Table 21 - U.S. chile peppers, all uses - -dry - weight basis: Supply, utilization, and price, 1980 - 94

Year	Supply			Utilization				Season average price 4/	
						Per capita	a use	Current dollars <u>1</u> /	Constant
	Production	Imports	Total	Exports <u>2</u> /	Total	Dry-weight	Fresh		1987
	<u>1</u> /	<u>2</u> /					3/		dollars
			Million pour	nds		Pound	ls	\$/sl	nort ton
1980	70.2	26.1	96.3	1.2	95.1	0.4	3.3	1,125	1,569
1981	79.6	26.7	106.3	1.5	104.9	0.5	3.6	1,340	1,698
1982	67.5	28.8	96.3	1.4	94.8	0.4	3.3	1,204	1,437
1983	70.5	33.3	103.8	1.6	102.1	0.4	3.5	1,210	1,388
1984	79.8	40.7	120.5	1.5	119.0	0.5	4.0	1,100	1,209
1985	83.4	45.2	128.6	1.5	127.1	0.5	4.3	1,125	1,192
1986	95.3	45.0	140.3	1.7	138.6	0.6	4.6	1,054	1,088
1987	95.3	44.6	139.9	1.5	138.4	0.6	4.6	1,060	1,060
1988	99.5	48.5	148.0	1.6	146.3	0.6	4.8	1,065	1,025
1989	106.6	63.5	170.1	3.6	166.5	0.7	5.4	1,095	1,009
1990	131.1	68.2	199.3	7.0	192.3	0.8	6.2	1,145	1,011
1991	140.7	63.4	204.1	7.8	196.2	8.0	6.2	1,270	1,080
1992	172.4	65.0	237.4	8.5	228.8	0.9	7.2	1,260	1,042
1993	149.0	73.1	222.1	11.7	210.4	8.0	6.5	1,210	980
1994 5/	160.0	43.2	203.2	5.6	197.6	8.0	6.1		

<sup>--</sup> Not available.

Source: Economic Research Service, USDA.

Dehydrated garlic and onion production from domestically produced fresh material has been growing in recent years. According to ASTA, combined dehydrated garlic and onion production, concentrated in California, totaled 200 million pounds, dry basis in 1993, compared with the average of 206.3 million in 1990-93, 159.0 million in 1985-89, and 120.6 million in 1980-84. Tables 22 and 23 provide area, yield, and production information for California garlic and summer onions provided by California's State Department of Agriculture and USDA's National Agricultural Statistics Service (NASS).

Domestic herb production used as spices is estimated at 4.5 million pounds for 1993 according to ASTA. This is unchanged from recent years, but double the level of the early 1980's. The leading herbs used in their form as spices are thyme, rosemary, marjoram, mint, basil, and parsley.<sup>5</sup>

# **U.S. Spice Utilization**

#### **Spice Exports**

U.S. spice exports have been growing in recent years in both volume and value terms. Most of the exports classified as domestic merchandise by USDA consisted of ground spices and crude or processed herbs. Although few of these spices are grown commercially in significant quantities in the United States, spices exported from the United States are considered domestic merchandise for statistical purposes if the product has been enhanced in value by processing in the United States. Imported spices that are cleaned, sorted, or graded in the United States are considered to be domestic articles when exported. Canada, Japan, and Germany are the principal markets for U.S. exports of spices, seasonings, and condiments.

USDA's U.S. spice exports data, incorporating selected value added data, put exports at 94.8 million pounds in 1994, with a value approaching the \$100 million mark (table 24). Dehydrated onions and garlic are the leading exports, accounting for nearly half the total in value terms (table 24). Other leading ex-

<sup>1/</sup> Source: ERS estimates based on State-supplied data and AMS fresh shipments.

<sup>2/</sup> Source: Bureau of the Census, U.S. Dept. of Commerce. Includes dehydrated (spices)

and fresh. Exports represent actual data for dehydrated (spice) products plus

<sup>10</sup> percent of the fresh pepper/pimento export category. 3/ Converted from dry weight to a

fresh-weight equivalent using a factor of 8.0. 4/ Average price per dry ton in New Mexico. 5/ Forecast.

<sup>&</sup>lt;sup>5</sup> Hawaii is a growing producer of ginger. This production is marketed fresh and is not included in this study, which counts only dried or ground ginger used as a spice.

Table 22 -- California garlic: Acreage, vield, production, and value

Year	Harvested	Yield	Production	Unit	Total
	acres	per acre		value	value
	Acres	Pounds	1,000	Cents per	Thousand
			pounds	pound	dollars
1980	12,870	12.47	160,520	155.16	24,906
1981	9,501	12.66	120,250	198.87	23,914
1982	12,734	13.32	169,640	179.01	30,367
1983	16,655	14.08	234,430	149.84	35,127
1984	11,890	14.62	173,840	186.76	32,466
1985	14,620	16.55	241,960	309.59	74,909
1986	12,901	13.76	177,540	256.43	45,526
1987	16,177	16.60	268,530	185.57	49,831
1988	15,819	16.55	261,876	154.92	40,569
1989	15,763	16.63	262,122	217.52	57,018
1990	19,220	17.76	341,274	213.06	72,713
1991	21,548	17.48	376,628	227.69	85,755
1992	23,000	16.50	379,500	271.03	102,854
1993	26,000	16.00	416,000	318.44	132,470
1994	29,000	17.00	493,000	416.17	205,172

Data may not be comparable with the historical USDA, NASS series. For some years, garlic data in some counties may have been included in miscellaneous crops category to avoid disclosure.

Source: County Agricultural Commissioner's Annual Reports compiled by the California Agriculture Statistics Service.

Table 23 -- California summer onions: Acreage, yield, production for fresh use and dehydrating, and value

Year	Harvested	Yield	Total	Estin	nated use for	Farm value	
	acres	per acre	production	Fresh 1/	Dehydrating 2/	Per unit	Total
	Acres	Pounds/	1,000	1,000	1,000	Cents/	Thousand
		acre	pounds	pounds	pounds	pound	dollars
1980	25,000	24,000	600,000	144,000	456,000	7.35	44,121
1981	22,300	31,502	702,500	168,600	533,900	8.11	56,969
1982	29,700	35,000	1,039,500	249,480	790,020	6.60	68,573
1983	27,400	33,500	917,900	220,296	697,604	8.29	76,077
1984	26,000	35,500	923,000	221,520	701,480	7.22	66,672
1985	25,000	37,000	925,000	222,000	703,000	7.12	65,889
1986	26,900	37,000	995,300	238,872	756,428	7.71	76,765
1987	29,000	34,000	986,000	236,640	749,360	7.39	72,840
1988	28,800	36,500	1,051,200	252,288	798,912	5.54	58,193
1989	27,000	37,500	1,012,500	243,000	769,500	7.39	74,867
1990	30,500	38,000	1,159,000	278,160	880,840	7.34	85,067
1991	28,600	37,000	1,058,200	253,968	804,232	6.95	73,510
1992	27,500	37,502	1,031,300	247,512	783,788	8.04	82,946
1993	33,000	39,500	1,303,500	312,840	990,660	7.85	102,268
1994	31,000	40,000	1,240,000	297,600	942,400	7.42	91,983

<sup>1/</sup> Beginning in 1979, onions for fresh use, estimated at 24 percent of the California summer crop.

Source: National Agricultural Statistics Service.

<sup>2/</sup> Beginning in 1979, onions for dehydrating, estimated at 76 percent of the California summer crop.

Table 24--U.S. exports of selected spices 1/

Commodity	1990	1991	1992	1993	1994
			1,000 pounds		
Anise or Badian seeds	82.9	128.7	83.3	168.7	264.8
Capsicum peppers	4,714.1	5,748.6	7,221.2	8,544.1	8,267.0
Caraway seed	85.1	29.1	53.6	134.3	57.8
Cardamom	158.7	117.3	59.7	30.0	138.9
Cassia and Cinnamon	1,004.9	1,386.0	1,276.0	1,168.9	1,568.6
Cloves	66.4	94.4	61.3	96.1	60.8
Coriander seed	143.3	121.0	85.5	179.5	182.1
Cumin seed	154.3	199.5	264.1	388.7	204.8
Curry	159.8	130.7	157.4	219.6	229.5
Fennel or Juniper seeds	71.0	51.6	15.0	11.2	20.3
Garlic, dehydrated	7,925.6	6,949.0	6,009.8	7,063.5	7,180.4
Ginger	2,300.5	2,844.4	2,818.6	2,606.3	1,670.2
Mace	126.8	47.2	127.2	61.3	15.0
Mustard seed	3,636.5	1,723.4	1,671.5	1,738.8	3,189.8
Nutmeg	412.0	121.0	100.8	239.4	133.8
Onions, dehydrated	31,903.1	33,993.1	32,592.8	37,132.1	51,819.1
Pepper, black and white	3,574.8	4,147.1	4,417.2	2,910.5	3,733.9
Poppy seed	504.4	147.7	105.8	239.2	425.3
Saffron	58.0	30.0	12.8	30.0	10.6
Sesame seed	4,657.0	5,694.8	2,762.0	2,249.6	2,591.5
Thyme (Bay) leaves	150.1	218.9	203.0	272.3	279.5
Turmeric	81.1	121.0	95.7	148.1	94.6
Other	1,275.4	16,853.7	10,036.6	13,042.9	12,643.7
Total volume	63,246.0	80,898.2	70,231.0	78,675.0	94,782.0
Total value (1,000 dollars)	77,081.0	82,316.0	82,831.0	93,308.0	99,716.0

1/ Data do not include capers or prepared mustard.

Source: U.S. Department of Commerce.

ports are capsicum peppers, mustard, and ginger. According to ASTA data, limiting U.S. exports largely to whole or ground spices grown in the United States, exports averaged 32.6 million pounds 1990-94. This compares with an average of 16.7 million in 1985-89, and 16.5 million in 1980-84.

According to USDA data, U.S. exports of spices and seasonings (excluding re-exports) averaged \$87 million (1990-94). Dehydrated onions continued to be the most important export item, with shipments totaling a record \$46.1 million, followed by capsicum peppers, \$8.3 million; dehydrated garlic, \$7.2 million; black and white pepper, \$3.7 million; and mustard seed, \$3.1 million (table 24).

In recent years, the export value of U.S. dehydrated garlic shipments has been about 50 percent higher than imports. The annual average value of exports in 1990-94 was \$7.9 million, while the export volume was 7.0 million pounds (figure 6, table 25). The average unit export value was \$1.16 a pound for 1994. Australia and the EU have been the major markets for the United States. Not included in either the ASTA or USDA data are exports of garlic powder, which

had an average export value and volume for 1990-93 of \$9.9 million and 3.2 million pounds, respectively.

U.S. exports of dehydrated onions are several times higher than imports. Exports were a record \$46.1 million in 1994 and averaged \$38.4 million, 1990-94 (table 25). Export volume averaged 37.5 million pounds with unit export value of 84 cents a pound for 1994. The major export markets are Canada, Japan, and the EU.<sup>6</sup>

### **Domestic U.S. Spice Consumption**

The United States is the world's largest market for spices. Moreover, U.S. spice consumption, which includes imports and domestic production less exports, has been on an uptrend for the last decade. The growth in spice consumption reflects population growth, a trend toward the use of spices to compensate for less salt and lower fat levels in foods, and heightened popularity of ethnic foods from Asia and

<sup>&</sup>lt;sup>6</sup> Not included in either the ASTA or USDA data are exports of garlic and onion powder. The HTS code for garlic powder or flour is 0712904020 and for onion powder or flour is 0712202000.

Figure 6
U.S. exports of dehydrated garlic and onions used as spices

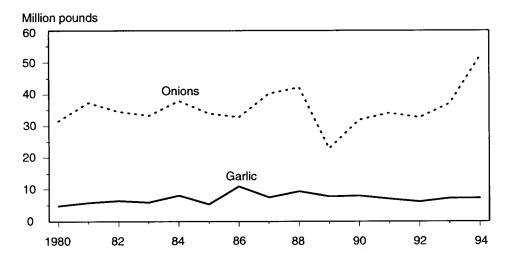


Table 25 -- U.S. exports of selected dehydrated vegetables (garlic and onions) used as spices

Year	Exports								
		Garlic	Onions						
	1,000 lb.	\$1,000	\$/lb.	1,000 lb.	\$1,000	\$/lb.			
1980	4,773	5,087	1.0	31,571	26,444	0.84			
1981	5,763	6,114	1.0	37,217	32,717	0.88			
1982	6,333	7,440	1.1	34,508	35,080	1.02			
1983	5,819	6,070	1.0	33,247	34,686	1.04			
1984	7,979	8,037	1.0	37,912	35,407	0.93			
1985	5,264	5,403	1.0	33,847	30,831	0.91			
1986	10,850	8,975	8.0	32,738	28,440	0.87			
1987	7,374	5,554	0.7	40,108	32,200	0.80			
1988	9,259	7,122	0.7	42,125	33,303	0.79			
1989	7,784	6,152	0.7	22,830	20,799	0.91			
1990	7,926	8,090	1.0	31,903	33,215	1.04			
1991	6,949	7,520	1.0	33,993	37,450	1.10			
1992	6,010	7,297	1.2	32,593	36,089	1.11			
1993	7,064	8,332	1.1	37,132	39,251	1.06			
1994	7,180	8,305	1.1	51,819	46,061	0.89			

Garlic dehydrated (HTS No. 0712904040). Onion dehydrated (HTS No. 0712204000).

Source: U.S. Department of Commerce.

Mexico. U.S. spice consumption averaged an estimated 815 million pounds in 1990-94, compared with 648 million in 1985-89, and 540 million in 1980-84 (table 26). Imports contributed about 60 percent to total spice consumption in recent years. Import growth over the last decade as well as expansion of

domestic production of selected spices have been key sources of supply allowing U.S. domestic spice consumption to expand (figure 7).

More than 50 countries, plus domestically produced U.S. spices, serviced direct consumer demand and the food processing industry in 1990-94. The U.S. contribution, which included dehydrated onion and garlic, capsicums, mustard seed, and various herbs, led with an average of 318 million pounds (39 percent). Canada, with mostly mustard seed, was second at 15 percent. Indonesian pepper, cinnamon, ginger, nut-

All data in this report are in pounds. One pound equals 0.45524 kilograms. One kilogram equals 2.2046225 pounds. One metric ton equals 2,204.6225 pounds. One short ton equals 2,000 pounds.

meg, etc., were third at 8 percent. Mexican sesame seeds and capsicums were fourth at 7 percent, while Indian pepper, capsicums, celery seed, turmeric were fifth at 7 percent (only slightly smaller than Mexico). Together, these five major supplying countries accounted for more than 75 percent of the U.S. total spice consumption (figure 8).

On a per capita basis, spice consumption averaged a record 3.13 pounds in 1990-94, up nearly 1 pound from a decade ago. This estimate for 1990-94 is based on domestic consumption of 815 million pounds of spices for a population of 255 million people (table 27). USDA's estimate for 1994 is 850 million pounds with a per capita use of 3.26 pounds for a population of 260.65 million.

Figure 7
U.S. spice consumption

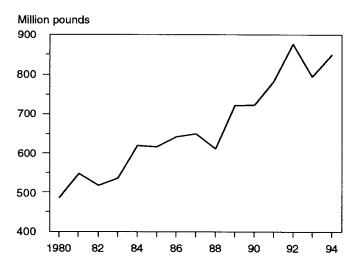
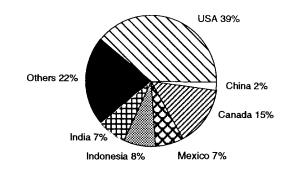


Figure 8
U.S. spice consumption by major source of supply, 1990-94<sup>1</sup>



Percent by volume

## **U.S. Spice Market Structure**

The U.S. market for spices is large, complex, and rapidly changing. The U.S. food industry markets an estimated 10,000 new products each year. Commercial practices for spices are common to other commodities, but the uniqueness of quality and availability from traditional origins makes for a highly specialized market. With modern communication and technical advances in many of the producing countries, some of these practices are changing.

It is difficult to be precise about the end-use patterns for spices owing to advanced food processing techniques, the wide range of products available to the consumer, the highly developed distribution and marketing chain, and the intensely competitive nature of the market. However, the market for spices can be subdivided into two basic categories: food processing (industrial sector/foodservice sector), and the retail sector.

Trade sources estimated that the sales of spices totaled around \$2.0 billion in 1994, double that of a decade ago, and up from only \$400-\$450 million in the mid-1970's.

#### **Commercial Practices**

The importation and distribution of spices in the United States is carried out through established brokers/agents, importers/dealers, and grinders/ processors. A spice exporter from India, for example, typically sells the spices to an importer through an agent in the United States, who acts on the exporter's behalf in return for a commission. Traditionally, an importer then sells the spice through a broker to a grinder/processor. The processor, after cleaning and grinding the spice, markets it in bulk to a food processor or packages it for sale to wholesale and retail outlets.

There has been a trend toward increased direct buying in recent years. The processor in the United States buys directly from sources in producing countries and thereby bypasses the agent and importer; or a large food processor or supermarket chain may do its own direct buying. This trend has led to a greater concentration of activities and to a decline in the role of agents and importers.

One example of this trend is McCormick and Company's global sourcing program. McCormick, the largest spice purchaser and marketer in the United States, has developed several long-term alliances with growers and governments, such as with Indonesian

<sup>1/</sup> Annual average total=815.3 million pounds 1990-94 (including spice oleoresins imports).