, IL,J,MX)	0.8¢/kg	([14])	2,565
0713.40.20	Lentils, other than seeds of a kind used for sowing	0.33¢/kg	Free (A,CA,E, IL,J,MX)	0.15¢/kg	27,927	1,674
0713.50.20	Broad beans *(Vicia faba* var. *major)* and horse beans *(Vicia faba* var. *equina* and *Vicia faba* var. *minor)*, other than seeds of a kind used for sowing	2.6¢/kg	Free (A,CA,E, IL,J,MX)	1.2¢/kg	120	208

See footnotes at end of table.

Table B-1—*Continued*
Processed vegetables: Harmonized Tariff Schedule subheading; description; U.S. col. 1 rate of duty as of Jan. 1, 1994; U.S. exports, 1993; U.S. imports, 1993

HTS subheading	Description	Col. 1 rate of duty as of Jan. 1, 1994		Bound duty Uruguay Round[2]	U.S. exports, 1993	U.S. imports, 1993
		General	Special[1]			
					1,000 dollars	
0713	Dried leguminous vegetables, shelled, whether or not skinned or split—Continued:					
0713.90.50	Guar seeds, other than seeds of a kind used for sowing	Free		Free	([15])	0
0713.90.60	Dried leguminous vegetables, nesi, other than seeds of a kind used for sowing, if entered for consumption during the period from May 1 to August 31, inclusive, in any year	1.7¢/kg	Free (A,CA,E,) IL,J,MX	0.8¢/kg	([15])	159
0713.90.80	Dried leguminous vegetables, nesi, other than seeds of a kind used for sowing, if entered for consumption outside the above stated period, or if withdrawn for consumption at any time	3.3¢/kg	Free (A,CA,E,IL,J,MX)	1.5¢/kg	909	91
1105	Flour, meal and flakes of potatoes:					
1105.10.00	Flour and meal	2.6¢/kg	Free (A,E,IL,J,MX) 1¢/kg (CA)	1.7¢/kg	2,868	290
1105.20.00	Flakes	2.9¢/kg	Free (E,IL,J,MX) 1.1¢/kg (CA)	1.3¢/kg	24,340	717
1106	Flour and meal of the dried leguminous vegetables of heading 0713, of sago or of roots or tubers of heading 0714; flour, meal and powder of the products of chapter 8:					
1106.10.00	Flour and meal of the dried leguminous vegetables of heading 0713	13%	Free (A,CA,E, IL,J,MX)	8.3%	417	525
1106.20.00	Flour and meal of sago, roots or tubers of heading 0714	Free		Free	37	723
2001	Vegetables, fruit, nuts and other edible parts of plants, prepared or preserved by vinegar or acetic acid:					
2001.10.00	Cucumbers including gherkins	12%	Free (A,E,IL,J,MX) 4.8% (CA)	9.6%	9,383	5,182
2001.20.00	Onions	8%	Free (A,E,IL,J,MX) 3.2% (CA)	3.6%	131	1,034
2001.90.10	Capers, in immediate containers holding more than 3.4 kg	8%	Free (A,E,IL,J,MX) 3.2% (CA)	8%	([16])	2,452

See footnotes at end of table.

Table B-1—*Continued*
Processed vegetables: Harmonized Tariff Schedule subheading; description; U.S. col. 1 rate of duty as of Jan. 1, 1994; U.S. exports, 1993; U.S. imports, 1993

HTS subheading	Description	Col. 1 rate of duty as of Jan. 1, 1994		Bound duty Uruguay Round[2]	U.S. exports, 1993	U.S. imports, 1993
		General	Special[1]			
					1,000 dollars	
2001	Vegetables, fruit, nuts and other edible parts of plants, prepared or preserved by vinegar or acetic acid—Continued:					
2001.90.20	Other capers, nesi	8%	Free (E,IL,J); 3.2% (CA); 7.2% (MX)	8%	([16])	1,435
2001.90.25	Artichokes	12%	Free (A,E,J,MX) 1.2% (IL); 4.8% (CA)	10.2%	([16])	8,152
2001.90.30	Beans	9%	Free (A,E,IL,J,MX) 3.6% (CA)	5.8%	([16])	96
2001.90.33	Nopalitos	12%	Free (A,E,IL,J,MX) 4.8% (CA)	7.7%	([16])	245
2001.90.35	Pimientos (*Capsicum anuum*)	9.5%	Free (E,IL,J); 3.8% (CA); 8.5% (MX)	8.1%	([16])	1,461
2001.90.39	Other vegetables, nesi	12%	Free (A*,E,IL,J) 4.8% (CA); 9.6% (MX)	9.6%	12,889	45,704
2002	Tomatoes prepared or preserved otherwise than by vinegar or acetic acid:					
2002.10.00	Tomatoes, whole or in pieces	14.7%[17]	Free (E,,IL,J); 5.8% (CA); 13.2% (MX)	12.5%	16,838	16,194
2002.90.00	Tomatoes, other than whole or in pieces	13.6%	Free (E,IL,J); 5.4% (CA); 10.3% (MX)	11.6%	71,567	20,286
2003	Mushrooms and truffles, prepared or preserved otherwise than by vinegar or acetic acid:					
2003.10.00	Mushrooms	7.1¢/kg on drained weight + 10%	Free (E,IL,J) 2.8¢/kg on drained weight + 4% (CA) 6.3¢/kg on drained weight + 9% (MX)	6¢/kg on drained weight + 8.5%	4,847	92,948
2003.20.00	Truffles	Free		Free	37	1,051
2004	Other vegetables prepared or preserved otherwise than by vinegar or acetic acid, frozen:					
2004.10.40	Yellow (Solano) potatoes	10%	Free (A,E,IL,J,MX) 4% (CA)	6.4%	0	15

See footnotes at end of table.

Table B-1—*Continued*
Processed vegetables: Harmonized Tariff Schedule subheading; description; U.S. col. 1 rate of duty as of Jan. 1, 1994; U.S. exports, 1993; U.S. imports, 1993

HTS subheading	Description	Col. 1 rate of duty as of Jan. 1, 1994		Bound duty Uruguay Round[2]	U.S. exports, 1993	U.S. imports, 1993
		General	Special[1]			
					1,000 dollars	
2004	Other vegetables prepared or preserved otherwise than by vinegar or acetic acid, frozen—Continued					
2004.10.80	Other potatoes, nesi	10%	Free (E,IL,J) 4% (CA); 8% (MX)	8%	162,214	72,169
2004.90.10	Antipasto	5%	Free (A,E,IL,J,MX) 2% (CA)	3.2%	1,213	83
2004.90.80	Beans and mixtures of beans	3.3¢/kg on entire contents of container	Free (A,E,IL,J,MX) 1.3¢/kg on entire contents of container (CA)	2.1¢/kg on entire contents of container	660	522
2004.90.90	Other vegetables and mixtures of vegetables, nesi	17.5%	Free (E,IL,J) 7% (CA)[18] 15.7% (MX)	11.2%	22,013	10,082
2005	Other vegetables prepared or preserved otherwise than by vinegar or acetic acid, not frozen:					
2005.10.00	Homogenized vegetables	17.5%	Free (A,E,IL,J,MX) 7% (CA)	11.2%	8,436	225
2005.20.20	Potato chips	10%	Free (A,E,IL,J,MX) 4% (CA)	6.4%	130,509	4,391
2005.20.60	Potato granules and other potatoes	10%	Free (A,E,IL,J,MX) 4% (CA)	6.4%	16,847	673
2005.30.00	Sauerkraut	7.5%	Free (E,IL,J) 3% (CA); 6% (MX)	4.8%	2,029	761
2005.40.00	Peas *(Pisum sativum)*	Free		Free	5,760	12,754
2005.51.20	Black-eye cowpeas, shelled	3.3¢/kg on entire contents of container	Free (E,IL,J,MX) 1.3¢/kg on entire contents of container (CA)	1.5¢/kg on entire contents of container	1,074	143
2005.51.40	Other shelled beans	3.3¢/kg on entire contents of container	Free (A,E,IL,J,MX) 1.3¢/kg on entire contents of container (CA)	2.1¢/kg on entire contents of container	7,841	3,638
2005.59.00	Beans, other than shelled	3.3¢/kg on entire contents of container	Free (A,E,IL,J,MX) 1.3¢/kg on entire contents of container (CA)	1.5¢/kg on entire contents of container	3,706	5,148
2005.60.00	Asparagus	17.5%	Free (E,IL,J); 7% (CA); 15.7% (MX)	14.9%	2,392	2,512
2005.80.00	Sweet corn (*Zea mays* var. *saccharata*)	12.5%	Free (A,E,IL, J,MX) 5% (CA)	5.6%	132,842	5,697

See footnotes at end of table.

Table B-1—*Continued*
Processed vegetables: Harmonized Tariff Schedule subheading; description; U.S. col. 1 rate of duty as of Jan. 1, 1994; U.S. exports, 1993; U.S. imports, 1993

HTS subheading	Description	Col. 1 rate of duty as of Jan. 1, 1994		Bound duty Uruguay Round[2]	U.S. exports, 1993	U.S. imports, 1993
		General	Special[1]			
					1,000 dollars	
2005	Other vegetables prepared or preserved otherwise than by vinegar or acetic acid, not frozen—Continued					
2005.90.10	Carrots in airtight containers	10%	Free (A,E,IL,J,MX) 4% (CA)	6.4%	([19])	2,484
2005.90.20	Onions	7%	Free (A,E,IL,J,MX) 2.8% (CA)	4.5%	([19])	1,724
2005.90.40	Water chestnuts	Free	Free	([19])	26,184	
2005.90.50	Pimientos *(Capsicum anuum)*	9.5%	Free (E,IL,J); 3.8% (CA); 8.5% (MX)	8.1%	([19])	6,258
2005.90.55	Other fruits of the genus *Capsicum* (peppers), other than pimientos (*Capsicum anuum*), or of the genus *Pimenta* (e.g., allspice), nesi	17.5%	Free (A,E,IL,J); 7% (CA); 15.7% (MX)	Free	([19])	9,980
2005.90.60	Bamboo shoots in airtight containers	Free	Free	([19])	24,041	
2005.90.80	Artichokes	17.5%	Free (E,J) 1.8% (IL); 7% (CA); 15.7% (MX)	14.9%	([19]) 21,815	
2005.90.85	Chickpeas (garbanzos)	1.7¢/kg on entire contents of container	Free (A,E,IL,J,MX) 0.6¢/kg on entire contents of container (CA)	0.8¢/kg on entire contents of container	([19])	683
2005.90.87	Nopalitos	17.5%	Free (A,E,IL,J,MX) 7% (CA)	11.2%	([19])	3,454
2005.90.95	Other vegetables and mixtures of vegetables, nesi	17.5%	Free (A,E,IL,J,MX) 7% (CA)	11.2%	31,465	28,642

[1] Programs under which special tariff treatment may be provided, and the corresponding symbols for such programs as they are indicated in the "Special" subcolumn, are as follows: Generalized System of Preferences (A or A*); Automotive Products Trade Act (B); Agreement on Trade in Civil Aircraft (C); North American Free- Trade Agreement, goods of Canada (CA) and Mexico (MX); Caribbean Basin Economic Recovery Act (E); United States-Israel Free-Trade Agreement (IL); and Andean Trade Preference Act (J).

[2] Uruguay Round bound rates of duty are published by the office of the U.S. Trade Representative, *Results of the Uruguay Round Market Access Negotiations, GATT Schedule XX, United States of America, Vol. 1, General Notes, Agriculture*, Washington, DC; U.S. Government Printing Office, Apr. 1994.

[3] Value included under HTS 0710.21.20.

[4] Value included under HTS 0710.22.10.

[5] Value included under HTS 0710.29.05.

[6] Value included under HTS 0710.80.10.

[7] See 9906.07.54 - 9906.07.55 (MX).

[8] Value included under HTS 0710.90.10.

[9] Value included under HTS 0710.90.20.

[10] See 9905.07.15.

[11] Value included under HTS 0712.30.10.

[12] Value includes Sch. B 0712.90.8000 and 0712.90.9000.

[13] Value includes all of Sch. B 0713.31.6000.

[14] Value included under HTS 0713.33.40.

Table B-1—*Continued*
Processed vegetables: Harmonized Tariff Schedule subheading; description; U.S. col. 1 rate of duty as of Jan. 1, 1994; U.S. exports, 1993; U.S. imports, 1993

HTS subheading	Description	Col. 1 rate of duty as of Jan. 1, 1994		Bound duty Uruguay Round[2]	U.S. exports, 1993	U.S. imports, 1993
		General	Special[1]			

[15] Value included under HTS 0713.90.80.
[16] Value included under HTS 2001.90.39.
[17] The duty on tomatoes, whole or in pieces, prepared or preserved otherwise than by vinegar or acetic acid (provided for in subheading 2002.10.00), the product of the European Community, increased to 100 percent.
[18] The duty on frozen battered and breaded onion rings and chips (provided for in subheading 2004.90.90), the product of Canada, is free.
[19] Value included under HTS 2005.90.95.

Source: Subheadings, product descriptions, and rates of duty compiled from the Harmonized Tariff Schedule of the United States; U.S. exports and imports compiled from official statistics of the U.S. Department of Commerce.

Table B-2
Processed vegetables: Harmonized tariff schedule subheading; description; and tariff treatment in primary U.S. export markets, 1993
(Percent ad valorem)

HTS subheading	Description	Japan		Canada		EC	Mexico
		General	GATT	MFN	US	MFN	General
0710.10	Potatoes, frozen	10	-	10	5	18	15
0710.21	Peas, shelled or unshelled, frozen	10	10	15	7.5	18	15
0710.22	Beans and cowpeas, shelled or unshelled, frozen	10	10	15	7.5	18	15
0710.29	Other leguminous vegetables, shelled or unshelled, frozen	10	10	Free-15	Free-7.5	18	15
0710.30	Spinach, frozen	10	10	Free	Free	18	15
0710.40	Sweet corn, frozen	25	12.5	15	7.5	8	15
0710.80	Other vegetables, excluding mixtures of vegetables, frozen	10	10	Free-22.5	Free-11.2	10-19	15-20
0710.90	Mixtures of vegetables	10	10	Free	11.2	18	15
0711.10	Onions, proivisionally preserved	15	-	12.5	6.2	9	15
0711.30	Capers, provisionally preserved	15	-	12.5	6.2	6	10
0711.40	Cucumbers including gherkins, provisionally preserved	15	-	12.5	6.2	15	15
0711.90	Other vegetables or mixtures of vegetables, provisionally preserved	15	-	12.5	6.2	8-15	15
0712.10	Potatoes, dried	15	-	10	5	16	20
0712.20	Onions, dried	15	-	10	5	10-16	20
0712.30	Mushrooms and truffles, dried	15	-	Free-10	Free-5	16	20
0712.90	Other vegetables or mixtures of vegetables, dried	15	-	Free-10	Free-5	0-16	20
0713.10	Peas, dried, shelled, whether or not skinned or split	12[1]	10	Free	Free	3	10
0713.20	Chickpeas, dried, shelled, whether or not skinned or split	12[1]	10	Free	Free	3	10
0713.31	Other beans, dried, shelled, whether or not skinned or split	Free	Free	Free-	Free	3	10
0713.32	Small red (adzuki) beans, dried, shelled, whether or not skinned or split	Free	Free	3.31[2]	Free	3	10
0713.33	Kidney beans, dried, shelled, whether or not skinned or split	Free	Free	2.21[2]-	Free	3	Free
0713.39	Cowpeas and other beans, dried, shelled, whether or not skinned or split	Free	Free	Free-	Free	3	10
0713.40	Lentils, dried, shelled, whether or not skinned or split	Free	Free	Free	Free	2	10
0713.50	Broad beans and horse beans, dried, shelled, whether or not skinned or split	Free	Free	3.31[2]	Free	5	10
0713.90	Other leguminous vegetables, dried, shelled, whether or not skinned or split	Free	Free	3.31[2]	Free	5	Free-10
1105.10	Potato flour and meal	25	-	12.5	6.2	19	15
1105.20	Potato flakes	25	-	10	5	19	15
1106.10	Flour and meal of the dried leguminous vegetables of heading 0713	25	16	Free-10	Free-5	12	15
1106.20	Flour and meal of sago, roots or tubers of heading 0714	25	-	0.8[2]- 1.65[2]	5-10	12	15
2001.10	Cucumbers including gherkins, prepared or preserved by vinegar or acetic acid	25	20	12.5	6.2	22	20

See footnotes at end of table.

Table B-2—*Continued*

Processed vegetables: Harmonized tariff schedule subheading; description; and tariff treatment in primary U.S. export markets, 1993

(Percent ad valorem)

HTS subheading	Description	Japan		Canada		EC	Mexico
		General	GATT	MFN	US	MFN	General
2001.20	Onions, prepared or preserved by vinegar or acetic acid	25	20	12.5	6.2	20	20
2001.90	Other vegetables, prepared or preserved by vinegar or acetic acid	25	-	12.5	6.2	0-20	20
2002.10	Tomatoes, whole or in pieces, prepared or preserved by vinegar or acetic acid	25	15	13.6	6.8	18	20
2002.90	Tomatoes, other, prepared or preserved by vinegar or acetic acid	25	15	13.6	6.8	18	20
2003.10	Mushrooms, prepared or preserved by vinegar or acetic acid	25	-	20	10	23	20
2003.20	Truffles, prepared or preserved by vinegar or acetic acid	25	-	Free	Free	18	20
2004.10	Potatoes, otherwise prepared or preserved, frozen	10	-	10	5	11-22	20
2004.90	Other vegetables, otherwise prepared or preserved, frozen	25	-	Free-22.5	Free-11.2	8-22	20
2005.10	Homogenized vegetables, otherwise prepared or preserved, not frozen	25	20	12.5	6.2	22	20
2005.20	Potato chips, granules, and other potatoes, otherwise prepared or preserved, not frozen	25	20	10	5	11-22	20
2005.30	Sauerkraut, otherwise prepared or preserved, not frozen	25	20	12.5	6.2	20	20
2005.40	Peas *(Pisum sativum)*, otherwise prepared or preserved, not frozen	25	20	12.5	6.2	24	20
2005.51	Beans, shelled, otherwise prepared or preserved, not frozen	25	20	5-10	6.2-12.5	22	20
2005.59	Beans, other than shelled, otherwise prepared or preserved, not frozen	25	20	12.5	6.2	24	20
2005.60	Asparagus, otherwise prepared or preserved, not frozen	25	20	22.5	11.2	22	20
2005.80	Sweet corn (*Zea mays* var. *saccharata*), otherwise prepared or preserved, not frozen	20	12.5	12.5	6.2	8	20
2005.90	Other vegetables or mixtures of vegetables, otherwise prepared or preserved, not frozen	25	-	Free-17.5	Free-8.7	10-22	20

[1] Yen per kilogram.
[2] Cents Canadian per kilogram.

Source: Customs Tariff Schedules of Japan, 1993, Japan Tariff Association; Customs Tariff-1993, Revenue Canada, Customs and Excise, Jan. 1, 1993; North American Free Trade Agreement, Annex 302.2; Brussels Tariff Nomenclature; and Schedule of Mexico.