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The Spice Market in the United States--Recent Developments and Prospects. Peter J. Buzzanell and Fred Gray, Commercial Agriculture Division, Economic Research Service, and Rex Dull, Foreign Agricultural Service, U.S. Department of Agriculture. Agriculture Information Bulletin Number 709.

Abstract

On both a volume and value basis, the United States is the world's largest spice importer and consumer, with both imports and consumption on an uptrend for the past 10 years. While the United States imports more than 40 separate spices, 7 of these (vanilla beans, black and white pepper, capsicums, sesame seed, cinnamon, mustard, and oregano) account for more than 75 percent of the total annual value of spice imports. While the United States imports spices from more than 50 countries, 5 of these countries (Indonesia, Mexico, India, Canada, and China) regularly account for one-half of the annual value of spice imports. The United States produces nearly 40 percent of its annual spice needs, with imports supplying the remainder. Growing domestic production consists of capsicum peppers, mustard seed, dehydrated onion and garlic, and herbs. U.S. spice exports have also been expanding in recent years, led by dehydrated garlic and onion. Rising domestic use of spices reflects growing Hispanic and Asian populations, 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 Latin America.

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Summary

The United States is the world's largest importer of spices as well as a growing producer. Both imports and domestic production of spices have been rising, reflecting growth in spice demand due to population growth, increased use of spices to compensate for less salt and lower fat levels in food, and heightened popularity of ethnic foods from Asia and Latin America. A spice is any dried plant product used primarily for seasoning purposes.

U.S. imports of spices and spice oleoresins averaged 530 million pounds with a value of $374 million for 1990-94, compared with 362 million pounds and $225 million for 1980-84.

The United States imports more than 40 separate spices. However, the seven largest spice imports (vanilla beans, capsicums, black and white pepper, sesame seed, cinnamon and cassia, mustard, and oregano) account for more than 75 percent of the total annual value of spice imports. While the United States imports spices from more than 50 countries, 5 of these countries (Indonesia, Mexico, India, Canada, and China) regularly account for one-half of the annual value of spice imports.

The United States produces over one-third of its annual spice needs, with imports supplying the remainder. Growing domestic production consists of four major spice types. Dehydrated garlic and onions represented nearly two-thirds of U.S. spice production during 1990-94, capsicums represented nearly 30 percent, with the residual coming from mustard seed and herbs.

Total spice use in the United States is accounted for by a small but growing volume of exports and large and expanding domestic disappearance in food processing and retail sales. U.S. exports have also been expanding in recent years, led by dehydrated garlic and onion, which account for nearly half of total spice exports in value terms. U.S. domestic spice consumption averaged 815 million pounds from 1990 to 1994, compared with 648 million in 1985-89, and 541 million in 1980-84. Spice consumption, per capita, totaled a record 3.19 pounds in 1990-94, up by nearly 1 pound from a decade ago.

In the early 1980's, about 60 percent of domestically consumed spices were used by retail consumers and the remainder by the food processing/foodservice sector. By the early 1990's, these shares have been reversed. Rapid expansion of fast-food restaurants in recent years explains part of the growth in food processing/foodservice. Another trend in food processing is the growing use of spice oleoresins (a concentrated form of spices), which are cleaner and easier to disperse in the manufacture of products containing spices.

The outlook for spices is for continued growth in total consumption, supported by imports and domestic production. As with other parts of the food supply, spices will need to meet increasingly stringent Government requirements to ensure that sound environmental and food safety practices are used in agricultural production, importation practices, and processing methods. Along with Government agencies such as the U.S. Customs Service, the Food and Drug Administration, and the U.S. Department of Agriculture, the American Spice Trade Association will continue to play an important role in protecting the welfare of consumers through improving the quality and safety of spices marketed to the U.S. public.

The Spice Market in the United States

Recent Developments and Prospects

Peter J. Buzzanell
Rex Dull
Fred Gray

Introduction

Five hundred years ago, ships sailed from Europe to discover new spice trade routes to Asia. En route they discovered the Americas and for centuries spices have been flowing from Asia to the Americas. For the United States, trade in spices in the 1980's and early 1990's has been trending upward to record levels reflecting increasing demand. The growth in spice demand reflects population growth, a trend toward the use of spices to compensate for less salt and lower fat levels in food, and heightened popularity of ethnic foods from Asia and Latin America. This report assesses trends in U.S. spice trade, domestic spice production, and spice consumption. Also reviewed is the role of the American Spice Trade Association and the U.S. Government in setting standards and regulating the industry. Lastly, this report assesses the outlook for future growth and leading issues confronting the U.S. spice industry.

Spices Defined

The American Spice Trade Association (ASTA) defines spice as "any dried plant product used primarily for seasoning purposes." Included are tropical aromatics (pepper, cinnamon, cloves, etc.); leafy herbs of the temperate zone (oregano, basil, sage, etc.); spice seeds (sesame, mustard, caraway, etc.); and dehydrated vegetables used as spices (onion, garlic, chile peppers, etc.).

In terms of statistical data, there are several differences between the U.S. Department of Agriculture's (USDA) data base as published annually in the *Spice Trade Circular* and that developed by ASTA. For example, USDA combines fresh and dried ginger trade data while ASTA includes only dried ginger. USDA includes capers in its spice trade statistics; ASTA does not. Conversely, ASTA includes chervil and chives in its spice trade statistics; USDA does not. All in all, the data are largely comparable and for purposes of this report, an effort has been made to link the two data sources, to eliminate problem data (for example, capers, candied ginger, and prepared mustard), and to focus on broad trends (text box 1).

U.S. Spice Supply

Spices As Part of U.S. Agricultural Trade

The United States is a large net importer of spices. On a volume and value basis, the United States, year to year, is consistently the world's largest spice importer. The average annual volume and value of spice and spice oleoresin imports into the United States (1990-94) was 530 million pounds and $374 million (table 1). This compares with the preceding 5-year periods, which averaged 433 million pounds and $372 million (1985-89), and 362 million pounds and $225 million (1980-84) (figure 1).

Spices are a significant and growing share of total U.S. agricultural imports, representing 6.4 percent of noncompetitive imports the last 5 years (table 2). Moreover, U.S. spice imports represent a significant trade group for many countries, especially those in the Asian tropics. In import value terms, however, spices remain small compared with import values for the major tropical commodities--coffee, sugar, bananas, and cocoa. For 1994, imports of these commodities totaled $5.72 billion, accounting for 21 percent of the total value of agricultural imports. Coffee imports lead the group with imports valued at $2.49 billion, followed by sugar, $1.13 billion; bananas, $1.07 billion; and cocoa, $1.03 billion.

Concurrently with record overall agricultural imports, the United States was exporting a record $45.7 billion

List of spices by their common and scientific names and the part of the spice plant from which they are obtained

Common name	Part of plant[1]	*Botanical name*
Allspice (pimento)	Berry	*Pimenta officinalis*
Anise seed	Seed	*Pimpinella anisum*
Star anise	Fruit	*Illicium verum*
Basil leaves	Leaf	*Ocimum basilicum*
Bay leaves (laurel leaves)	Leaf	*Laurus nobilis/Umbellularia California*
Black caraway (Russian caraway, black cumin)	Seed	*Nigella satavia*
Caraway seed	Seed	*Carum carvi*
Cardamom[2]	Fruit	*Elettaria cardamomum*
Cassia/Cinnamon	Bark	*Cinnamomum spp.*
Celery seed	Seed	*Apium graveolens*
Chervil	Leaf	*Anthriscus cerefolium*
Chives	Leaf	*Allium schoenoprasum*
Cilantro (Coriander leaf)	Leaf	*Coriandrum sativum*
Cinnamon/Cassia	Bark	*Cinnamomum spp.*
Cloves	Bud	*Syzygium aromaticum*
Coriander seed	Seed	*Coriandrum sativum*
Cumin seed (Comino)	Seed	*Cuminum cyminum*
Dill seed	Seed	*Anethum graveolens/Anethum sowa*
Dill weed	Leaf	*Anethum graveolens/Anethum sowa*
Fennel seed	Seed	*Foeniculum vulgare*
Fenugreek seed (Foenugreek seed)	Seed	*Trigonella foenum-graecum*
Ginger	Root	*Zingiber officinale*
Juniper	Berry	*Juniperus communis*
Mace	Aril	*Myristica fragrans*
Marjoram leaves	Leaf	*Majorana hortensis*
Mustard seed	Seed	*Brassica juncea/Brassica hirta*
Nutmeg	Seed	*Myristica fragrans*
Oregano leaves	Leaf	*Origanum vulgare/Lippia spp.*
Parsley (Dehydrated parsley, parsley flakes)	Leaf	*Petroselinum crispum*
Black pepper	Berry	*Piper nigrum*
White pepper	Berry	*Piper nigrum*
Green peppercorns	Berry	*Piper nigrum*
Pink peppercorns[3]	Berry	*Schinus terebinthifolius*
Peppermint leaves (Peppermint flakes)	Leaf	*Mentha piperita*

See references at end of table.

Continued--

List of spices by their common and scientific names and the part of the spice plant from which they are obtained--Continued

Common name	Part of plant[1]	*Botanical name*
Poppy seed	Seed	*Papaver somniferum*
Rosemary leaves	Leaf	*Rosmarinus officinalis*
Sage leaves	Leaf	*Salvia officinalis/Salvia triloba*
Savory leaves	Leaf	*Satureia montana/Satureia hortensis*
Sesame seed[4]	Seed	*Sesamum indicum*
Spearmint leaves (Spearmint flakes)	Leaf	*Mentha spicata*
Tarragon leaves	Leaf	*Artemisia dracunculus*
Thyme leaves	Leaf	*Thymus vulgaris*
Vanilla beans	Fruit	*Vanilla planifolia/Vanilla tahitensis*

In addition there are a number of dehydrated vegetables used as spices:

Bell peppers (Green, Red, or Mixed)	Fruit	*Capsicum spp.*
Celery	Leaf/stalk	*Apium graveolens*
Garlic	Bulb	*Allium sativum*
Onion	Bulb	*Allium cepa*

There are also a select group of spices used to impart color as well as flavor:

Annatto seed	Seed	*Bixa orellana*
Paprika	Fruit	*Capsicum spp.*
Saffron	Stigma	*Crocus sativus*
Turmeric	Root	*Curcuma longa*

Also, all capsicum, whether of the spices annum or frutescens, are listed separately and not listed within the "general" spice group. They include the following:

Bell peppers (Green, Red, or Mixed)	Fruit	*Capsicum spp.*
Chile pepper[5]	Fruit	*Capsicum spp.*
Paprika	Fruit	*Capsicum spp.*
Pepper, red (Chiles)	Fruit	*Capsicum spp.*

[1]References to plant parts, berries, leaves, seeds, etc., are usually in the dried form.
[2]Must be small cardamom.
[3]Must be from Madagascar or Island of Reunion.
[4]May be listed by specific form (that is, natural or hulled).
[5]Often are listed by specific variety.

in agricultural exports led by shipments of grains and oilseeds of nearly $21 billion, leaving an agricultural trade balance in excess of nearly $19 billion (table 3). A significant share of these exports are marketed in Asia. This complementary trade has at its roots the economic law of "comparative advantage," which is the basis for nations to specialize in the agricultural production and trade in which their natural resources, climate, and human experience give them special advantages. This specialization tendency is very striking in the production and international commerce of spices.

Composition of the U.S. Spice Import Market

The United States imports more than 40 primary types of spices each year. Seven major types (vanilla beans, capsicums, black and white pepper, sesame seed, cinnamon and cassia, mustard, and origanum) account for more than 75 percent of the total annual value of spice imports (figure 2). Also, while more than 50 countries regularly supply the United States with spices, 5 of these countries (Indonesia, Mexico, India, Canada, and China) regularly account for one-half of the annual value of spice imports (figure 3). Three countries (India, Spain, and Morocco) regularly account for two-thirds of the value of spice oleoresin imports (figure 4).

Leading Spice Imports

The following provides an overview of the leading spice imports, in order of total value, including trends in the volume and value of trade, and their main sources of supply and uses in the U.S. market.

Vanilla beans (*Vanilla planifolia*). The United States is the world's largest market for vanilla beans. Moreover, vanilla beans rank as the leading U.S. spice import in terms of value. The trend toward natural flavoring in food products continues to keep demand for vanilla beans steady, despite strong competition from synthetic flavorings such as vanillin. Vanilla continues as the most popular ice cream flavor in the United States and accounts for nearly one-third of all ice cream sales. Ice cream is the largest use for natural vanilla, representing about one-half of the market. Legislation requiring the labeling of ice cream products to show whether real vanilla or artificial vanilla has been used has also aided real vanilla sales.

Most vanilla flavorings used in baking, confectionery, and in many frozen desserts contain some vanillin, ethyl vanillin, vanitrope, or a combination of these products. Vanillin accounts for over 90 percent of the U.S. market for vanilla flavorings. The market for synthetics is expected to remain strong because of their relatively low and stable prices, as well as their reliability of supply and quality.

The original vanilla extract is made from the pods of the tropical climbing orchid, *Vanilla planifolia*. The seed pods are cured to develop the characteristic vanilla aroma and the essence (glycoside) is extracted in alcohol to yield the vanilla extract for commerce (13.35 ounces of vanilla beans with a moisture content of not more than 25 percent make a gallon of extract). Artificial vanillin is synthesized from other materials such as eugenol obtained from other sources such as cloves and coal tar.

Figure 1
U.S. import value of spices and spice oleoresins

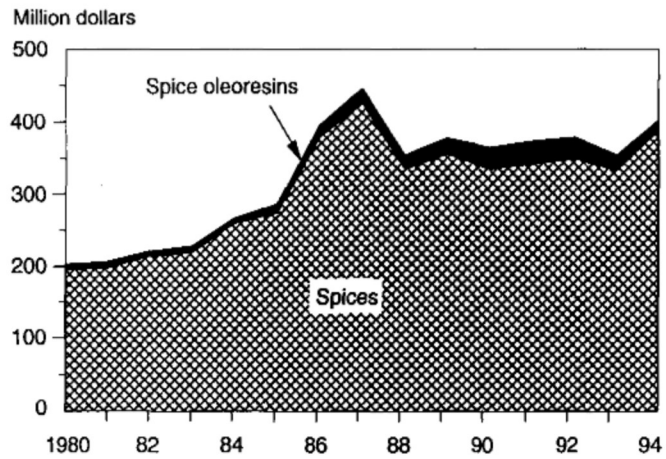
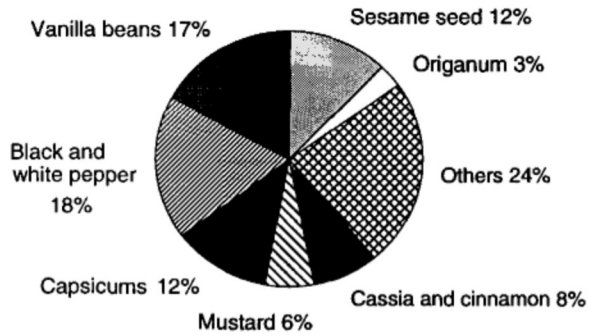


Figure 2
U.S. value of major spice imports, 1990-94[1]



1/ Annual average total = $348.3 million 1990-94, excluding spice oleoresins.

Table 1--U.S. import of spices 1/

Year	Spices		Spice oleoresins		Total spice and spice oleoresins	
	Volume	Value	Volume	Value	Volume	Value
	1,000 pounds	$1,000 dollars	1,000 pounds	$1,000 dollars	1,000 pounds	$1,000 dollars
1980	322,354	195,304	741	7,543	323,094	202,847
1981	352,577	196,762	1,023	9,826	353,600	206,588
1982	343,746	212,983	773	8,657	344,519	221,640
1983	370,095	218,676	895	9,138	370,990	227,815
1984	415,894	258,278	995	8,479	416,888	266,757
1985	399,579	273,775	1,411	12,652	400,990	286,426
1986	437,352	377,929	1,526	17,355	438,878	395,284
1987	441,243	424,321	1,680	21,499	442,922	445,820
1988	398,266	333,519	1,708	20,378	399,974	353,897
1989	478,369	354,647	2,070	22,900	480,439	377,548
1990	503,369	334,052	2,264	30,266	505,634	364,318
1991	505,075	340,363	2,394	32,634	507,469	372,997
1992	528,565	347,634	2,512	30,108	531,077	377,742
1993	518,895	332,379	2,100	20,957	520,995	353,336
1994	581,018	387,146	1,789	14,324	582,807	401,470

1/ Specified condiments, seasonings, and flavoring materials.
Sources: U.S. Department of Agriculture and U.S. Department of Commerce.

Table 2--U.S. total agricultural imports and spices share

Year (Jan.-Dec.)	Total agricultural imports			Total spice imports 3/	Spice share of noncompetitive imports
	Competitive 1/	Noncompetitive 2/	Total		
	Million U.S. dollars				Percent
1980	10,358	7,043	17,401	203	2.9
1981	11,171	5,736	16,907	207	3.6
1982	9,985	5,360	15,345	222	4.1
1983	11,009	5,527	16,536	228	4.1
1984	12,619	6,716	19,335	267	4.0
1985	13,067	6,902	19,969	286	4.1
1986	13,436	8,017	21,453	395	4.9
1987	13,781	6,621	20,402	446	6.7
1988	14,691	6,263	20,954	354	5.7
1989	15,610	6,139	21,749	378	6.2
1990	17,202	5,568	22,770	364	6.5
1991	17,139	5,580	22,719	373	6.7
1992	18,946	5,678	24,624	378	6.7
1993	19,362	5,618	24,980	353	6.3
1994	20,087	6,731	26,818	401	6.0

1/ Competitive imports consist of all imports similar to agricultural commodities produced commercially in the United States.
2/ Noncompetitive imports include all agricultural commodities not grown in the United States, such as rubber, coffee, tea, cocoa beans, bananas, and most spices. 3/ Total spice imports include spice oleoresins.
Source: U.S. Department of Agriculture.

Table 3--U.S. agricultural trade value

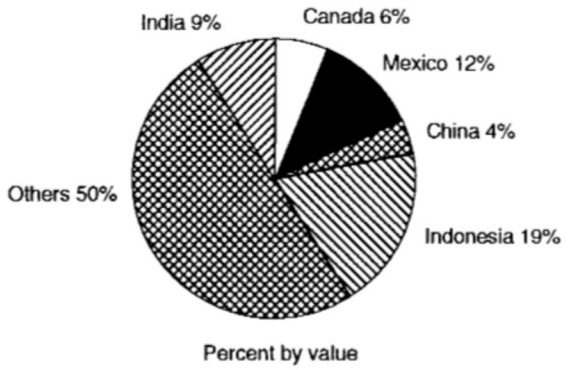
Year	Agricultural exports 1/	Agricultural imports 2/	Trade balance
	Million dollars		
1980	41,233	17,401	23,832
1981	43,339	16,907	26,432
1982	36,627	15,345	21,282
1983	36,099	16,536	19,563
1984	37,804	19,334	18,470
1985	29,041	19,968	9,073
1986	26,222	21,453	4,769
1987	28,709	20,402	8,307
1988	37,080	20,955	16,125
1989	39,909	21,749	18,160
1990	39,363	22,770	16,593
1991	39,192	22,719	16,473
1992	42,930	24,624	18,306
1993	42,609	24,981	17,628
1994	45,704	26,818	18,886

1/ Agricultural export products exclude re-exports. 2/ Agricultural imports for consumption, customs value.
Source: U.S. Department of Agriculture.

In recent years, Indonesia has become the largest supplier to the U.S. market, reflecting the significantly lower price for "Java" vanilla beans, compared with most other sources. Other important suppliers are Madagascar, the Comoros, and several Pacific Island sources (table 4).

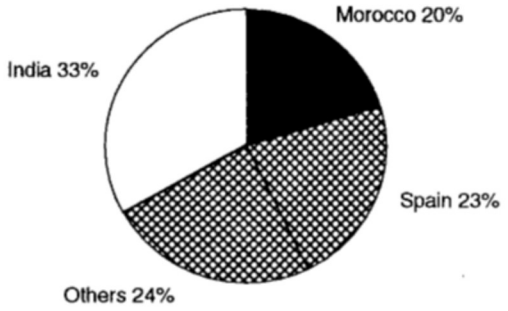
U.S. imports of vanilla beans were valued at an annual average of $61.6 million for 1990-94. This compares with import values averaging $58.8 million for 1985-89, and $39.1 million for 1980-84. The expansion of the U.S. import value of vanilla beans is due mostly to larger import volumes rather than higher prices. The volume of vanilla bean imports averaged 2.7 million pounds for 1990-94, up from 2.4 million for 1985-89, and 1.6 million for 1980-84.

Figure 3
U.S. spice import shares by major source of supply, 1990-94[1]



1/ Annual average total=$348.3 million 1990-94, excluding spice oleoresins.

Figure 4
U.S. spice oleoresin import shares by major source of supply, 1990-94[1]



1/ Annual average total = $25.7 million 1990-94.

The unit import value of vanilla beans in 1993 and 1994 were down sharply from the early 1990's and especially the mid-1980's. For the period 1990-94, the average unit import value of vanilla beans was $22.7 per pound versus $24.6 for 1985-89 and $24.1 average for 1980-84. These unit values compare with spot market prices for vanilla beans (Madagascar, Bourbon), which were $29.0 a pound in 1994, and averaged $34.1, 1990-94; $35.8, 1985-89; and $42.3, 1980-84 (appendix table 4).

Black and white pepper *(Piper nigrum).* The United States is the largest pepper importer, accounting for over one-quarter of annual world imports. The leading suppliers are Indonesia, India, and Brazil (table 5). Other important suppliers include Malaysia, Thailand, Sri Lanka, and Mexico. Pepper re-exports from Singapore are also an important source of supply. Black pepper is used whole in seasoning soups and meats and in pickling. In the ground form, black pepper is used to season practically all types of prepared meats and other foods. White pepper is used in white sauces and in other foods where pepper flavor is desired but not the dark specks of black pepper. Pepper is also used to make an extract or oleoresin, which is increasingly used in the industrial/foodservice sector. The oleoresin has a concentrated and consistent flavor, is relatively free of bacteria contamination, and contains no fiber.

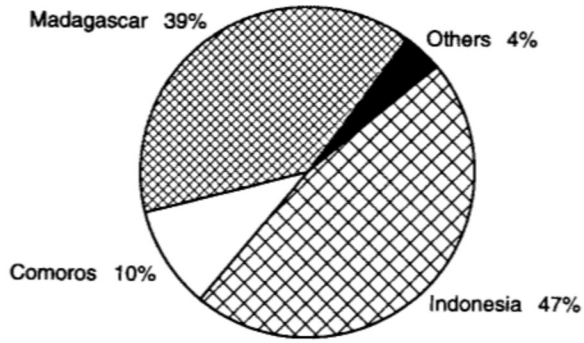
Pepper imports usually rank as the second spice import after vanilla in terms of total dollar value. For the 1990-94 period, black pepper imports averaged $52.9 million; white, $10.9 million; and ground, $1.4 million, for a combined total of $65.2 million, representing 19 percent of total U.S. spice imports. While substantial, these recent import value levels are well under those of the mid-1980's, when historically high prices pushed U.S. combined pepper imports to the $170 million level in 1986 and 1987 (appendix table 1).

The volume of pepper imports has been trending generally up in recent years, reflecting growth in demand. Total pepper imports averaged 98.1 million pounds annually during 1990-94, of which black pepper accounted for 86 percent (84.4 million pounds). This compares with combined pepper imports averaging 79.3 million pounds, 1985-89, and 72.6 million, 1980-84. Demand for black pepper underpinned this growth, accounting for 87 percent (68.6 million) of the total, 1985-89, and 90 percent (65.6 million), 1980-84. There also has been an upward trend in imports of white and ground pepper. In 1994, total pepper im-

Table 4--U.S. imports of vanilla beans 1/

Year	Volume	Value	Unit value
(Jan-Dec)	1,000 pounds	$1,000	$/pound
1980	756.2	18,615.5	24.62
1981	1,411.4	31,248.2	22.14
1982	1,948.4	45,196.1	23.20
1983	2,154.8	50,811.6	23.58
1984	1,855.0	49,933.8	26.92
1985	1,638.3	47,578.3	29.04
1986	2,310.9	61,130.0	26.45
1987	3,058.7	77,499.2	25.34
1988	2,682.4	61,937.5	23.09
1989	2,441.4	46,125.3	18.89
1990	2,149.9	47,757.9	22.21
1991	2,883.4	69,044.1	23.95
1992	2,781.3	65,700.0	23.62
1993	2,936.1	63,483.2	21.62
1994	2,744.3	61,855.3	22.54

Leading sources of U.S. supply 2/

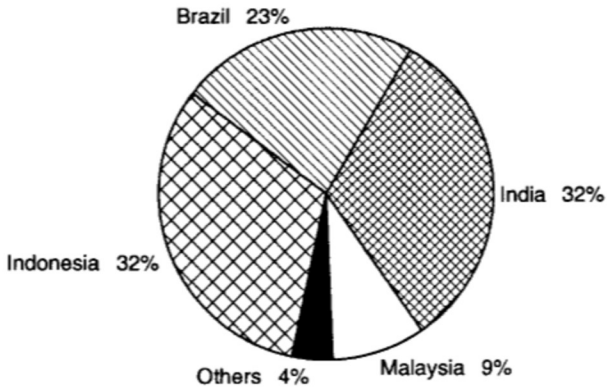


1/ HTS No. 0905000000. 2/ Average 1990-94, based on volume of imports.
Source: Bureau of Census, U.S. Department of Commerce.

Table 5--U.S. imports of pepper, black 1/

Year	Volume	Value	Unit value
(Jan-Dec)	1,000 pounds	$1,000	$/pound
1980	65,353.6	50,778.1	0.78
1981	62,971.5	36,327.9	0.58
1982	61,312.7	30,504.3	0.50
1983	62,492.4	29,296.9	0.47
1984	76,071.4	56,704.4	0.75
1985	60,453.8	73,414.4	1.21
1986	83,914.7	152,962.7	1.82
1987	69,163.6	147,807.7	2.14
1988	59,391.2	95,161.0	1.60
1989	70,148.4	77,261.4	1.10
1990	72,707.6	58,609.5	0.81
1991	85,671.2	52,206.8	0.61
1992	89,485.2	41,705.2	0.47
1993	79,297.5	41,026.0	0.52
1994	94,822.1	70,997.3	0.75

Leading sources of U.S. supply 2/

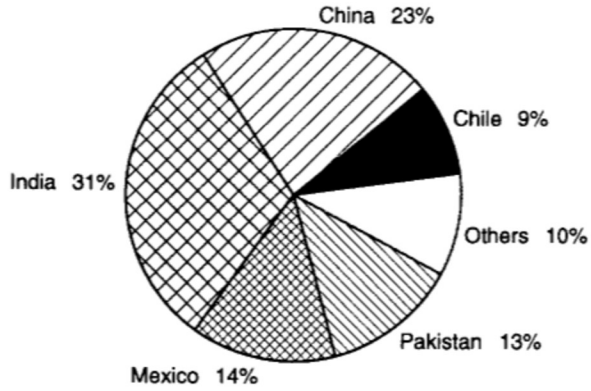


1/ HTS No. 0904110020, does not include white pepper or ground white or black pepper. 2/ Average 1990-94, based on volume of imports.
Source: Bureau of Census, U.S. Department of Commerce.

Table 6--U.S. imports of other capsicums, unground 1/

Year	Volume	Value	Unit value
(Jan-Dec)	1,000 pounds	$1,000	$/pound
1980	9,566.1	5,239.9	0.55
1981	9,592.1	5,321.5	0.55
1982	9,976.4	6,049.3	0.61
1983	13,117.7	6,915.6	0.53
1984	14,777.4	7,879.5	0.53
1985	13,645.9	7,084.1	0.52
1986	14,689.2	6,479.8	0.44
1987	16,620.0	7,949.6	0.48
1988	17,770.6	10,773.7	0.61
1989	29,136.1	28,211.6	0.97
1990	25,777.8	20,660.5	0.80
1991	23,541.2	24,807.3	1.05
1992	33,179.0	38,543.7	1.16
1993	32,629.4	27,691.5	0.85
1994	33,747.6	23,965.6	0.71

Leading sources of U.S. supply 2/



1/ HTS No. 0904206000. 2/ Average 1990-94, based on volume of imports.
Source: Bureau of Census, U.S. Department of Commerce.

ports were a record 109.4 million pounds, reflecting growth in demand despite a sharp upturn in prices.

However, unit import values and market prices were lower in 1994 and in the early 1990's than during most of the 1980's. Unit import values for black and white pepper for the period 1990-94 averaged 63 and 87 cents a pound, respectively. This contrasts with an average of $1.57 a pound, 1985-89, and 62 cents a pound, 1980-84 for black pepper, and $1.95 a pound, 1985-89 and 88 cents a pound, 1980-84, for white pepper (appendix table 3).

These import unit values track well with actual market prices. For example, New York spot prices for Indonesian Lampong black pepper averaged 77 cents a pound, 1990-94, $1.87 a pound, 1985-89, and 79 cents a pound, 1980-84 (appendix table 4). Similarly, Indonesian Muntok white pepper prices averaged 99.5 cents a pound, 1990-94, $2.24 a pound, 1985-89, and $1.12 a pound, 1980-84. The downturn in world prices reflects abundant supplies relative to demand. New plantings made during the high price years of the mid-1980's reached their maximum bearing age by the early 1990's. Moreover, reduced sales to the former Soviet Union contributed to the depressed market for pepper. However, prices have strengthened since their recent low point in 1992, largely reflecting a drought in the pepper growing areas of Indonesia and a drawdown of global stocks in order to meet consumption needs. Also, farmers have not been making new plantings and have not given adequate farm maintenance to existing vines and have been shifting to other crops.

Capsicum and paprika peppers (***Capsicum spp***). One of the fastest growing spice import groups in the U.S. market is capsicum (cayenne or red peppers). The three basic types of capsicum products in demand are chilli powder, chiles, and paprika (the mildest of the capsicum peppers). They are used in pickling, relishes, catsup, sauces, and in processed meat and fish. The rapid growth in both domestic and imported peppers is largely due to the changing American diet and the growing influence of Hispanic foods and population.

Anaheim and ancho red peppers largely are imported from Mexico. Other capsicums come from Asia, particularly India, China, and Pakistan, while about one-half of ground capsicums come from Mexico (table 6). In contrast, paprika imports largely originate in Spain, Morocco, and Hungary. These imports supplement the growing domestic production of capsicum and paprika peppers in New Mexico, California, and Arizona (text box 2).

Capsicum imports have grown in importance in recent years, reflecting growth in demand for this spice group by both the home consumer and the food processing industry. The value of combined capsicum imports totaled $38.8 million in 1994, of which imports of anaheim and ancho capsicum accounted for 6 percent; paprika, 17 percent; ground capsicum, 15 percent; and other capsicum, 62 percent (appendix table 1). The total value of combined capsicum imports averaged $44.6 million in 1990-94, compared with $24.7 million in 1985-89, and $15.5 million in 1980-84.

Sesame Seed (***Sesamum indicum***)**.** Sesame seed is one of the largest spices imported into the United States in both volume and value. It is widely used by the baking industry and has been very popular as a topping for yeast-leavened buns in the fast-food sector. The leading sources of supply are Mexico (nearly one-half), Guatemala, and El Salvador, together accounting for 84 percent of total shipments (1990-94). Other Central American countries, India, and China are also important sources of supply (table 7).

Imports of sesame seed averaged $43.7 million and 84.6 million pounds for 1990-94, versus $29.8 million and 81.0 million pounds for 1985-89, and $34.9 million and 80.4 million pounds in 1980-84. The recent upturn in the value of imports while volume has remained relatively stable reflects higher market prices. The unit import value averaged 51 cents a pound for 1990-94, 37 cents for 1985-89, and 43 cents for 1980-84. These values parallel average monthly New York spot prices for sesame seed, Central American hulled, of 69 cents in 1990-94, 57 cents in 1985-89, and 66 cents in 1980-84 (appendix table 4).

Cassia and Cinnamon (***Cinnamomum spp***)**.** Beginning in 1989, U.S. trade statistics combined imports of cassia and cinnamon. Both cassia and cinnamon currently have the same tariff number, and the Federal Trade Commission of the United States has determined that either can be sold under the name cinnamon. Cinnamon quills or curls, obtained from the bark of the tropical *Cinnamomum zeylanicum* tree, are widely used in pickling, preserves, pudding, flavorings, and stewed fruit. In ground form, the largest end-use is in baking, followed by confectionery and beverages. Cassia is widely used in the making of doughnuts. Prospects for further growth in cassia and cinnamon are linked to the expansion of the commer-

From *The Great Chile Book*: Are Chiles Really Peppers?

by Gary Lucier[1]

Confusion over chilean terminology began with Columbus, who gave peppers their name assuming they were the black peppercorns of the Indies. The genus for peppers, *Capsicum*, includes sweet varieties called bell peppers, and hot varieties usually known as chile peppers. As for spelling, chile means the hot pepper, chili refers to the spicy meat and bean dish, and chilli is the ground spice containing chiles, according to *The Great Chile Book* (Ten Speed Press, Berkeley, California). Webster allows all three spellings for the hot pepper.

Another source of confusion is mistaking a whole species or type of chile pepper for a single cultivar. The five domesticated species in the pepper genus, *C. annuum*, *C. frutescens*, *C. chinese*, *C. pubescens*, and *C. baccatum*, contain dozens of pod types and hundreds of cultivars. Except for the tabasco chile pepper in the *C. frutescens* species and the habanero in *C. chinese*, most chile peppers are in the *C. annuum* species.

Major pod types include bell and pimento for sweet peppers; New Mexican, Jalapeno, Serrano, and Ancho for hot peppers; and paprika and cherry which have both kinds. Some examples of cultivars are the Anaheim and New Mexico chiles in the New Mexican pod type, and the Jalapeno cultivar in the Jalapeno type.

Chile peppers are usually green and occasionally yellow when immature, and may be red, orange, brown, or yellow when ripe. Green chiles are frequently eaten fresh, while the sweeter ripened chiles are often used decoratively and ground into powder. Here's a sample of some popular chiles:

Anaheim. Long, green chiles used in sauces and stews. The ripened red chile is also used decoratively in wreaths and sold powdered as Chile Colorado.

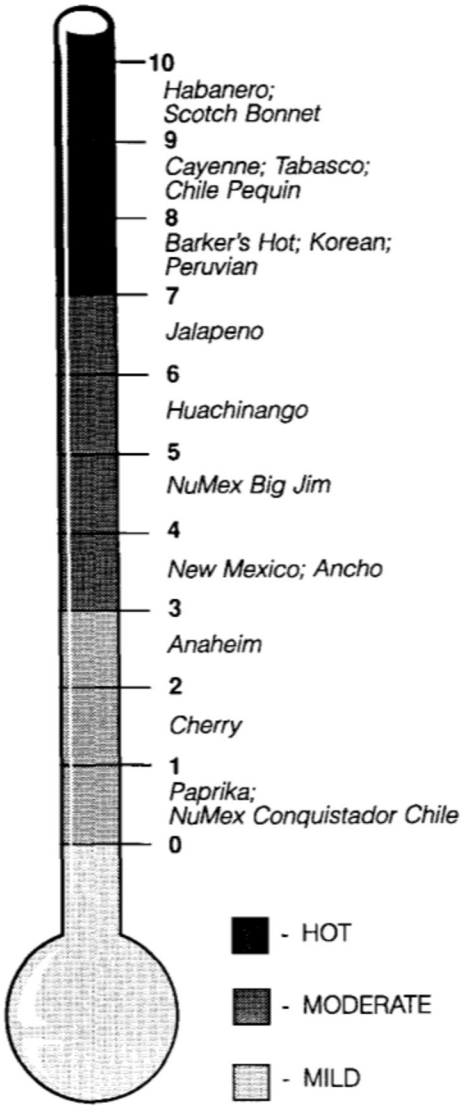
Cayenne. Small, dried red peppers, used most frequently in powdered form as a spice, and heavily used in hot sauces.

Habanero. Small, lantern-shaped chile in the *C. chinese* species that is one of the world's hottest peppers; colors include dark green, red, orange, and orange-red.

Jalapeno. Top chile pepper variety exported to the United States from Mexico--the very popular chiles eaten on nacho chips; smoked, dried red jalapeno (chipotle) is used in soups, salsas, and sauces.

[1]Gary Lucier is Team Leader, Vegetable Analysis Section, Commercial Agriculture Division, Economic Research Service, USDA.

Scoville Organoleptic Test



cial specialty baking sector. Indonesia is by far the leading source of supply with 90 percent of the market. Other sources are Sri Lanka, China, and re-exports from Singapore (table 8).

Cassia and cinnamon imports, both in quill and ground form, have been trending up in recent years. Import volumes averaged 30.0 million pounds for quills and 1.5 million for ground cassia and cinnamon for 1990-94. This compares with 28.7 million pounds for quills and 0.8 million for ground for 1985-89, and 22.7 million and 0.7 million for 1980-84 (appendix table 2). For 1990-94, imports in quill and ground form totaled an average value of $27.9 million, compared with $29.7 million (1985-89), and $14.6 million (1980-84) (appendix table 1).

Unit import values for cassia and cinnamon quills averaged 87 cents a pound for 1990-94, compared with 80 cents in 1985-89, and 50 cents for 1980-84. Ground cinnamon is usually valued about one-third higher, averaging $1.18 a pound in 1990-94 (appendix table 3). New York monthly average spot prices for cinnamon, Ceylon H-2 grade, averaged $2.41 a pound in 1990-94, $1.49 in 1985-89, and $1.21 in 1980-84 (appendix table 4).

Mustard seed ***(Brassica juncea)***. The United States produces a small amount of mustard seed, with the bulk of its requirements coming from imports. Mustard consumption has been growing in the United States, reflecting its common use in the home and especially in fast-food establishments. The rise in use also reflects, to a degree, the waste common in the use of minipackets of mustard at fast-food establishments. Imports are likely to continue to dominate supply as U.S. farmers are not expanding production due to relatively low prices and availability of more remunerative crop options. Almost all mustard seed is imported from Canada (table 9).

Combined U.S. mustard imports for 1990-94 averaged $20.2 million, of which mustard seed accounted for 79 percent and ground for 21 percent. Import volume, the largest of any of the spice group, averaged 135.1 million pounds in 1990-94, with a unit import value of 13 cents a pound for mustard seed. For the two preceding 5-year periods, total mustard imports averaged $15.8 million and 102.5 million pounds in 1985-89 and $13.0 million and 76.4 million pounds in 1980-85. New York spot prices for Canadian No. 1 yellow mustard seed were 26 cents a pound in 1994, relatively unchanged over the last 4 years (appendix table 4).

Oregano (***Origanum vulgare***). The recent growth of oregano or origanum imports reflects increasing demand spurred by its use in the rapidly expanding market for pizza, consumed from frozen products, pizza parlors, and the fast-growing home-delivery market. Turkey, Mexico, and Indonesia are the leading sources of U.S. imports (table 10).

Imports of origanum averaged $12.1 million in 1990-94, up from $7.9 million in 1985-89, and $5.7 million in 1980-84 (appendix table 1). Unit import values in 1994 were $1.12 cents a pound, up from $1.03 in 1993, and 97 cents in 1992. This compares with New York spot prices for Mexican origin oregano of 95 cents a pound in March 1992, $2.50 in March 1993, and $1.40 in March 1994 (appendix table 5). In March 1995, prices moved up again to $2.50 a pound.

Cumin (***Cuminum cyminum***). The value of cumin imports averaged $12.0 million in 1990-94, $4.7 million in 1985-89, and $5.5 million in 1980-84. Cumin is used whole and ground in prepared meats, pickles, sausages, chilli powder, and soups. Pakistan and Turkey are leading sources of supply (table 11). The market for cumin has been expanding, reflecting growing use in both Hispanic and Asian foods.

Annual import volume was a record 15.0 million pounds in 1994 and averaged 12.5 million pounds during 1990-94. This compares with 9.2 million (1985-89), and 8.8 million (1980-84), respectively. Unit import values had been generally trending up, averaging 68 cents a pound in 1990-94, compared with 51 cents for the previous 5-year period. This compares with New York spot prices for Indian origin cumin seed of $1.50 a pound in 1992, $1.15 a pound in 1993, and 87 cents a pound in 1994.

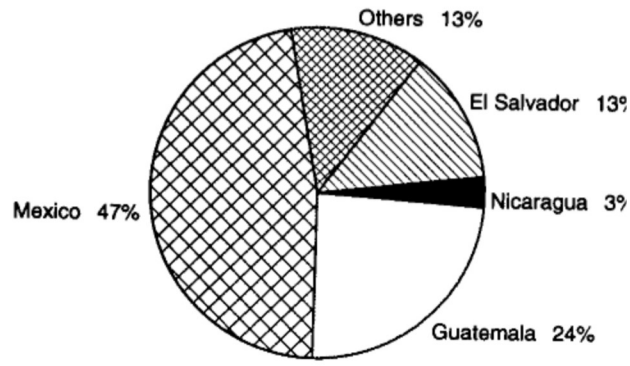
Saffron (***Crocus sativus***). Saffron is the world's most expensive spice. Saffron is used as a culinary adjunct including flavoring and coloring foods. The reason for its costliness is that saffron comes from the stigmas of a crocus and no other part of the plant is used. An acre planted with saffron will yield only 8 to 12 pounds of dried spice per year. Despite its high price, demand remains strong because of its distinctive taste and intense yellow color. Spain, the largest producer, is the largest source of U.S. imports, with most of the balance coming from Costa Rica, Italy, and India (table 12).

U.S. imports of saffron have been reported separately only since 1989. Imports totaled $3.2 million in 1994 and averaged $3.5 million in 1989-93. The volume of imports totaled a record 17,200 pounds in 1994, up

Table 7--U.S. imports of sesame seed 1/

Year	Volume	Value	Unit value
(Jan-Dec)	1,000 pounds	$1,000	$/pound
1980	69,603.0	33,559.9	0.48
1981	83,674.2	35,202.3	0.42
1982	73,222.1	32,454.4	0.44
1983	94,334.5	39,962.8	0.42
1984	81,039.7	32,986.0	0.41
1985	82,307.8	31,013.6	0.38
1986	80,063.1	25,747.0	0.32
1987	80,508.2	26,541.8	0.33
1988	73,075.1	25,702.1	0.35
1989	89,318.3	39,961.7	0.45
1990	94,531.5	56,869.0	0.60
1991	80,381.6	40,643.0	0.51
1992	77,145.3	42,729.7	0.55
1993	81,401.5	34,819.5	0.43
1994	89,321.4	43,195.6	0.48

Leading sources of U.S. supply 2/

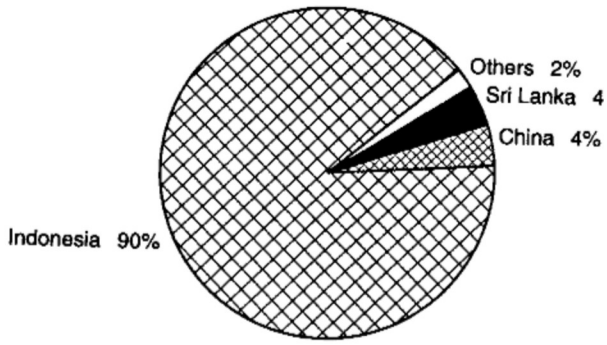


1/ HTS No. 1207400000. 2/ Average 1990-94, based on volume of imports.
Source: Bureau of Census, U.S. Department of Commerce.

Table 8--U.S. imports of cassia and cinnamon quills 1/

Year	Volume	Value	Unit value
(Jan-Dec)	1,000 pounds	$1,000	$/pound
1980	21,899.6	10,373.8	0.47
1981	19,880.2	10,885.0	0.55
1982	20,064.9	10,478.9	0.52
1983	21,641.5	10,013.3	0.46
1984	29,891.6	14,493.6	0.48
1985	27,363.8	13,929.5	0.51
1986	28,161.2	16,800.3	0.60
1987	31,382.4	26,554.1	0.85
1988	24,736.1	22,131.8	0.89
1989	31,777.4	36,395.6	1.15
1990	24,076.9	22,253.3	0.92
1991	30,639.8	26,279.5	0.86
1992	33,170.2	26,609.2	0.80
1993	29,744.2	24,943.2	0.84
1994	32,392.8	29,683.4	0.92

Leading sources of U.S. supply 2/

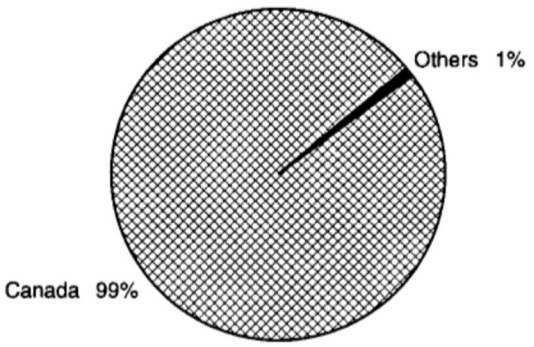


1/ HTS No. 096100000. 2/ Average 1990-94, based on volume of imports.
Source: Bureau of Census, U.S. Department of Commerce.

Table 9--U.S. imports of mustard seed 1/

Year	Volume	Value	Unit value
(Jan-Dec)	1,000 pounds	$1,000	$/pound
1980	64,922.6	8,251.5	0.13
1981	77,362.8	10,984.8	0.14
1982	69,787.3	11,549.0	0.17
1983	70,394.9	10,599.9	0.15
1984	82,104.1	13,071.7	0.16
1985	87,832.1	14,257.2	0.16
1986	91,079.3	13,373.1	0.15
1987	100,535.8	11,431.2	0.11
1988	90,301.5	9,243.5	0.10
1989	102,549.1	12,631.3	0.12
1990	122,632.8	17,812.2	0.15
1991	121,901.7	17,390.8	0.14
1992	122,846.0	14,775.0	0.12
1993	116,718.8	13,910.3	0.12
1994	140,954.0	15,785.6	0.11

Leading sources of U.S. supply 2/

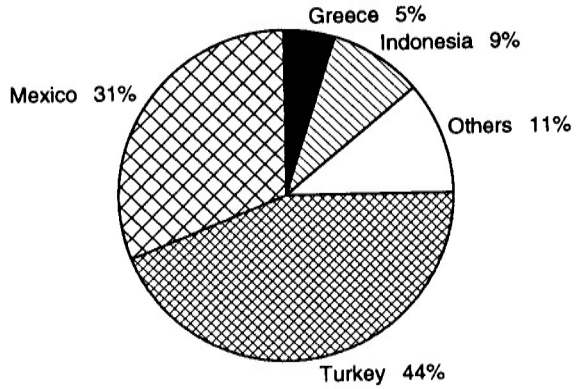


1/ HTS No. 1207500000. 2/ Average 1990-94, based on volume of imports.
Source: Bureau of Census, U.S. Department of Commerce.

Table 10--U.S. imports of origanum 1/

Year	Volume	Value	Unit value
(Jan-Dec)	1,000 pounds	$1,000	$/pound
1980	6,060.7	4,896.7	0.81
1981	6,763.6	5,118.7	0.76
1982	8,360.6	6,917.6	0.83
1983	7,921.4	6,198.3	0.78
1984	9,563.9	4,877.0	0.51
1985	7,905.8	4,174.3	0.53
1986	12,116.8	8,239.1	0.68
1987	11,536.6	12,869.7	1.12
1988	7,615.4	6,659.5	0.87
1989	7,465.5	5,529.3	0.74
1990	10,339.0	7,336.9	0.71
1991	11,834.6	10,158.7	0.86
1992	11,336.5	11,036.5	0.97
1993	14,515.3	15,019.9	1.03
1994	15,033.6	16,858.6	1.12

Leading sources of U.S. supply 2/

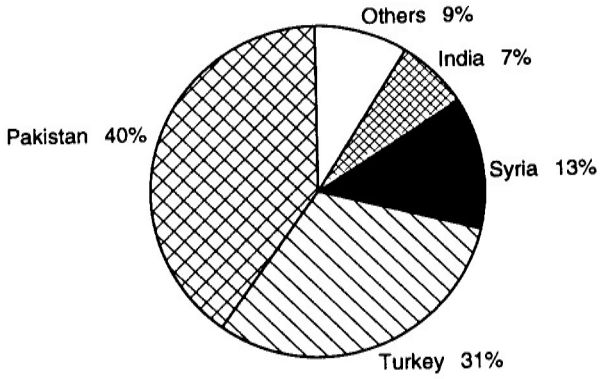


1/ HTS No. 0910992000. 2/ Average 1990-94, based on volume of imports.
Source: Bureau of Census, U.S. Department of Commerce.

Table 11--U.S. imports of cumin 1/

Year	Volume	Value	Unit value
(Jan-Dec)	1,000 pounds	$1,000	$/pound
1980	7,993.1	5,381.0	0.67
1981	10,420.4	6,115.0	0.59
1982	8,888.8	5,993.7	0.67
1983	7,038.7	4,837.5	0.69
1984	9,700.1	5,329.1	0.55
1985	8,688.4	3,296.2	0.38
1986	8,239.8	4,183.1	0.51
1987	10,358.6	6,846.3	0.66
1988	8,157.1	4,461.2	0.55
1989	10,377.6	4,539.3	0.44
1990	10,296.9	4,672.3	0.45
1991	8,850.5	5,551.1	0.63
1992	14,187.0	12,596.1	0.89
1993	11,532.0	9,221.2	0.80
1994	15,044.0	9,531.6	0.63

Leading sources of U.S. supply 2/

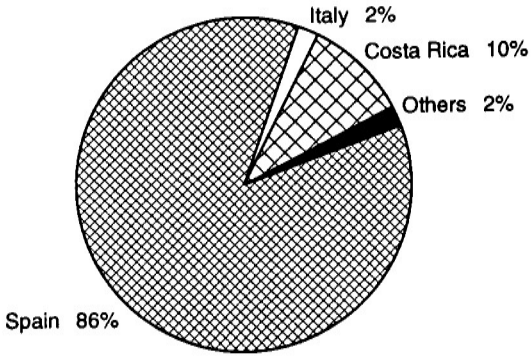


1/ HTS No. 0909300000. 2/ Average 1990-94, based on volume of imports.
Source: Bureau of Census, U.S. Department of Commerce.

Table 12--U.S. imports of saffron 1/

Year	Volume	Volume	Value	Unit value
(Jan-Dec)	Kilograms	1,000 pounds	$1,000	$/pound
1980	NA	NA	NA	NA
1981	NA	NA	NA	NA
1982	NA	NA	NA	NA
1983	NA	NA	NA	NA
1984	NA	NA	NA	NA
1985	NA	NA	NA	NA
1986	NA	NA	NA	NA
1987	NA	NA	NA	NA
1988	NA	NA	NA	NA
1989	3,048	6.7	3,266.2	486.1
1990	3,172	7.0	3,213.2	459.5
1991	3,335	7.4	3,380.8	459.8
1992	3,197	7.0	3,173.4	450.4
1993	7,907	17.4	4,206.6	241.3
1994	8,600	19.0	3,201.1	168.8

Leading sources of U.S. supply 2/



NA=Not available. 1/ HTS No. 0910200000, not reported separately under TSUSA. 2/ Average 1990-94, based on volume of imports.
Source: Bureau of Census, U.S. Department of Commerce.

from 8,200 pounds for the previous 5 years when information was reported separately. The unit import value averaged $464 per pound in 1989-92, then dropped to $242 per pound in 1993 and $168 per pound in 1994 reflecting a sharp increase in supply. New York spot prices for Spanish saffron averaged $523 per pound in 1989-92 and then fell to $355 in 1993 and $274 in 1994 (appendix table 4).

Nutmeg and Mace (*Myristica fragrans*). Imports of nutmeg and mace are combined in this report since these spices come from the same tropical tree species, *Myristica fragrans*. The seed of this tree is the nutmeg of commerce, and the membrane, called an aril that surrounds the seed, becomes mace. Indonesia has about two-thirds of the U.S. import market for nutmeg and Grenada in the West Indies, most of the remainder. Singapore is a source of re-exported nutmeg (table 13). Indonesia is by far the leading source of supply of mace.

Nutmeg is used for flavoring foods, sauces, and beverages--eggnog is the best known. Mace has similar uses. U.S. importers have a preference for deep-brown aromatic nutmeg and orange-red mace from Indonesia. Prospects for growth above recent levels will likely pivot on nontraditional uses.

Nutmeg and mace imports were valued at $3.9 million in 1990-94, down from an average of $11.0 million in 1985-89, and comparable with the $4.2 million registered for 1980-84. The volume of nutmeg and mace imports declined slightly over the three time periods, 4.6 million pounds in 1990-94, 4.8 million in 1985-89, and 5.3 million in 1980-84 (appendix tables 1 and 2). A decline in unit import values mostly explains the fall-off in the total value of imports, with values over the last several years averaging 80 cents a pound for nutmeg, less than one-half the unit values of $2.1 per pound in 1985-89 (table 13).

Recent lower prices reflect world production that continues to exceed demand. New York spot prices for West Indian whole nutmegs averaged $2.33 per pound for 1990-94--dipping to $1.05 in 1994, compared with $2.67 for 1985-89, and $1.00 during 1980-84 (appendix table 4). Indonesian nutmegs averaged 88 cents a pound in 1990-94, down from $2.55 cents in 1985-89, and comparable with 1980-84 levels. New York spot prices for Indonesian No. 2 Siauw mace siftings averaged $1.61 per pound in 1990-94, compared with record highs of $5.41 per pound in 1985-89, and $2.18 for 1980-85. In addition to oversupply, prices have been in a downtrend since the collapse of the marketing agreement between Indonesia and Grenada in May 1990. The agreement had been in effect since April 1987 and was established to set minimum export prices and quotas for nutmegs and mace.

Allspice *(Pimento)* (*Pimenta officinalis*). This spice, native to the Americas, is used in the industrial and home baking of cakes, biscuits, pies, and in pickles. Allspice is also commonly used in meat and fish products. Jamaica is the principal source of U.S. imports followed by Honduras, Guatemala, and Mexico. Small amounts also came from China and Indonesia in recent years (table 14).

Imports have remained relatively consistent from year to year in value and volume terms. Allspice or pimento averaged $1.8 million and 2.2 million pounds in 1990-94, $1.6 million and 1.9 million pounds in 1985-89, $1.5 million and 1.6 million pounds in 1980-84. The unit import values have ranged from a 15-year low of 68 cents a pound in 1994 to a high of $1.05 cents in 1984. In 1993, the average import value was 88 cents a pound and the New York average monthly price for Guatemalan allspice was 94 cents (appendix table 4).

The lack of growth in the use of allspice is attributed to the decline in the baking of specialty products and to its relatively high price, especially the Jamaican variety. Substantial growth in consumption and therefore imports will depend on development of nontraditional applications.

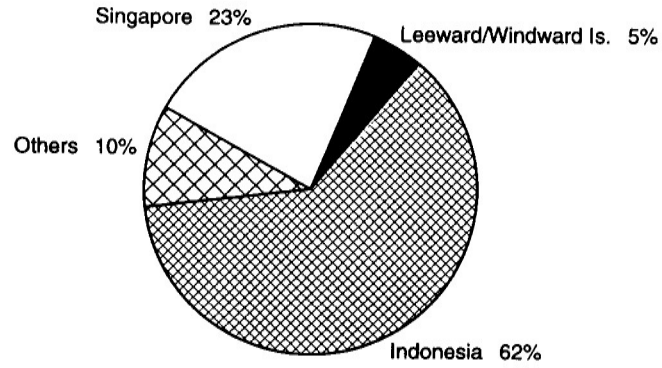
Turmeric *(Curcuma longa).* Turmeric is widely used as a food coloring and flavoring agent, particularly in mustard products. In addition, turmeric is used as an ingredient in curry powder. Market growth is linked to the consumption of imported curry powder, which has been on the upswing in recent years. Consumers in America prefer turmeric with an orange-yellow color and a mild, ginger-pepper flavor exemplified by the Indian variety. India has been the dominant source of supply followed by Thailand and Indonesia. China has been also an important supplier in recent years (table 15). The size of India's crop, stock levels, and the level of demand from India's oleoresin manufacturers have a strong influence on prices.

U.S. imports of turmeric averaged $2.4 million in 1990-94, $2.3 million in 1985-89, and $1.4 million in 1980-84. Import volume was at a record 5.7 million pounds in 1992 but fell to 3.8 million in 1994. This compares with 4.3 million pounds in 1990-94; 4.4 mil-

Table 13--U.S. imports of nutmegs (whole and ground) 1/

Year	Volume	Value	Unit value
(Jan-Dec)	1,000 pounds	$1,000	$/pound
1980	4,527.6	4,126.9	0.91
1981	4,855.7	3,605.9	0.74
1982	5,393.8	3,627.1	0.67
1983	4,602.6	3,014.0	0.65
1984	4,455.3	3,029.4	0.68
1985	4,701.1	3,312.7	0.70
1986	4,035.8	6,898.0	1.71
1987	4,729.6	12,873.3	2.72
1988	3,397.8	9,879.0	2.91
1989	4,222.1	11,073.0	2.62
1990	3,771.9	5,088.6	1.35
1991	4,097.1	3,019.3	0.74
1992	3,715.2	2,357.6	0.63
1993	4,069.9	2,446.4	0.60
1994	5,178.2	3,534.0	0.68

Leading sources of U.S. supply 2/

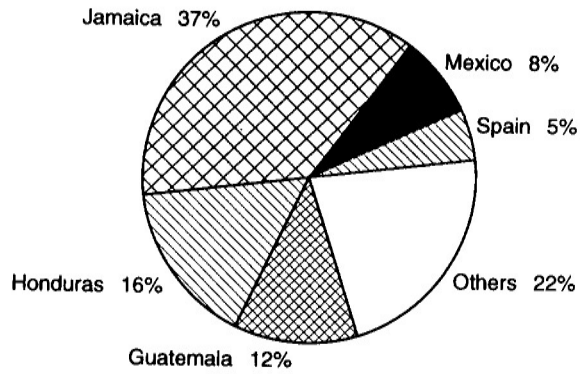


1/ HTS No. 0908100000. 2/ Average 1990-94, based on volume of imports.
Source: Bureau of Census, U.S. Department of Commerce.

Table 14--U.S. imports of allspice (pimento) 1/

Year	Volume	Value	Unit value
(Jan-Dec)	1,000 pounds	$1,000	$/pound
1980	1,620.6	1,266.3	0.78
1981	1,797.9	1,440.2	0.80
1982	1,155.0	1,124.4	0.97
1983	1,676.0	1,612.9	0.96
1984	1,870.8	1,973.2	1.05
1985	1,540.6	1,567.8	1.02
1986	1,704.4	1,469.6	0.86
1987	1,919.1	1,683.5	0.88
1988	2,045.7	1,545.5	0.76
1989	2,487.3	1,827.3	0.73
1990	2,231.3	1,770.5	0.79
1991	2,305.2	1,870.1	0.81
1992	1,898.8	1,707.9	0.90
1993	2,495.0	2,200.4	0.88
1994	2,227.5	1,519.2	0.68

Leading sources of U.S. supply 2/

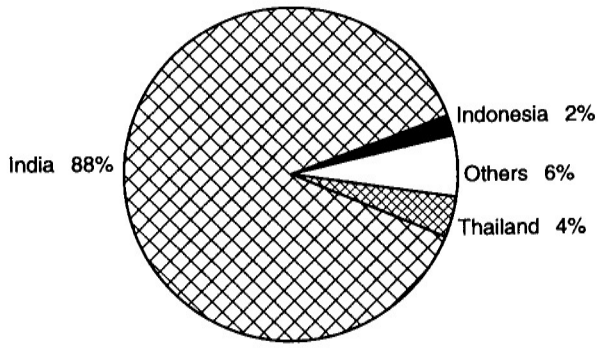


1/ HTS No. 0904208000. 2/ Average 1990-94, based on volume of imports.
Source: Bureau of Census, U.S. Department of Commerce.

Table 15--U.S. imports of turmeric 1/

Year	Volume	Value	Unit value
(Jan-Dec)	1,000 pounds	$1,000	$/pound
1980	3,415.4	1,182.9	0.35
1981	4,106.1	1,129.6	0.28
1982	3,536.7	946.8	0.27
1983	3,527.6	1,368.6	0.39
1984	3,944.3	2,155.0	0.55
1985	4,630.4	2,661.1	0.57
1986	4,561.6	2,615.2	0.57
1987	4,258.2	1,836.2	0.43
1988	3,614.0	2,021.9	0.56
1989	4,733.5	1,807.2	0.38
1990	3,728.2	1,374.5	0.37
1991	4,120.7	2,063.6	0.50
1992	5,744.3	4,075.5	0.71
1993	4,390.0	2,035.4	0.46
1994	3,814.8	1,735.1	0.45

Leading sources of U.S. supply 2/



1/ HTS No. 0910300000. 2/ Average 1990-94, based on volume of imports.
Source: Bureau of Census, U.S. Department of Commerce.

lion, 1985-89; and 3.7 million, 1980-84. Unit import values have gone from a 14-year low of 27 cents a pound in 1982 to a high of 71 cents in 1992. In 1994, values dropped to 46 cents, close to the averages for the three periods--50 cents a pound in 1990-94; 50 cents in 1985-89; and 37 cents in 1980-84.

Cloves (*Syzygium aromaticum*). The United States is a relatively small consumer of cloves. This spice is used in pickling and preserves as well as baking, confectionery, and desserts. Clove oil is used as a flavoring for chewing gum and candy. Since clove oil contains 80-95 percent eugenol, it is also used for the synthesis of vanillin. Indonesia is the world's largest consumer and producer, where between 175-200 million pounds annually are used in the manufacture of "Kretek" cigarettes. Madagascar is by far the main exporter. Other leading sources of shipments to the U.S. market have been Brazil and Indonesia (table 16).

Import values for this high-value, low-volume spice have declined sharply in recent years. Clove imports have averaged $2.0 million for 1990-94, compared with $3.6 million in 1985-89, and $7.9 million in 1980-84. While the volume of U.S. imports increased some in recent years--2.9 million pounds in 1990-94, 2.5 million in 1985-89, and 2.1 million in 1980-84--the unit import value also has been on a steady downward trend from $3.78 per pound in 1980-84, $1.48 in 1985-89, and 65 cents in 1990-94, with 1993 and 1994 registering lows of 44 cents a pound. This decline closely paralleled monthly average New York spot prices for cloves (Madagascar/Zanzibar) of $4.44 per pound in 1980-84, $1.81 cents in 1985-89; and 82 cents in 1990-94, with a low of 49 cents in 1994. Large Indonesian production and stocks, together with weak global demand, have led to depressed clove prices. The oversupply situation had been compounded by the emergence of new producers, such as Brazil.

Other Spice Imports

A number of other spices are imported into the United States in significant volumes (see appendix tables 1, 2, and 3, for long-term trends). Appendix table 3 provides a time series on unit import prices which are f.o.b. values. Appendix tables 4 and 5 provide spot New York prices for selected spices.

Anise (*Pimpinella anisum*). Value of imports averaged $2.3 million annually the last 5 years (1990-94), and $1.4 million during the 1980's. Record imports of $3.4 million were registered in 1993 reflecting both higher prices and record volume of 2.95 million pounds. Value and volume of imports fell to $2.5 million and 2.8 million pounds in 1994. Turkey is the major supplier--around two-thirds of total annual imports. Anise is used both whole and ground to flavor candy and pastry. It has a flavor similar to licorice. New York average monthly spot prices (Turkish) were $1.13 a pound in 1993 and 92.2 cents in 1994.

Basil (*Ocimum basilicum*). Value of imports averaged $3.3 million (1990-94) and $1.7 million during the 1980's. Record imports of $4.6 million were recorded in 1994 due to record import volume of 7.1 million pounds. Egypt is the major supplier with over 80 percent of the U.S. market. Basil's sweet and warm flavor make it popular for seasoning soups, meat, pies, and vegetables. Unit import values in 1994 were 65 cents a pound; spot New York market prices ranged from 46 to 73 cents for Egyptian basil.

Caraway seed (*Carum carvi*). Value of imports averaged $3.7 million (1990-94) and $3.8 million during the 1980's. The Netherlands is the largest supplier, accounting for about 75 percent of the market. Caraway seed is popular in breads, rolls, cheese, and in pickling. The volume of imports has been fairly steady in recent years, but jumped from 7.2 million pounds in 1992 to 8.6 million in 1993 and 8.4 million in 1994. Unit import values in 1994 were 79 cents a pound, versus $1.00 in the spot New York market.

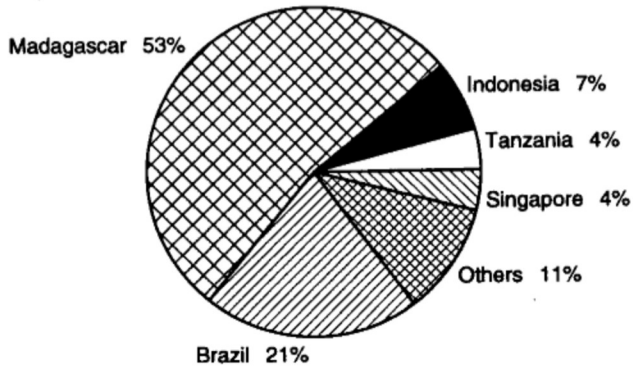
Cardamom (*Elettaria cardamomum*). Imports averaged $1.1 million (1990-94). Guatemala is the principal supplier, about 90 percent of the total. The U.S. food processing industry uses whole cardamoms as a mixed pickling spice, and in the ground form as a flavoring for pastries, in curry powders, and in spice blends for sausages. The volume of imports in recent years has ranged between 300,000 to 550,000 pounds annually. The unit import value is relatively high, averaging $2.93 a pound in 1994. Guatemalan mixed greens on the New York market averaged $2.97 a pound in 1994.

Celery seed (*Apium graveolens*). Import value of celery seed averaged $1.7 million (1990-94) and $1.9 million during the 1980's. India is by far the leading supplier, with over 90 percent of the U.S. import market. Celery seed is commonly used for seasoning for soups and sauces and compounding with salt to produce celery salt. Annual import volumes are relatively steady but jumped nearly 20 percent to 6.9 million pounds in 1993, then fell to 6.0 million

Table 16--U.S. imports of cloves 1/

Year	Volume	Value	Unit value
(Jan–Dec)	1,000 pounds	$1,000	$/pound
1980	2,105.4	8,094.2	3.84
1981	2,082.3	8,098.2	3.89
1982	2,439.9	11,005.5	4.51
1983	1,479.1	5,672.3	3.84
1984	2,363.6	6,703.3	2.84
1985	2,475.1	4,444.2	1.80
1986	2,364.7	4,413.1	1.87
1987	2,238.8	3,358.2	1.50
1988	2,915.8	3,721.3	1.28
1989	2,500.9	2,328.5	0.93
1990	4,080.3	3,645.0	0.89
1991	2,513.7	2,243.5	0.89
1992	2,547.9	1,503.0	0.59
1993	2,744.7	1,207.9	0.44
1994	2,906.8	1,288.3	0.44

Leading sources of U.S. supply 2/



1/ HTS No. 0907000000. 2/ Average 1990–94, based on volume of imports.
Source: Bureau of Census, U.S. Department of Commerce.

pounds in 1994. Unit import value was 23 cents a pound in 1993 and 34 cents in 1994.

Coriander seed (*Coriandrum sativum*). Imports averaged $1.4 million annually during 1990-94 and $1.8 million in the 1980's. Canada and Morocco are the largest suppliers, accounting for 80 percent of the market in recent years. Coriander is used whole as a mixed pickling spice and in ground form to season meats and sausages, and as an ingredient in curry powder. Volume of imports has been relatively steady in recent years. Unit import value in 1994 was 27 cents a pound, compared with under 28 cents the previous 4 years.

Curry and curry powder. Imports have been trending up in recent years and averaged $1.6 million in 1990-94 and $1.0 million during the 1980's. The main sources are India and Japan. Curry powder consists of a blend of numerous ground spices such as turmeric, fenugreek, ginger, black and cayenne pepper, coriander, and caraway. It is commonly used in the United States as a flavoring for rice, veal, chicken, shrimp, and other dishes. The volume of imports has been trending up slowly, with record imports of 1.3 million pounds in 1994. Unit import values for curry have been in the $1.40-$1.60-a-pound range the last several years.

Dill (*Anethum graveolens*). Import value has averaged $731,200 annually (1990-94), and $570,000 during the 1980's. India captures about three-fourths of the U.S. import market. Dill is used whole and ground in making dill pickles, and in soups, salads, sauces, and processed meats. The annual volume of imports has been moving up. Record imports of 2.1 million pounds were recorded in 1994, up from 1.8 and 1.6 million the previous 2 years. Unit import values have been at or close to 50 cents a pound the last 3 years, comparable with New York average monthly spot prices.

Fennel (*Foeniculum vulgare*). Value of imports has averaged $3.4 million in 1990-94 and $1.7 million during the 1980's. Egypt and India together account for about 90 percent of imports. Fennel seed is used whole or ground to season bread, rolls, pastry, pickles, fish dishes, and sauces. The volume of fennel imports has been trending slowly up in recent years. Unit import values have averaged 56 cents a pound the last 5 years.

Ginger (*Zingiber officinale*). U.S. imports of ginger have been growing fairly steadily. Ginger has numerous uses in the food and beverage industry. In baking, it is used in biscuits and gingerbread. It is also used as a seasoning in meat, pickles, and soups. Large quantities of ginger are used by the beverage industry for the manufacture of ginger ale and other soft drinks. Leading sources of supply include India, Fiji, Indonesia, and Jamaica. Peeled Jamaican ginger is known for its high quality. New York spot prices for Indian Cochin material averaged 66 cents a pound in 1993 and 74 cents in 1994 (appendix table 4).[1]

[1] Not included is the large amount of fresh ginger imported annually.

Laurel (Bay) leaves and thyme (*Laurus nobilis and Thymus spp.*). U.S. trade statistics combine these two spice items, the average annual value of imports for which was $3.9 million in 1990-94 and $2.2 million during the 1980's. Spain and Turkey are the main sources of supply with Turkey the main source of laurel imports.[2] These traditional spices are used in soups and meat dishes. Import volume shifts marginally from year to year. Unit import values have been between 90 cents and $1.10 a pound the last several years.

Mint Leaves (*Mentha spicata*).[3] Import value has averaged approximately $311,000 in 1990-94 and $490,000 during the 1980's. Egypt is by far the largest supplier--more than 50 percent. Mint is very popular in home cooking and as a commercial flavoring for mint jelly, candies, and mouthwashes. U.S. demand is filled both from imports, mostly peppermint and spearmint, and domestic production. Unit import values have averaged between 60 and 80 cents a pound the last 5 years, after record-high values of $1.35 and $1.53 a pound in 1987 and 1988.

Parsley *(Petroselinum crispum)*. U.S. imports of dehydrated or manufactured parsley come from several countries, most importantly Israel and Mexico. Manufactured parsley sold as a spice is used in many typical Italian processed foods and in a number of home-prepared fish and meat dishes. The value of imports averaged $1.8 million in 1990-94, compared with $1.0 million in 1985-89. Record import value, $4.2 million, and volume, 2.9 million pounds, were recorded for 1994.

Poppy seed (*Papaver somniferum*). Imports averaged $4.9 million in 1990-94 and $3.1 million in the 1980's. For 1994, imports were a record $9.6 million reflecting increased volume and unit values. Australia and the Netherlands are the main suppliers, together accounting for over 90 percent of imports. Poppy seeds are very popular in a variety of bakery goods. Import volume trended up in recent years reaching a record 12.9 million pounds in 1994. Unit import values rose over 50 percent in 1993 to 44 cents a pound, then to 75 cents in 1994, but still well under the record $1.42 cents recorded on the New York spot market in 1994.

Sage (*Salvia officinalis*) Imports averaged $4.8 million annually (1990-94), compared with $5.1 million during the 1980's. Albania and the former Yugoslavia are the traditional sources of supply. Sage is a spice commonly used in processed meats and sausages and is an indispensable part of preparing "bread stuffing" which accompanies America's traditional Thanksgiving turkey or other poultry dishes. The volume of sage imports has been up in recent years, but dipped to 4.1 and 4.2 million pounds in 1993 and 1994. Sage unit import values were $1.03 a pound in 1994 and averaged $1.08 a pound for 1990-94.

Mixed spices and others. The United States imports a number of spices--including mixtures in the "other spices" category (HTS No. 091090000 and HTS No. 0910996000). USDA includes in the data imports of spices such as marjoram, rosemary, savory, and tarragon which were previously listed separately. The import value of these mixed spices averaged $6.9 million in 1990-94, $7.0 million in 1985-89, and $3.8 million in 1980-85.

Spice Oleoresin Imports

U.S. imports of spice oleoresins, principally paprika and black pepper, averaged $25.7 million in 1990-94, $19 million in 1985-89, and $8.7 million in 1980-84 (table 17). Spice oleoresins contain the aroma and fla vor of the spice in a concentrated form. Technically, spice oleoresins are obtained from dried spices by extraction with a volatile nonaqueous solvent, which is subsequently removed from the oleoresin by evaporation at moderate temperatures and under partial vacuum. The oleoresin contains the aroma and flavor of the spice (including any nonvolatile principles, unlike spice essential oils) in concentrated form, and are usually viscous liquids, or semisolid materials. Because of their high concentration, oleoresins cannot be incorporated into food products unless they are diluted. The dilution is usually achieved by dissolving the oleoresin in alcohol, propylene glycol, or other appropriate solvents to make an essence; or by dispersing the oleoresin on a dry carrier, such as salt, dextrose, or starch; or emulsifying the oleoresin with gum acacia, or one of the soft starches, followed by spray drying to produce an encapsulated spice.

Demand in the United States is increasing as oleoresins offer certain advantages over natural spices, such as consistency of quality, freedom from microorganisms, uniform dispersion in the product, and easy handling and storage. Trends in unit import prices of paprika and black pepper oleoresins are given in table 17. USDA does not have information on the level of

[2] Laurel is increasingly being produced in California.
[3] ASTA does not consider mint a spice. USDA spice data include mint.

Table 17--U.S. imports of spice oleoresins

Year	Paprika			Black pepper			Other			Total
	1,000 pounds	$1,000	$/pound	1,000 pounds	$1,000	$/pound	1,000 pounds	$1,000	$/pound	$1,000
1980	282.8	4,355.2	15.40	202.8	1,672.1	8.25	254.9	1,515.4	5.95	7,542.7
1981	616.3	6,301.7	10.22	232.7	1,860.6	7.99	174.0	1,663.9	9.56	9,826.2
1982	233.3	4,720.2	20.23	324.1	2,213.9	6.83	215.3	1,722.6	8.00	8,656.7
1983	416.0	5,471.0	13.15	271.8	1,809.5	6.66	207.3	1,857.8	8.96	9,138.3
1984	555.1	4,947.7	8.91	243.7	1,745.5	7.16	195.9	1,786.1	9.12	8,479.3
1985	737.3	6,828.3	9.26	348.5	3,138.0	9.00	325.7	2,685.2	8.24	12,651.5
1986	766.9	9,767.6	12.74	398.5	4,713.7	11.83	360.4	2,873.4	7.97	17,354.7
1987	811.6	11,275.5	13.89	481.0	7,009.2	14.57	387.3	3,214.0	8.30	21,498.7
1988	746.6	11,360.2	15.22	484.7	5,158.6	10.64	477.1	3,859.1	8.09	20,377.9
1989	775.6	14,468.2	18.65	290.8	2,976.1	10.24	1,003.6	5,455.9	5.44	22,900.2
1990	956.0	19,012.6	19.89	419.7	3,951.2	9.41	888.7	7,302.6	8.22	30,266.4
1991	802.5	18,734.5	23.35	600.4	4,979.6	8.29	991.5	8,920.1	9.00	32,634.2
1992	989.9	18,648.8	18.84	496.2	3,574.3	7.20	1,025.6	7,884.9	7.69	30,108.0
1993	640.2	10,469.0	16.35	632.1	2,948.3	4.66	827.4	7,539.7	9.11	20,957.0
1994	107.8	2,320.9	21.53	587.7	3,542.6	6.03	1,093.0	8,460.0	7.74	14,323.5

Source: U.S. Department of Commerce.

U.S. production of oleoresins. U.S. imports of spice oleoresins are dominated by India.

Imports of Dehydrated Vegetables Used As Spices

Dehydrated garlic and onions are the leading dehydrated vegetables used as spices. The United States is a significant importer and exporter of these spices (table 18). The average value and volume of dehydrated garlic imports in 1990-94 were $5.0 million and 10.0 million pounds, respectively. In recent years, the main sources of supply have been China, Hong Kong, and Mexico. During the 1980's, dehydrated garlic imports averaged $1.2 million but generally grew during the decade, reflecting increased volume. Unit import value averaged 49 cents a pound in 1990-94 and 59 cents during the 1980's. Dehydrated garlic is used for seasoning beef, poultry, and fish dishes.

Dehydrated onion imports averaged $2.2 million and 3.7 million pounds in 1990-94, compared with under $200,000 and about 550,000 pounds during the 1980's. China and Mexico were the leading suppliers. Unit import values averaged 63 cents a pound in 1990-94. Dehydrated onions are used for seasoning beef, poultry, and fish dishes.

U.S. Spice Production

The U.S. agricultural sector produces several spices that are used to supplement imports needed to meet domestic demand. These include capsicums, mustard seed, dehydrated onion and garlic, and several herbs used as spices. U.S. spice production has expanded over the last decade, up by two-thirds from 1983 to 1994 (figure 5). For the 1990-94 period, U.S. production of spices averaged an estimated 318.3 million pounds, compared with 232.4 million for 1985-89, and 195.8 million in 1980-84. These data are derived largely by ASTA sources as USDA does not have a comprehensive breakdown of production by use as spices.

New Mexico is an important producer of capsicums used both as spices and other uses. According to New Mexico's State Department of Agriculture, production of dried chile peppers in 1994 totaled 97.8 million pounds, dry basis, from 27,900 acres for a total value of $53.5 million (table 19). Production used as spices averaged 50.3 million pounds in 1990-93, 35.3 million in 1985-89, and 26.1 million in 1980-85, according to industry data. Output is up largely due to expansion in area harvested, reflecting good prices and the growing demand for capsicums. Luna County in southwestern New Mexico accounted for nearly three-quarters of the expansion.

California is also a significant producer of dried chile peppers used for spices and other uses. For the 1990-

93 period, production averaged 45.6 million pounds.[4] This compares with annual average production of 19.3 million in 1985-89, and 21.2 million in 1980-84 (table 20). Production takes place mostly in the coastal Salinas Valley in Central California. Table 21 provides a comprehensive USDA supply-use table for dried chile peppers in the United States including data for New Mexico, California, and Arizona.

Mustard seed is grown commercially in the United States in several Northern Great Plains States, with the Dakotas and Montana the principal producers. According to USDA sources, U.S. production in 1994 is estimated at 13.0 million pounds, compared with 12.4 and 14.5, respectively, during the previous 2 years. Production averaged 12.6 million pounds in 1990-94, 14.7 million in 1985-89, and 26.2 million in 1980-84. The smaller harvest in 1994 was due to an 18-percent decline in harvested area to 13,400 acres.

[4] Data for 1994 were not available for this publication.

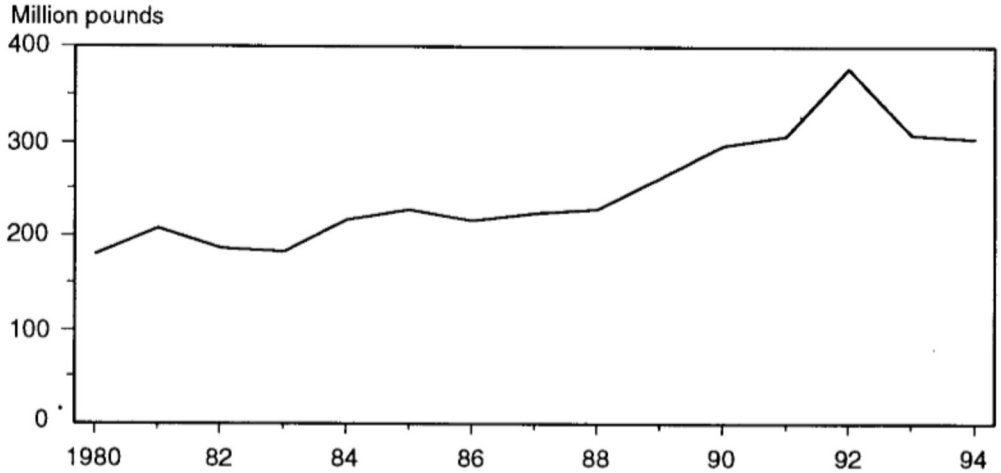
Table 18--U.S. imports of selected dehydrated vegetables (garlic and onions) used as spices

Year	Imports					
	Garlic			Onions		
	1,000 lb.	$1,000	$/lb.	1,000 lb.	$1,000	$/lb.
1980	291	251	0.86	91	63	0.69
1981	262	156	0.60	220	102	0.46
1982	3,521	2,099	0.60	26	34	1.31
1983	844	571	0.68	32	26	0.81
1984	397	297	0.75	244	169	0.69
1985	621	332	0.53	121	97	0.80
1986	3,080	1,281	0.42	81	35	0.43
1987	4,073	1,752	0.43	1,464	190	0.13
1988	3,052	1,352	0.44	235	53	0.23
1989	7,046	3,917	0.56	3,023	1,115	0.37
1990	13,827	8,583	0.62	5,588	3,553	0.64
1991	9,544	4,909	0.51	4,697	2,513	0.54
1992	5,858	2,649	0.45	2,653	1,619	0.61
1993	8,440	4,199	0.50	4,805	2,752	0.57
1994	12,223	4,599	0.38	734	570	0.78

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

Source: U.S. Department of Commerce.

Figure 5
U.S. domestic production of spices



Source: Economic Research Service, USDA.

Table 19--New Mexico: Dried chile peppers, area harvested, yield, production, and farm value

Year	Area harvested	Yield	Production 1/	Farm value
	Acres	Pounds per acre	1,000 pounds	$1,000
1980	17,200	2.72	46,800	26,325
1981	15,300	3.20	49,000	32,830
1982	14,600	3.40	49,600	29,859
1983	17,200	3.20	55,000	33,275
1984	17,000	3.20	54,400	29,920
1985	19,300	3.10	59,800	33,638
1986	22,100	3.20	70,720	37,269
1987	22,900	3.16	72,364	38,353
1988	22,210	3.26	72,404	38,555
1989	23,650	3.24	76,626	41,953
1990	28,700	3.26	93,562	53,564
1991	29,700	3.14	93,258	59,219
1992	34,500	3.10	106,950	67,379
1993	29,900	3.10	92,690	56,077
1994	27,900	3.51	97,798	53,455

1/ Dry weight basis. A 5.1 ratio was used to convert given tonnage to a dry weight equivalent for long hot and long mild varieties; an 8.1 ratio was used to convert jalapino green tonnage to a dry weight equivalent.

Source: New Mexico Department of Agriculture.

Table 20--California: Dried chile peppers, area harvested, yield, production, and farm value

Year	Area harvested	Yield	Production 1/	Farm value
	Acres	Pounds per acre	1,000 pounds	$1,000
1980	5,457	10.05	54,828	11,685
1981	6,491	8.39	54,460	21,200
1982	4,711	11.14	52,462	23,714
1983	3,994	7.35	29,358	12,207
1984	3,483	7.28	25,350	12,338
1985	3,329	7.84	26,110	12,277
1986	1,684	9.72	16,368	5,918
1987	1,873	9.35	17,510	6,858
1988	3,665	7.25	26,560	14,003
1989	4,632	6.95	32,190	17,796
1990	5,305	7.73	41,008	27,187
1991	5,009	7.45	37,312	19,080
1992	6,680	7.05	47,112	30,882
1993	7,505	7.60	57,046	32,945

Note: California data for 1994 will not be available until mid-1995.
1/ Dry weight basis.

Source: California Agricultural Statistics Service.

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 use		Current	Constant
	Production 1/	Imports 2/	Total	Exports 2/	Total	Dry-weight	Fresh 3/	dollars 1/	1987 dollars
	----------Million pounds----------					---Pounds---		---$/short 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	0.8	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	0.8	6.5	1,210	980
1994 5/	160.0	43.2	203.2	5.6	197.6	0.8	6.1	--	--

--Not available.

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

2/ Source: Bureau of the Census, U.S. Dept. of Commerce. Includes dehydrated (spices) and fresh. Exports represent actual data for dehydrated (spice) products plus 10 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.

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.[5]

[5] 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.

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-

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

Year	Harvested acres	Yield per acre	Production	Unit value	Total value
	Acres	Pounds	1,000 pounds	Cents per pound	Thousand 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 acres	Yield per acre	Total production	Estimated use for		Farm value	
				Fresh 1/	Dehydrating 2/	Per unit	Total
	Acres	Pounds/ acre	1,000 pounds	1,000 pounds	1,000 pounds	Cents/ pound	Thousand 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

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

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

Source: National Agricultural Statistics Service.

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.[6]

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

[6] 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

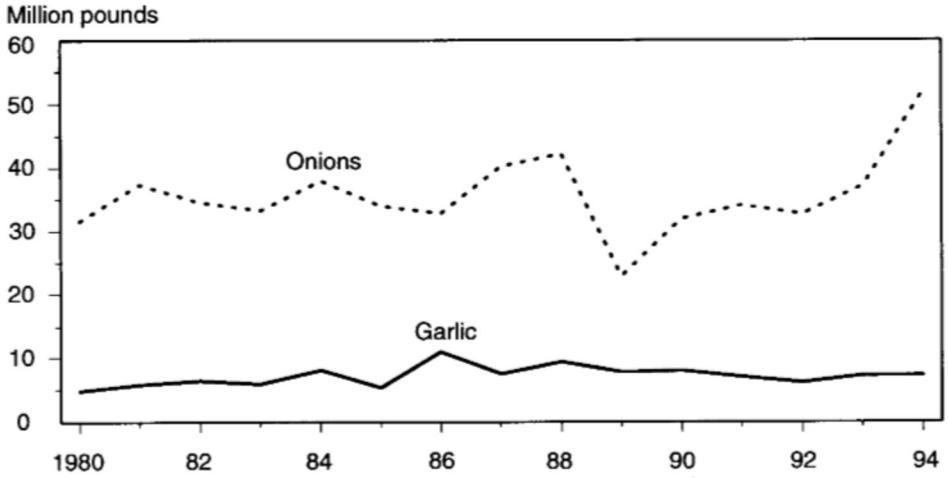


Table 25--U.S. exports of selected dehydrated vegetables (garlic and onions) used as spices

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	0.8	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).[7] 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-

[7] 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

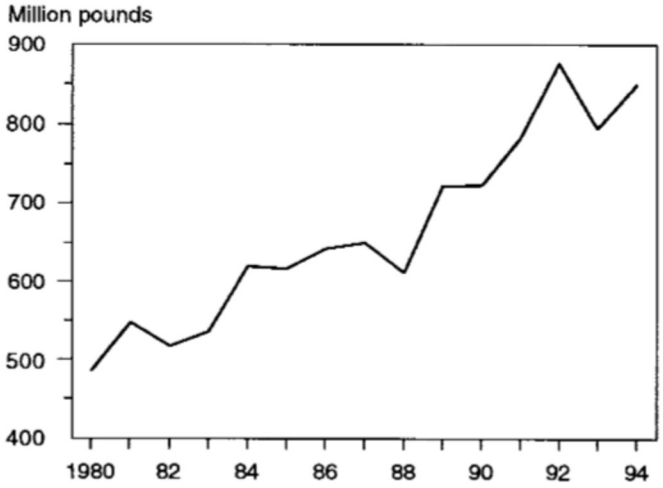
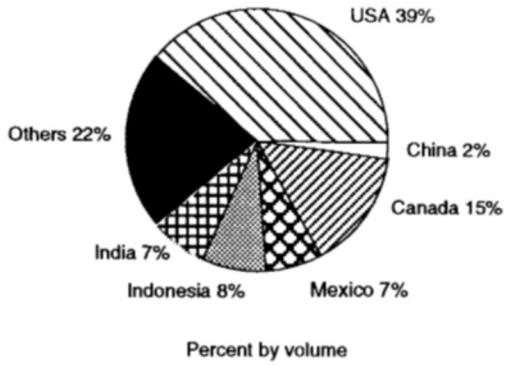


Figure 8
U.S. spice consumption by major source of supply, 1990-94[1]



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

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

Table 26--U.S. spice supply and demand

Year	Imports 1/	Production 2/	Exports 3/	Apparent consumption
		1,000 pounds		
1980	323,094	181,120	18,339	485,875
1981	353,600	208,816	14,747	547,769
1982	344,519	187,320	15,040	516,799
1983	370,990	183,662	18,698	535,954
1984	416,888	218,019	15,827	619,080
1985	400,990	228,781	13,284	616,487
1986	438,878	217,340	14,513	641,705
1987	442,922	224,676	17,771	649,827
1988	399,974	228,875	17,641	611,208
1989	480,439	262,115	20,246	722,308
1990	505,634	296,492	29,624	772,502
1991	507,469	306,088	31,515	782,042
1992	531,080	337,700	31,619	877,161
1993	520,973	307,878	34,440	794,411
1994 4/	582,910	303,500	36,000	850,410

1/ U.S. Department of Agriculture (spices and oleoresins).
2/ American Spice Trade Association (Note: Domestic production consists of capsicums, mustard seed, dehydrated garlic and onions, and herbs used as spices).
3/ American Spice Trade Association (excludes reexports).
4/ Imports based on U.S. Department of Commerce data, production, exports, and consumption are estimates.

Sources: U.S. Department of Agriculture and American Spice Trade Association

Table 27--U.S. spice consumption, total, and per capita

Year	Apparent consumption	U.S. population	Per capita consumption
	1,000 pounds	Millions	Pounds
1980	485,875	227,726	2.13
1981	547,769	229,966	2.38
1982	516,799	232,188	2.23
1983	535,954	234,307	2.29
1984	619,080	236,348	2.62
1985	616,487	238,466	2.59
1986	641,705	240,651	2.67
1987	649,827	242,804	2.68
1988	611,208	245,021	2.49
1989	722,308	247,342	2.92
1990	772,502	249,911	3.09
1991	782,042	252,643	3.10
1992	877,161	255,407	3.43
1993	794,411	258,120	3.08
1994	850,410	260,651	3.26

Sources: American Spice Trade Association, U.S. Department of Agriculture and Bureau of Census, U.S. Department of Commerce.

growers of black pepper and vanilla beans. Through this direct sourcing program, McCormick has sought to interact with producers to obtain higher quality spices and reduce costs of transportation and processing by reducing waste and scrap rates.

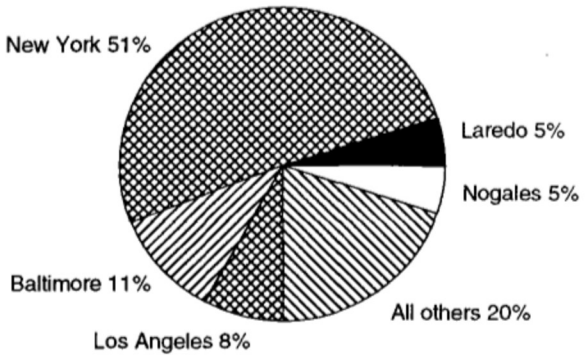
Prices are quoted in U.S. dollars per pound on cost, insurance, and freight (c.i.f.), cost and freight (c.&f.), or free on board (f.o.b.) basis depending on the needs of the importer. Typically, dealers in the United States prefer c.&f. quotations and arrange their own insurance, as this helps in settling claims. Most spices enter the United States by sea. The main ports of entry are New York and Baltimore on the east coast and Los Angeles on the west coast (figure 9).

Official American Spice Trade Association (ASTA) contracts are commonly used. Four different types of contracts have been established to meet the varying needs of importers: (1) import c.i.f., c.&f., and f.o.b. contract, (2) import ex-dock contract, (3) spot contract, and (4) future delivery contract. Payment is usually by letter of credit or cash against documents. When using an ASTA contract, disputes with regard to prices and quality are required to be arbitrated through ASTA.

The commission charged by agents/brokers varies with the type of spice and the quality; normally, it is between 0.5 percent and 2 percent. For example, in recent years the commission has been 1 percent on pepper, 0.5 percent on spice seeds, and 2 percent on other spices. In addition, a wide variety of trade costs have to be taken into account: import duties, customs clearance fees, pier demurrage, charge for samples for chemical analysis, interest charges on financing the merchandise, transportation costs, etc.

Figure 9

U.S. spice imports by ports, 1990-94



Percent by value

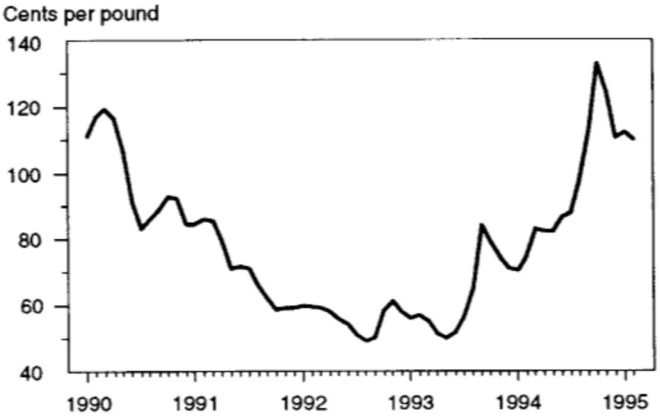
At the port of entry, fumigation (with methyl bromide) costs, and subsequently at the grinder level, cleaning and reconditioning (when necessary) costs, are involved. It is estimated that the net profit to the grinder/packer is between 5-15 percent at the retail stage since processing, packaging, and distribution costs, in addition to promotional costs, have to be absorbed in the retail price of the spice.

Usually, unground and unprocessed spices are imported in gunny sacks or paper bags of a wide range of weights. Thick, air-tight paper containers are typically used for distribution to the industrial sector. For foodservice or institutional consumption, the average size of the container or jar is 5 pounds, while seasonings and pre-prepared flavorings for catering outlets are supplied in specially made dispensers. In the retail sector, spice packers use a wider variety of packaging, ranging from containers made from tin, plastic, or paper to glass jars for the more expensive gourmet lines.

There are no good statistics on stocks. However, market assessments of inventory levels at the different points of the marketing chain have a significant effect on prices. Upon harvest, producers hold new crop inventories. During the year, these stocks shift to importers and dealers in consuming countries such as the United States. Many users practice just-in-time systems of inventory management and depend on importers and dealers to carry normal stocks. According to industry sources, reduced steamship service from some points of origin, increased costs on the pier, fewer days of pier operations, and general increased costs to import have increased the importance of inventory management.

Developments in the global pepper market, the world's most widely traded spice, provide a typical example of market information related to harvest conditions, inventories, and price trends that affect the U.S. spice industry--the world's largest importer of pepper. In the early 1990's world pepper prices were depressed, reflecting abundant supplies and flat demand. Prices for Indonesian, Lampong black pepper fell to a low of 56.1 cents a pound in 1992, down by more than one-half from 99.1 cents in 1990 and significantly below the record price years of 1986 and 1987 when prices averaged over $2.00 a pound (figure 10). By the early 1990's new plantings made during the high price levels of the mid-1980's were in their maximum bearing range. Moreover, reduced

Figure 10
Indonesian Lampong black pepper prices, monthly



Source: New York market area spice brokers.

sales to the former Soviet Union, one of the world's largest markets for spices, also contributed to a depressed market.

By the fall of 1993, prices began to rise largely due to a significant reduction in Indonesian production as a result of unfavorable growing conditions. By the fall of 1994, prices rose to a high of $1.33 a pound in October as news of drought in Indonesia reduced again production prospects from the world's largest pepper exporter while the U.S. industry imported pepper at record levels to replenish inventories and meet rising consumer demand.

Illustrative of these market developments are U.S. import statistics for black pepper. In 1992, the United States imported 89.5 million pounds of black pepper valued at $41.7 million. For 1994, the import volume was 71.0 million pounds and the value a record $94.8 million--double the 1992 level. The unit import price in 1994 was 75 cents a pound, a 60-percent increase from 1992.

Food Processing/Foodservice Sector

The industrial food processing or industrial sector in the United States is a major user of spices in meat preparations, soups, bakery products, beverages, snacks, convenience foods, and many other food items. Although the food industry uses spices in their natural or powdered form, the trend is toward greater use of flavoring and seasonings that have been pre-prepared to meet the specifications of individual food processing companies.

The largest users of spices in the food processing industry are packers of meat products, such as Armour and Oscar Mayer. Despite the significant quantities of natural spices used by these companies, there is a growing tendency to switch to spice oleoresins because they are cleaner and are easier to disperse in the manufacture of end products. Large quantities of spices are also used in the manufacture of soups. Companies such as Campbell and Heinz still use natural spices but there is a gradual trend toward greater use of spice oleoresins.

Beverages, particularly soft drinks, contain sizable amounts of spice flavorings. However, in this product area, as in that of ice creams and frozen desserts, spices face increasing competition from synthetic substitutes, although this is countered by the trend toward "natural foods" and the use of natural ingredients.

The use of spices in industrial baking appears to have declined somewhat because of the high cost of making specialty products. Even so, spices such as sesame, caraway and poppy seeds, cinnamon and cassia, nutmeg and mace, cloves, and cardamom are still widely used in bakery products.

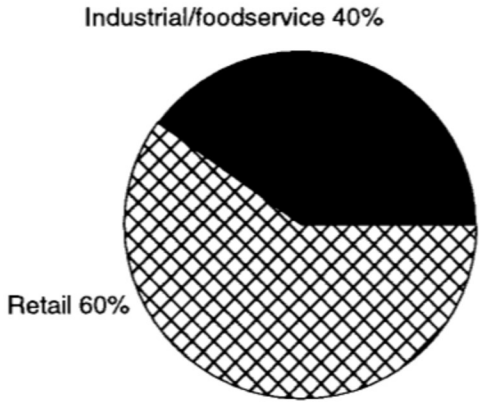
It is estimated that Americans eat a third of their meals in public eating places, including restaurants, hotels, schools, employee cafeterias, institutions, and snack stands. The foodservice sector uses sizable quantities of spices. Since convenience foods, or "fast foods," make up a large proportion of the meals served in public eating places, there is a certain overlap between the industrial and institutional sectors.

Among the major users are the large fast-food chains, such as Kentucky Fried Chicken and McDonalds. They use both natural spices, like pepper and paprika, and prepared seasonings/flavors served in dispensers specially made by flavor processors, such as McCormick and Griffith Laboratories.

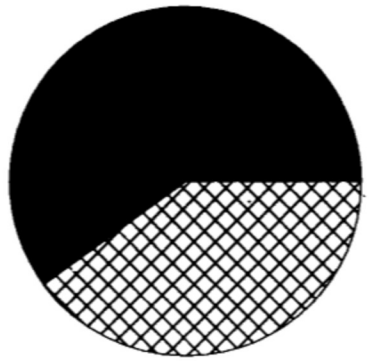
Although foodservice has expanded rapidly, direct sales of spices and seasonings, which formerly took place mainly at foodservice outlets themselves, are now increasingly being made at the food processing level. An example of this is the tremendous growth in sales of pizzas in foodservice establishments and home delivery. The upsurge in demand for these pizzas, which are pre-prepared and only need to be heated, has led to sharply increased demand for oregano at the industrial level.

The institutional/foodservice sector accounts for an estimated 60 percent of total spice consumption in the United States, compared with 40 percent a decade ago (figure 11).

Figure 11
U.S. spice consumption by sector



Early 1980's



Early 1990's

Retail Sector

In quantitative terms, an estimated 40 percent of spices are sold through retail outlets versus 60 percent a decade ago. However, the volume of spice use by the retail sector appears to have expanded due to population growth and changes in the American diet. Although convenience foods and pre-prepared "microwave" dinners are very popular, there is an apparent trend for the average American family to eat more highly seasoned foods at home. The spices for this home seasoning are available at a wide variety of retail outlets. This trend is probably the result of the increasing influence and exposure of Asian and Hispanic foods to the general population, which in turn has led to the consumption of greater quantities, and a wider variety of spices (figure 12).

The U.S. retail sector is serviced largely by a small number of large spice processing and marketing companies which grind imported or domestically produced spices and pack them in a variety of containers for sale at retail outlets, either under their own brand names or under private labels. Among the major grinders/processors in the United States are McCormick/Schilling (37 percent); Specialty Brands (includes Durkee-French, and Spice Islands) (14 percent); and a number of smaller companies and private label brands. McCormick and Co., headquartered in Maryland, markets its retail spices under the Schilling label in the Western United States. As with other parts of America's food processing sector, there has been a trend of mergers resulting in fewer and larger firms operating in the spice industry (figure 13).

Historically, supermarkets have dominated retail sales, marketing both brand name and chain brands. For example, the Safeway supermarket chain markets spices under its Crown Colony house brand. However, during the last 10 years, traditional retail sales delineations have changed dramatically. Today, supermarkets have large health and beauty aid departments, while drug stores carry a variety of food items, including spices. For example, in the Washington area, one large drug store chain recently marketed a brand of spice in glass containers for prices well under those offered at area supermarkets. An emerging trend is growing retail sales of spices at warehouse club stores, generally at reduced prices.

Role of the American Spice Trade Association

The American Spice Trade Association (ASTA) has played an important role in the evolution of the U.S. spice industry for more than 50 years. For example, in 1969, ASTA adopted its first Cleanliness Specifications for Unprocessed Spices, Seeds, and Herbs (foreign and domestically produced). Subsequent revisions were approved by the membership in 1971, 1975, 1976, 1982, 1991, 1992, and 1994. Each of these revisions focused on providing for a credible set of Cleanliness Specifications or improving the Sampling and Analytical Procedures, which are an integral part of the Specifications.

ASTA Cleanliness Specifications and their related requirements such as sampling, analysis, etc., are intended to ensure that spices, seeds, and herbs as raw unprocessed agricultural commodities have been properly handled and stored so they may be further processed into acceptable finished products for U.S.

Figure 12

U.S. marketing and consumption of a typical spice import: Cinnamon

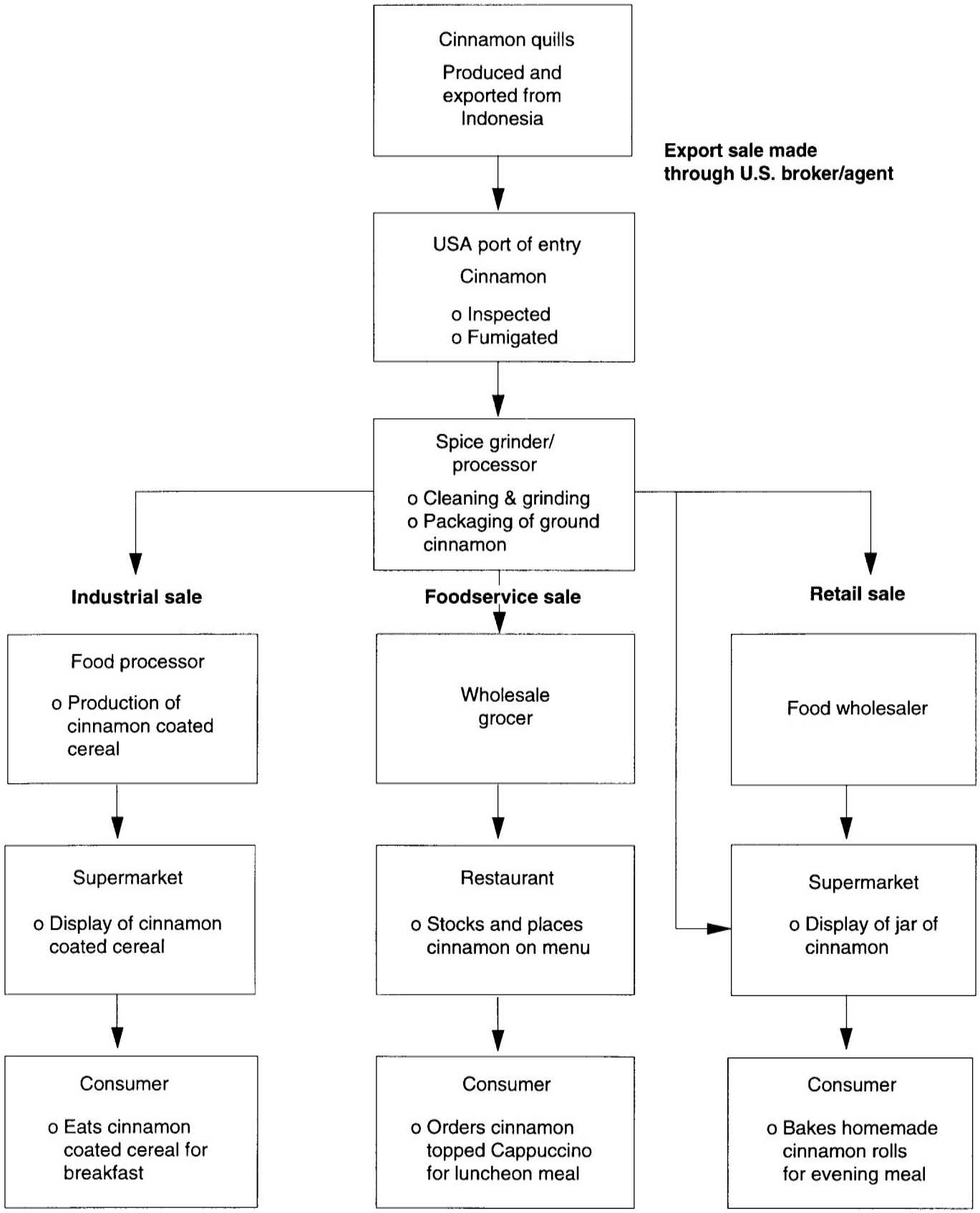
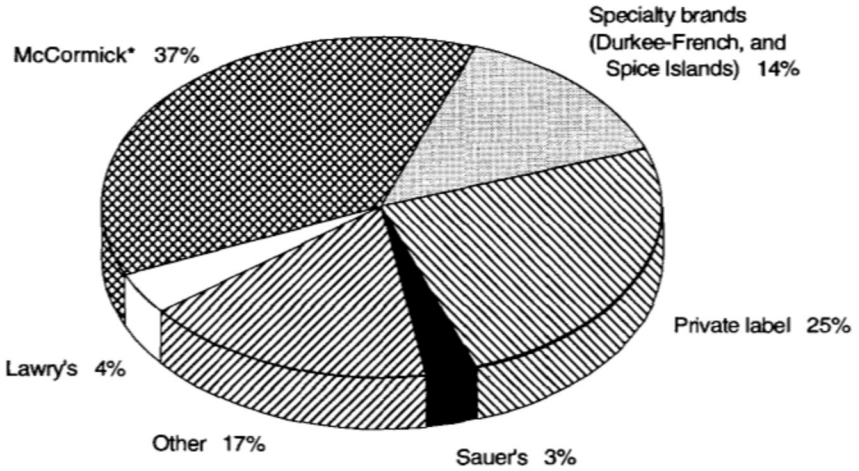


Figure 13
U.S. distribution of retail spice market



*McCormick & Co., Maryland markets its retail spices under the Schilling label in the Western United States.
Source: Industry contacts.

consumption at the consumer, foodservice, and industrial levels.

At present, spices traded on an ASTA contract must be accompanied by a certificate of analysis. The certificate of analysis is issued by a laboratory approved by ASTA before the merchandise can be released from the port of arrival. The majority of spice products imported are not tested for ASTA compliance unless there is a requirement in the purchase contract or the customer of the importer requires the certificate.

In addition to its work in the United States, ASTA's Quality Assurance Committee has recently reissued a "Clean Spice Manual" and has held education seminars in producer countries (for example, India, Egypt, Turkey). ASTA is currently designing a Hazard Analysis Critical Control Point (HACCP) Program for prevention, detection, and control of salmonella in pepper. This program is being presented to pepper producing countries.

Role of the U.S. Government

The U.S. Government has several functions that impact the trade and consumption of spices. With respect to market access, unground and unprocessed spices have generally been admitted duty-free into the United States with no restrictions on quantity. Since January 1, 1976, the United States Generalized System of Preferences (GSP) has been in effect designating selected products from developing countries eligible for duty-free entry into the United States. Tables 28, 29, and 30 provide up-to-date tariff nomenclature information and rates for the major spices imported into the United States, as well as special trade agreement rates and restrictions. Text box 3 provides a listing of the countries that receive special trade rates or restrictions (pages 36-37).

The U.S. Customs Service, Department of the Treasury, approves the classification of imports, collects duties, and investigates irregularities or omissions in import documentation. U.S. Customs information on the value and volume of imports provides the basic data on which the U.S. trade statistics on spices and other merchandise are compiled. U.S. Government regulations stipulate that each container or package of imported spices, oils, or oleoresins must be legibly marked in a conspicuous place with the name of the country of origin in English. This allows the ultimate purchaser in the United States to know the name of the country in which the article was manufactured or produced. It also facilitates the compiling of trade data and collection of import fees.

The Food and Drug Administration (FDA) administers regulations based on the Federal Food, Drug, and Cosmetic Act, as amended. Spices must comply with FDA regulations concerning misbranded food (section

Table 28--U.S. spice tariff codes

Item	Tariff schedule of the United States of America (TSUSA) Before 1989	Harmonized tariff schedule (HTS) 1989 to present
Allspice (Pimento)	1618600	0904208000
(Ground)	1618800	included/090420800
Anise	1610100	0909100000
Basil	1610300	1211908040
(other than crude)	1610500	included/1211908040
Capers	1610600,1610800	0711300000,2001901000,2001902000
Capsicum or Red peppers:		
Anaheim and Ancho	1618000	0904204000
Other	1618300	0904206000
(Ground)	1618400	0904207000
Caraway	1610900	0909400000
Cardamom	1611100	0908300000
Cassia	1611300	included/cinnamon, unground
(Ground)	1611500	included/cinnamon, ground
Celery seed	1262100	1209912000
Cinnamon	1611700	0906100000
(Ground)	1611900	0906200000
Cloves	1612100	0907000000
(Ground)	1612300	included/0907000000
Coriander	1612500	0909200000
Cumin	1612700	0909300000
Curry and curry powder	1612900	0910500000
Dill	1613100	0910995000
Fennel	1613300	0909500000.0712906000*
Garlic (Dehydrated)	1403000	0712904040
Ginger (ungr. inc. fresh)	1613500	0910102000
(Ground)	1613700	0910104000
(Sweet)	1418700	2008996300
(Candied root)	1544000	2006003000
Laurel (Bay) leaves	1613900	0910402000
(Other than crude)	1614100	0910404000
Mace	1614700	0908204000
(Bombay or Wild)	1614300	0908202000
(Ground)	1614900	0908204000
(Ground Bombay or Wild)	1614500	0908202000
Marjoram	1615100	0712906000*
(Other than crude)	1615300	0712907000*
Mint leaves	1615500	1211902000
(Manufactured)	1615700	1211904020,1211904040
Mustard seed	1616100	1207500000
(Ground)	1615800	2103302000
(Prepared, other)	1616000	2103304000
Nutmegs	1616300	0908100000
(Ground)	1616500	included/0908100000
Onions (Dehydrated)	1404000	0712204000
Origanum	1616700	0910992000
(Other than crude)	1616900	0910994000
Paprika	1617100	0904202000
Parsley	1617300	0712906000*
(Manufactured)	1617500	0712906500
Pepper, black	1617720	0904110020
Pepper, white	1617740	1904110040
(Black and white ground)	1617900	0904120000
Poppy seed	1753600	1207910000
Rosemary	1619000	1211908030*,1211908090*
(Other than crude)	1619200	1211908030*,1211908090*
Saffron	1932560 *	0910200000
Sage	1619400	1211908050
(Ground or Rubbed)	1619600	included/1211908050
Savory	1620100	0712906000*
(Other)	1620300	0712907000*
Sesame seed	1754500	1207400000
Tarragon	1620500	0712906000*
(Other than cured)	1620700	0712907000*
Thyme	1620900	0910402000
(Other than crude)	1621100	0910403000
Turmeric	1621300	0910300000
Vanilla beans	1931500	0905000000
Mixed Spices, other	1621500	0910910000,0910996000
Paprika, Oleoresin	4502010	3301301010
Black pepper, Oleorsin	4502015	3301301020
Other spice, Oleoresins	4502025	3301301050

* Denotes basket classifications.

Table 29--U.S. Schedule B nomenclature for spice export data, 1980-88, and 1989 to present

Spice name and/or category, 1989 to present	1980-88 Schedule B number	1980-88 classification and/or description	Comments on Schedule B classification, 1980-88	Schedule B number, 1989 to present	Comments on Schedule B classification, 1989 to present
Anise or badian seeds	162.1700 *	Other spices *	Other spices basket, but badian not specifically mentioned *	0909.10.0000 *	Specifically reported, beginning 1989 *
Capers	162.1700	Other spices *	Other spices basket *	0711.30.0000 *	Unsuitable for immediate consumption *
Capsicum peppers	161.8100	Red peppers	Capsicum peppers basket, including paprika	0904.20.0000	Includes paprika and allspice
Caraway seed	162.1700 *	Other spices *	Other spices basket *	0909.40.0000 *	Specifically reported, beginning 1989 *
Cardamoms	162.1700 *	Other spices *	Other spices basket *	0908.30.0000 *	Specifically reported, beginning 1989 *
Cinnamon (including cassia)	161.1800	Cinnamon and cassia	Specific item	0906.10.0000 and 0906.20.0000	Neither crushed or ground Crushed or ground
Cloves	162.1700 *	Other spices *	Other spices basket *	0907.00.0000 *	(Whole fruit, cloves and stems) *
Coriander seed	162.1700 *	Other spices *	Other spices basket *	0909.20.0000 *	Specifically reported, beginning 1989 *
Cumin seed	162.1700 *	Other spices *	Other spices basket *	0909.30.0000 *	Specifically reported, beginning 1989 *
Curry	162.1700 *	Other spices *	Other spices basket *	0910.50.0000 *	Specifically reported, beginning 1989 *
Fennel seed; juniper berries	162.1700 *	Other spices *	Other spices basket, but juniper berries not specifically mentioned *	0909.50.0000 *	Specifically reported, beginning 1989 *
Garlic, dehydrated	140.5100	Garlic, dehydrated	Specific item	0712.90.4040	Separately reported, before 1989
Ginger	162.1700 *	Other spices *	Other spices basket *	0910.10.0000 *	Specifically reported, beginning 1989 *
Mace	162.1700 *	Other spices *	Other spices basket *	0908.20.0000 *	Specifically reported, beginning 1989 *
Mustard seed	161.6100	Mustard seeds	Specific item	1207.50.0000	Separately reported, before 1989
Mustard flour and meal and prepared mustard	161.6000	Mustard flour and prepared mustard	Specific item	2103.30.0000	Separately reported, before 1989
Nutmeg	162.1700 *	Other spices *	Other spices basket *	0908.10.0000 *	Specifically reported, beginning 1989 *
Onions, dehydrated	140.5300	Onions, dehydrated	Specific item	0712.20.4000	Separately reported, before 1989
Pepper, black and white	161.7800	Black and white pepper	Specific item	0904.11.0000 and 0904.12.0000	Neither crushed or ground Crushed or ground
Poppy seed	175.6040	Oil-bearing nuts and seeds, NSPF	Other oil seeds basket	1207.91.0000	Specifically reported, beginning 1989
Saffron	Not specifically mentioned in Schedule B Nomenclature Index, prior to 1989			0910.20.0000	Specifically reported, beginning 1989
Sesame seed	175.6040	Oil-bearing nuts and seeds, NSPF	Other oil seeds basket	1207.40.0000	Specifically reported, beginning 1989
Thyme; bay leaves	162.1700 *	Other spices *	Other spices basket *	0910.40.0000 *	Specifically reported, beginning 1989 *
Turmeric	162.1700 *	Other spices *	Other spices basket *	0910.30.0000 *	Specifically reported, beginning 1989 *
Other spices	162.1700	Other spices	Other spices basket	0910.91.0000 and 0910.99.0000	Mixtures Other spices
Garlic, powder or flour	140.7100	Vegetables reduced to flour (powder)	Vegetables reduced to flour (powder), includes flour (powder) of vegetables other than onions and/or garlic	0712.90.4020	Specifically reported, beginning 1989
Onions, powder or flour	140.7100			0712.20.2000	Specifically reported, beginning 1989
Vanilla beans	193.2500	Vegetable substances, crude, NSPF	Vegetable substances, crude, NSPF, basket	0905.00.0000	Specifically reported, beginning 1989

* As noted above, the "Other spices" basket specifically included (from index), 14 Schedule B export items with an *, that are now separately reported, beginning in calendar 1989.

Source: Foreign Trade Division, Bureau of the Census, U.S. Department of Commerce.

Table 30--U.S. spice duties under the harmonized tariff schedule (HTS), 1994

Spice description	HTS code	Units of quantity	Rate of duty 1 General	Rate of duty 1 Special	Rate of duty 2
Allspice (Pimento)	0904208000	Kg	Free		Free
Anise	0909100000	Kg	Free		Free
Basil	1211908040	Kg	Free		Free
Capers	0711300000	Kg	8%	Free (A,E,IL,J,MX) 3.2% (CA)	20%
Capsicum or Red peppers:					
Anaheim and Ancho	0904204000	Kg	11 cents/kg	Free (CA,E,IL,J) 9.9 cents/kg (MX)	11 cents/kg
Other:					
Not ground	0904206000	Kg	5.5 cents/kg	Free (CA,E,IL,J,MX)	5.5 cents/kg
Beginning 1994:					
Bell peppers	0904206010	Kg	5.5 cents/kg	Free (CA,E,IL,J,MX)	5.5 cents/kg
Jalapeno peppers	0904206020	Kg	5.5 cents/kg	Free (CA,E,IL,J,MX)	5.5 cents/kg
Other peppers	0904206090	Kg	5.5 cents/kg	Free (CA,E,IL,J,MX)	5.5 cents/kg
Ground	0904207000	Kg	11.2 cents/kg	Free (A,E,IL,J,MX) 4.4 cents/kg (CA)	17.6 cents/kg
Paprika	0904202000	Kg	3 cents/kg	Free (A,E,IL,J,MX) 1.2 cents/kg (CA)	11 cents/kg
Caraway	0909400000	Kg	Free		Free
Cardamoms	0908300000	Kg	Free		Free
Celery seed	1209912000	Kg	Free		4.4 cents/kg
Cassia/Cinnamon	0906100000	Kg	Free		Free
Ground	0906200000	Kg	Free		11 cents/kg
Cloves	0907000000	Kg	Free		Free
Ground	0907000000	Kg	Free		Free
Coriander	0909200000	Kg	Free		Free
Cumin	0909300000	Kg	Free		Free
Curry and Curry powder	0910500000	Kg	Free		11 cents/kg
Dill	0910995000	Kg	Free		25%
Fennel seed; Juniper berries	0909500000	Kg	Free		Free
Fennel, dried, crude	0712906000	Kg	Free		Free
Fennel manufactured	0712907000	Kg	7.5%	Free (A,E,IL,J,MX) 3% (CA)	25%
Garlic (dehydrated)	0712904040	Kg	35%	Free (CA,E,J) 32.6% (MX)	35%
Ginger (unground, incl. fresh):	0910102000	Kg	Free		Free
Ground	0910104000	Kg	2.2 cents/kg	Free (A,E,IL,J,MX) 0.8 cent/kg (CA)	11 cents/kg
Sweet	2008996300	Kg	9%	Free (A,E,IL,J,MX) 3.6% (CA)	35%
Candied	2006003000	Kg	5.4%	Free (A,E,IL,J,MX) 2.1% (CA)	20%
Laurel (bay) leaves	0910402000	Kg	Free		Free
Other than crude	0910404000	Kg	5%	Free (E,IL,J,MX) 2% (CA)	25%
Mace:					
Bombay or wild, ground	0908202000	Kg	16.5 cents/kg	Free (A,E,IL,J,MX) 6.6 cents/kg (CA)	49 cents/kg
Other	0908204000	Kg	Free		Free
Marjoram, dried	0712906000	Kg	Free		Free
Manufactured	0729070000	Kg	7.5%	Free (A,E,IL,J,MX) 3% (CA)	25%
Mint Leaves	1211902000	Kg	Free		Free
Manufactured	1211904040	Kg	7.5%	Free (A,CA,E,IL,J,MX)	25%

Continued--

Table 30--U.S. spice duties under the harmonized tariff schedule (HTS), 1994--Continued

Spice description	HTS code	Units of quantity	Rate of duty 1 General	Rate of duty 1 Special	Rate of duty 2
Mustard seed:	1207500000	Kg	Free		4.4 cents/k
Flour and meal	2103302000	Kg	Free		22 cents/k
Prepared mustard	2103304000	Kg	4.4 cents/Kg	Free (A,E,IL,J,MX) 1.7 cents/kg (CA)	22 cents/k
Nutmegs	0908100000	Kg	Free		Free
Onions, (dehydrated)	0712204000	Kg	25%	Free (CA, E,IL,J) 23.3% (MX)	35%
Origanum	0910992000	Kg	Free		Free
Other than crude	0910994000	Kg	7.5%	Free (A,E,IL,J,MX) 3% (CA)	25%
Parsley, dried	0712906000	Kg	Free		Free
Manufactured	0712906500	Kg	6%	Free (A,E,IL,J,MX) 2.4% (CA)	20%
Pepper, black	0904110020	Kg	Free		Free
Pepper, white	0904110040	Kg	Free		Free
Crushed or ground	0904120000	Kg	Free		2 cents/k
Poppy seed	1207910000	Kg	0.13 cent/kg	Free (A,CA,E,IL,J,MX)	0.7 cents/k
Rosemary	1211908090	Kg	Free		Free
Saffron	0910200000	Kg	Free		Free
Sage	1211908050	Kg	Free		Free
Savory, dried	0712906000	Kg	Free		Free
Manufactured	0712907000	Kg	7.5%	Free (A,E,IL,J,MX) 3% (CA)	25%
Sesame seed	1207400000	Kg	Free		2.6 cents/k
Tarragon, dried	0712906000	Kg	Free		Free
Manufactured	0712907000	Kg	7.5%	Free (A,E,IL,J,MX) 3% (CA)	25%
Thyme, crude	0910402000	Kg	Free		Free
Other than crude	0910403000	Kg	7.5%	Free (A,E,IL,J,MX) 3% (CA)	25%
Turmeric	0910300000	Kg	Free		Free
Vanilla beans	0905000000	Kg	Free		66 cents/k
Other spices:					
Mixtures	0910910000	Kg	3%	Free (A,E,IL,J,MX) 1.2% (CA)	25%
Other spices	0910996000	Kg	3%	Free (A,E,IL,J,MX) 1.2% (CA)	25%
Extracted oleoresins:					
Paprika	3301901000	Kg	6%	Free (A*,CA,E,IL,J,MX)	25%
Black pepper	3301901020	Kg	6%	Free (A*,CA,E,IL,J,MX)	25%
Other spice oleoresins	3301901050	Kg	6%	Free (A*,CA,E,IL,J,MX)	25%

Note: The "Rates of Duty" columns designated 1 ("General" and "Special") and 2 of the tariff schedule apply to goods imported into the custom territory of the United States. Column 1 "General" subcolumn sets forth the general most-favored-nation (MFN) rates. The "Special" tariff treatment programs are as follows with corresponding symbols.

Generalized System of Preferences.....A or A*
United States-Canada Free-Trade Agreement.....CA
Caribbean Basin Economic Recovery Act.....E or E*
United States-Israel Free Trade Area.....IL
Andean Trade Preference Act.....J or J*
United States-Mexico Free-Trade Agreement.....MX

U.S. Products of Countries Designated Beneficiary Developing Countries for Purposes of Generalized Systems of Preferences (GSP).

The following countries, territories, and associations of countries eligible for treatment as one country (pursuant to section 502(a)(3) of the Trade Act of 1974 (19 U.S.C. 2462(a)(3) are designated beneficiary developing countries for the purposes of the Generalized System of Preferences, provided for in Title V of the Trade Act of 1974, as amended (19 U.S.C. 2461 et seq.):

Independent countries

Albania
Angola
Antigua and Barbuda
Argentina
Bahamas, The
Bahrain
Bangladesh
Barbados
Belize
Benin
Bhutan
Bolivia
Botswana
Brazil
Bulgaria
Burkina Faso
Burundi
Cameroon
Cape Verde
Central African Republic
Chad
Chile
Colombia
Comoros
Congo
Costa Rica
Cote d'Ivoire
Cyprus
Czech Republic
Djibouti
Dominica
Dominican Republic
Ecuador
Egypt
El Salvador
Equatorial Guinea
Estonia
Ethiopia
Fiji
Gambia, The
Ghana
Grenada
Guatemala
Guinea
Guinea Bissau
Guyana
Haiti
Honduras
Hungary
India
Indonesia
Israel
Jamaica
Jordan
Kenya
Kiribati
Kyrgyzstan
Latvia
Lebanon
Lesotho
Lithuania
Madagascar
Malawi
Malaysia
Maldives
Mali
Malta
Mauritius
Morocco
Mozambique
Namibia
Nepal
Niger
Oman
Pakistan
Panama
Papua New Guinea
Paraguay
Peru
Philippines
Poland
Russia
Rwanda
St. Kitts and Nevis
Saint Lucia
Saint Vincent and the Grenadines
Sao Tome and Principe
Senegal
Seychelles
Sierra Leone
Slovakia
Solomon Islands
Somalia
Sri Lanka
Suriname
Swaziland
Syria[1]
Tanzania
Thailand
Togo
Tonga
Trinidad and Tobago
Tunisia
Turkey
Tuvalu
Uganda
Uruguay
Uzbekistan
Vanuatu
Venezuela
Western Samoa
Yemen Arab Republic (Sanaa)
Zaire
Zambia
Zimbabwe
Each of the former republics of the Socialist Federal Republic of Yugoslavia other than Serbia and Montenegro

[1]Syria deleted effective August 16, 1992.

Continued

Nonindependent countries and territories

Anguilla
Aruba
British Indian Ocean Territory
Cayman Islands
Christmas Island (Australia)
Cocos (Keeling) Islands
Cook Islands
Falkland Islands (Islas Malvinas)
French Polynesia
Gibraltar
Greenland
Heard Island and McDonald Islands
Macau
Montserrat
Netherlands Antilles
New Caledonia
Niue
Norfolk Island
Pitcairn Island
Saint Helena
Tokelau
Trust Territory of the Pacific Islands (Palau)
Turks and Caicos Islands
Virgin Islands, British
Wallis and Futuna
Western Sahara

Associations of countries (treated as one country)

Member countries of the Cartagena Agreement (Andean Group)

Consisting of:

Bolivia
Colombia
Ecuador
Peru

Members of the Association of South East Asian Nations (ASIAN) Eligible for GSP except Brunei, Darussalam, and Singapore

Consisting of:

Indonesia
Malaysia
Philippines
Thailand

Member countries of the Caribbean Common Market (CARICOM)

Consisting of:

Antigua and Barbuda
Bahamas, The
Barbados
Belize
Dominica
Grenada
Guyana
Jamaica
Montserrat
St. Kitts and Nevis
Saint Lucia
Saint Vincent and the Grenadines
Trinidad and Tobago

403) and adulterated food (section 402). For example, ASTA defines spice as "any dried plant product used primarily for seasoning purposes." Included are tropical aromatics (pepper, cinnamon, cloves, etc.); leafy herbs of the temperate zone (oregano, basil, sage, etc.); spice seeds (sesame, mustard, caraway, etc.); and dehydrated vegetables used as spices (onion, garlic, bell peppers, etc.). FDA's definition of spices is similar to ASTA's. Dehydrated vegetables may not be labeled as "spices." Paprika, turmeric, and saffron or other spices which are also colors, shall be declared as "spice and coloring" unless declared by their common or usual name.

Imports of all spices, seeds, and herbs into the United States are subject to the health and sanitation regulations of the FDA. These regulations are intended to assure the consumer that foods are pure and wholesome, safe to eat, and have been produced under sanitary conditions. Examination is carried out by the FDA at the time of arrival. Laboratory tests may be requested by FDA to detect problems such as pesticide residues or salmonella.

Most spice cargoes are not sampled on the pier, but after the shipments have been moved to a warehouse or to the importer's plant. FDA clearance is required to move the product more than 50 miles from the port of entry. If moved, the entire shipment must be held intact until released by FDA.

The Government also plays an important role in the emerging new field of food irradiation. Some imported spices and other foods are treated with gamma radiation to kill bacteria, molds, and other disease-causing organisms. Plants that do this type of work are inspected regularly by the Nuclear Regulatory Commission and the Occupational Safety and Health Administration, among other agencies. Currently, however, radiation is not widely used on spices due to lack of widespread consumer acceptance. It is important to note that a food product using an irradiated spice as an ingredient does not have to be labeled. According to FDA, the labeling requirement applies only to a food that has been irradiated, not to a food that merely contains an irradiated ingredient but that has not itself been irradiated.

The U.S. Department of Agriculture (USDA) provides the U.S. spice industry with several direct and indirect public service functions. USDA provides farm extension and plant research information to domestic spice growers. USDA also performs a public service of compiling, analyzing, and distributing spice trade statistics and other market and nutrition information. These functions are performed by USDA's Research, Education, and Economics' agencies and Foreign Agricultural Service.

USDA's Animal and Plant Health Inspection Service (APHIS) plays a leading regulatory role in preventing the importation of restricted articles. For example, before being imported into the United States, shipments of cumin seed from Pakistan packed in jute or burlap bagging are required to be fumigated with methyl bromide. APHIS requires that this be done, at the cost of the importer, to prevent the possible entry into the United States of Khapra beetle (*Trogoderma granarium Everts*). Another example is ginger root imports, which are prohibited from certain countries and require an import permit if shipped from other countries.

Outlook

The Bureau of the Census forecasts U.S. population to grow to 274.8 million by the year 2000. At the current (1990-94) per capita rate of 3.19 pounds, that would translate into total domestic use of spices of 877 million pounds in the year 2000, up 8 percent from the early 1990's base period (figure 14). But all indications are that the growth is likely to be even higher. The trend toward less salt in foods will likely continue to stimulate more condiment use to compensate for flavor loss. Growth in consumption of ethnic foods will also stimulate the rise in use of more and a greater variety of spices. The U.S. population is becoming both more Asian and more Hispanic. According to the U.S. Census Bureau, the Asian population grew from 4.4 million in 1982 to 8.2 million in 1992 and the Hispanic population grew from 15.9 million to 23.7 million in 1992. Moreover, Asian and Hispanic cuisine is increasing in popularity and this will continue to cause a surge in the use of spices common to these cultures. For example, capsicum spice imports increased by 85 percent from 32.0 million pounds in 1984 to 59.2 million in 1994--an indicator of the increasing popularity of Latin American foods.

Many restaurants are popularizing the terms "Pacific Rim" and "Tastes of Asia" cooking today, signifying a menu apt to offer dishes from any and/or all parts of Korea, Taiwan, Thailand, Vietnam, Burma, Malaysia, the Philippines, and Indonesia, as well as India, Japan, and the various regional cuisines of China. Typical spices of these countries--ginger, onion, garlic, red pepper, coriander (seeds, leaves), black and white pepper, anise, cumin, fennel, cloves, nutmeg, curry powder, cinnamon, star anise, mace, turmeric--

are increasingly being imported to service the growing demand.

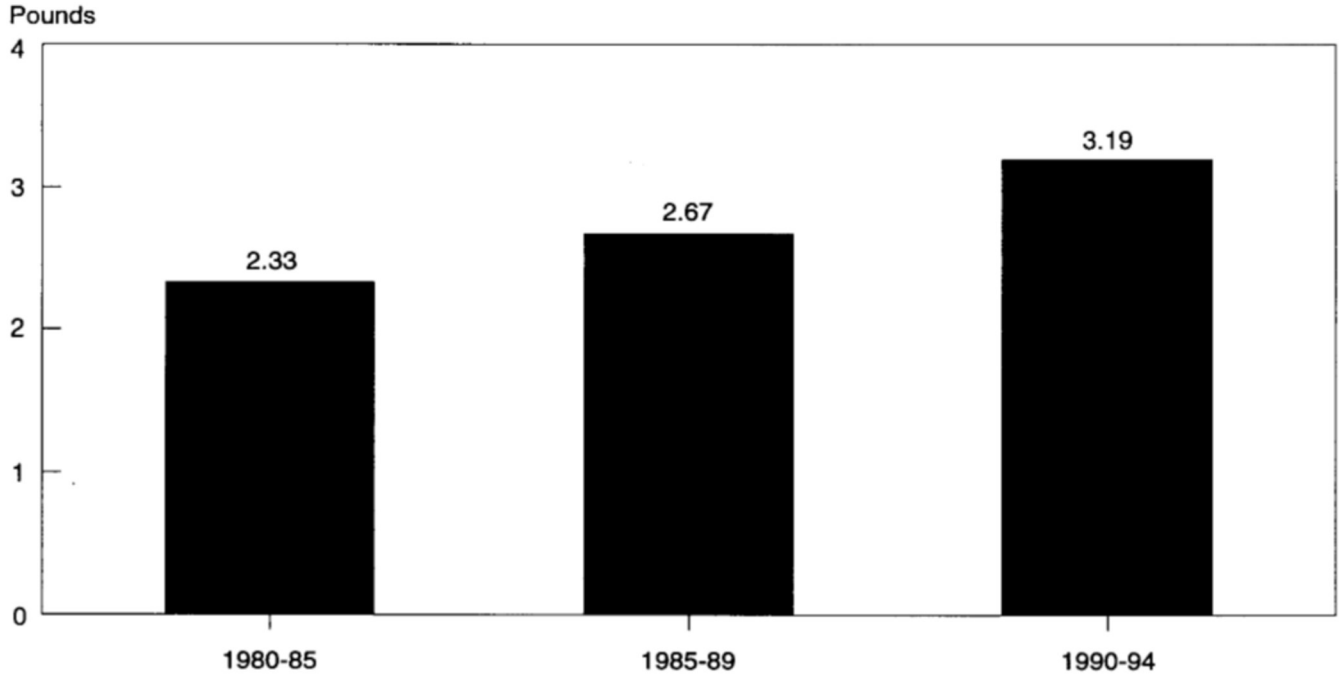
While this growth scenario is most likely, there is the prospect of a downtrend for spices in general or, more likely, particular spices. Demand for spices is assessed as being price inelastic--that is, changes in prices either up or down are not likely to radically alter demand. What is changing consumption for spices is expansion due to population growth, incomes, and tastes in the American diet--particularly favoring ethnic and natural foods. However, if spice prices were to move sharply higher for a sustained period, artificial spice substitutes are frequently available to replace a natural spice that has become too expensive. A wholesale wave of substitutes could shift the demand curve for spices to the left, causing a contraction in consumption. Major U.S. spice processors have a number of artificial flavors ready in the test tube for many of the world's major spices if the need arises.

On the regulatory side, the heightened concern over food safety is likely to foster tightened compliance with existing regulations and perhaps the establishment of new ones. In food safety, an important area for possible reevaluation are techniques for spice sterilization such as the use of ethylene oxide, methyl bromide, and irradiation. Technically, irradiation holds considerable promise, but issues of product labeling and consumer acceptance of the technique must be evaluated.

Focusing on trade, increased global sourcing programs have important implications for both importing countries such as the United States and exporting countries. With global sourcing, the buyer achieves greater purchase value, while the seller learns directly quality requirements of the buyer. Buyers heighten their knowledge of foreign crop conditions and improve their ability to analyze current market forces; sellers increase their knowledge of the buyer's current season demand. Buyers improve knowledge of crop potential and prospects for improvement and sellers gain greater perspective on the outlook for demand needs of buyers. Transfer of technology, such as process control and vendor certification, improves standards and capabilities in source countries and heightens the level of quality assurance in receiving countries. Improved prospects for manufacture of finished products at origin offer value-added exports to the source country and opportunities for buyers to resell finished products in growing third-country markets. Over the long run, these developments could lead to a diminished role for U.S. importers and dealers as some of their services (for example, recleaning) shift to source countries.

Figure 14

U.S. per capita spice consumption growing



Source: USDA.

The outlook for increased domestic production of certain spices is strong. While many spices will continue to be grown overseas due to comparative advantages in climate, soils, and labor costs, certain spices such as capsicum, and garlic and onions used for spices, should expand, reflecting prospects for expanded demand and remunerative prices. For example, the surge in chile demand has created opportunities for large and small growers. Based on the continued popularity and expanded acceptance of Mexican or southwestern cuisine, and the discovery of new uses for chile pepper products, the U.S. chile pepper industry--and chile pepper demand--are expected to continue expanding. Growers are streamlining their production practices as well. Plant breeders and engineers, for example, are collaborating to devise a cost-effective machine harvester for chile peppers.

Methyl Bromide, the Montreal Protocol, and the U.S. Clean Air Act

The U.S. Environmental Protection Agency (EPA) ruled in 1990 that methyl bromide production and importation will be phased out completely by the year 2001. The ruling enforced the Clean Air Act, under which the United States complies with the Montreal Protocol. Methyl bromide's Ozone Depletion Potential (ODP) is 0.7, in excess of the 0.2 lower limit for substances to be classified as class I Ozone Depleting Substances, requiring phaseout within 7 years of listing. The action required under the Clean Air Act is more stringent than freezing methyl bromide production in 1995 at 1991 levels required by the Montreal Protocol. Protocol parties could agree to ban production, but have not done so. For plants and plant products considered potential conveyors of exotic pests, fumigation using methyl bromide is currently the principal method of quarantine treatment.

Appendix table 1--U.S. value of spice imports, by type

Year	Allspice (Pimento)	Anise	Basil	Capsicum or Red pepper: Anaheim and Ancho	Capsicum or Red pepper: Other	Capsicum or Red pepper: Ground	Capsicum or Red pepper: Paprika	Capsicum or Red pepper: Total
				$ 1,000				
1980	1,266.3	1,041.7	569.7	1,264.9	5,239.9	214.0	6,285.8	13,004.6
1981	1,440.2	1,266.0	701.2	1,530.4	5,321.5	383.4	7,668.0	14,903.3
1982	1,124.4	1,631.2	1,381.5	1,772.2	6,049.3	383.4	6,748.7	14,953.6
1983	1,612.9	1,156.3	1,608.3	705.4	6,915.6	1,015.3	7,444.1	16,080.4
1984	1,973.2	1,318.5	1,688.6	1,036.1	7,879.5	724.8	8,912.3	18,552.7
1985	1,567.8	1,164.9	2,210.1	1,361.8	7,084.1	836.5	11,550.6	20,833.0
1986	1,469.6	1,281.9	1,956.3	1,079.9	6,479.8	1,388.6	9,766.9	18,715.2
1987	1,683.5	2,222.6	2,024.0	1,082.4	7,949.6	1,382.9	8,757.8	19,172.7
1988	1,545.5	1,408.5	2,456.4	1,800.1	10,773.7	1,416.4	8,483.3	22,473.5
1989	1,827.3	1,777.0	2,469.9	2,373.5	28,211.6	4,053.5	7,494.1	42,132.7
1990	1,770.5	1,589.0	2,657.4	3,096.1	20,660.5	5,066.9	7,539.0	36,362.5
1991	1,870.1	2,032.4	2,929.3	4,278.4	24,807.3	4,790.7	8,712.9	42,589.3
1992	1,707.9	2,234.5	3,038.5	6,133.6	38,543.7	9,658.8	6,054.0	60,390.1
1993	2,200.4	3,404.3	3,473.6	3,437.0	27,691.5	7,089.5	6,711.3	44,929.3
1994	1,519.2	2,491.3	4,574.5	2,382.3	23,965.6	5,917.3	6,544.2	38,809.4

	Caraway	Cardamom	Cassia and Cinnamon quills	Cassia and Cinnamon ground	Celery seed	Cloves	Coriander	Cumin	Curry and curry powder
					$ 1,000				
1980	3,964.7	777.6	10,373.8	114.7	1,361.9	8,094.2	1,491.7	5,381.0	622.6
1981	3,162.3	491.0	10,885.0	361.1	1,371.0	8,098.2	1,852.8	6,115.0	749.5
1982	4,035.8	785.2	10,478.9	541.8	1,326.0	11,005.5	1,867.4	5,993.7	976.9
1983	3,522.1	598.2	10,013.3	567.6	1,778.0	5,672.3	1,721.5	4,837.5	1,306.1
1984	5,302.6	1,116.1	14,493.6	489.9	2,964.5	6,703.3	2,391.1	5,329.1	1,042.9
1985	5,473.8	1,580.3	13,929.5	311.5	2,911.3	4,444.2	993.4	3,296.2	737.5
1986	4,252.9	807.3	16,800.3	481.3	2,159.8	4,413.1	1,409.5	4,183.1	861.1
1987	3,611.8	849.4	26,554.1	1,000.5	1,426.6	3,358.2	1,716.3	6,846.3	943.0
1988	2,441.0	578.0	22,131.8	700.2	1,801.1	3,721.3	3,322.3	4,461.2	1,380.6
1989	2,507.2	544.9	36,395.6	893.5	2,210.8	2,328.5	1,229.9	4,539.3	1,442.8
1990	2,162.2	1,081.7	22,253.3	1,460.7	1,630.5	3,645.0	1,070.0	4,672.3	1,279.6
1991	2,921.4	647.1	26,279.5	1,561.4	1,904.9	2,243.5	1,422.0	5,551.1	1,338.9
1992	3,007.1	777.8	26,609.2	1,437.7	1,599.4	1,503.0	1,496.7	12,596.1	1,511.9
1993	3,784.6	1,326.1	24,943.2	2,168.2	1,570.5	1,207.9	1,590.3	9,221.2	1,859.6
1994	6,579.7	1,623.8	29,683.4	2,857.0	2,024.1	1,288.3	1,449.6	9,531.6	1,896.2

	Dill	Fennel	Garlic (dehydrated)	Ginger: Ground	Ginger: Sweet	Ginger: Total	Laurel (Bay) leaves and Thyme
				$ 1,000			
1980	414.9	969.1	251.2	103.6	106.3	209.9	1,892.3
1981	498.8	1,268.3	155.7	66.0	110.2	176.2	1,697.7
1982	517.4	1,287.2	2,098.5	87.1	184.7	271.8	1,730.0
1983	533.1	2,130.4	571.4	132.4	395.0	527.4	1,794.9
1984	621.7	1,783.9	297.0	91.9	415.7	507.6	1,452.7
1985	360.0	1,021.5	331.6	55.4	404.6	460.0	1,513.5
1986	840.2	1,594.6	1,280.9	32.6	579.5	612.1	2,369.0
1987	837.2	2,231.0	1,752.3	287.2	761.6	1,048.8	3,646.5
1988	551.5	1,813.0	1,352.2	191.4	650.1	841.5	3,035.9
1989	529.3	2,964.1	3,917.0	424.5	370.6	795.1	3,006.8
1990	513.0	3,769.1	8,582.6	1,576.1	512.4	2,088.5	2,987.2
1991	475.3	4,462.1	4,909.2	2,075.0	325.3	2,400.3	3,463.2
1992	764.4	3,413.6	2,649.1	459.5	450.3	909.8	4,504.6
1993	867.4	2,675.2	4,199.0	292.6	618.0	910.6	4,381.9
1994	1,037.3	2,716.2	4,599.0	455.0	913.9	1,368.9	4,075.8

Continued--

Appendix table 1--U.S. value of spice imports, by type--Continued

Year	Laurel (Bay) leaves other than crude 1/	Mint leaves	Mustard Seed	Mustard Ground	Mustard Total	Nutmegs, whole and ground	Mace whole and ground	Onions (dehy-drated)
					$1,000			
1980	5.0	456.0	8,251.5	2,076.4	10,327.9	4,126.9	463.7	63.1
1981	3.0	476.6	10,984.8	1,806.9	12,791.7	3,605.9	542.4	101.7
1982	7.4	558.3	11,549.0	1,753.5	13,302.5	3,627.1	618.6	34.4
1983	3.7	654.6	10,599.9	1,985.6	12,585.5	3,014.0	1,007.7	26.0
1984	25.2	521.1	13,071.7	2,886.2	15,957.9	3,029.4	1,331.6	169.1
1985	2.7	517.4	14,257.2	3,085.0	17,342.2	3,312.7	1,965.1	97.4
1986	1.0	548.3	13,373.1	3,650.0	17,023.1	6,898.0	1,716.8	35.3
1987	--	552.4	11,431.2	3,664.1	15,095.3	12,873.3	3,244.4	190.2
1988	6.8	579.9	9,243.5	4,056.9	13,300.4	9,879.0	2,195.8	53.1
1989	54.5	41.3	12,631.3	3,646.5	16,277.8	11,073.0	1,862.8	1,115.0
1990	42.9	143.4	17,812.2	3,970.7	21,782.9	5,088.6	1,650.2	3,553.1
1991	48.1	192.2	17,390.8	4,267.0	21,657.8	3,019.3	421.7	2,513.2
1992	50.2	444.2	14,775.0	4,196.0	18,971.0	2,357.6	456.3	1,619.0
1993	79.6	416.5	13,910.3	4,286.4	18,196.7	2,446.4	351.2	2,752.2
1994	208.0	361.4	15,785.6	4,411.4	20,197.0	3,534.0	380.5	570.0

	Origanum	Origanum (other than crude)	Parsley manufactured	Pepper Black	Pepper White	Pepper Ground	Pepper Total	Poppy seed	Saffron
					$ 1,000				
1980	4,896.7	119.3	228.4	50,778.1	7,690.4	40.8	58,509.3	1,910.9	--
1981	5,118.7	68.9	277.9	36,327.9	4,455.0	153.3	40,936.2	2,336.2	--
1982	6,917.6	247.4	481.7	30,504.3	4,282.1	218.0	35,004.4	4,231.2	--
1983	6,198.3	63.9	551.3	29,296.9	4,514.8	360.3	34,172.0	4,312.1	--
1984	4,877.0	19.9	830.1	56,704.4	9,240.8	510.5	66,455.7	3,196.9	--
1985	4,174.3	148.3	1,054.0	73,414.4	15,911.8	180.0	89,506.2	1,936.9	--
1986	8,239.1	103.0	1,144.5	152,962.7	18,472.3	1,509.4	172,944.4	2,116.9	--
1987	12,869.7	287.1	1,116.0	147,807.7	24,693.9	1,758.6	174,260.2	3,314.9	--
1988	6,659.5	583.5	1,120.2	95,161.0	19,275.9	773.6	115,210.5	3,952.8	--
1989	5,529.3	1,015.5	560.9	77,261.4	16,914.7	1,035.1	95,211.2	3,718.7	3,266.2
1990	7,336.9	622.7	959.4	58,609.5	10,381.9	1,693.4	70,684.8	2,953.4	3,213.2
1991	10,158.7	1,122.0	794.6	52,206.8	7,069.4	1,361.5	60,637.7	3,878.4	3,380.8
1992	11,036.5	665.6	731.2	41,705.2	7,186.0	1,199.4	50,090.6	3,126.7	3,173.4
1993	15,019.9	406.2	2,203.1	41,026.0	11,997.3	1,349.4	54,372.7	4,976.3	4,206.6
1994	16,858.6	649.3	4,229.7	70,997.3	17,805.6	1,340.7	90,143.6	9,599.0	3,201.1

	Sage	Sesame seed	Thyme (other than crude)	Turmeric	Vanilla beans	Mixed spice and others 2/	Total 3/
				$ 1,000			
1980	6,199.5	33,559.9	10.2	1,182.9	18,615.5	2,826.9	195,304.0
1981	4,883.9	35,202.3	25.4	1,129.6	31,248.2	2,820.3	196,762.2
1982	3,647.7	32,454.4	8.5	946.8	45,196.1	3,692.4	212,983.3
1983	3,260.2	39,962.8	30.5	1,368.6	50,811.6	4,621.7	218,676.2
1984	3,735.6	32,986.0	17.8	2,155.0	49,933.8	5,006.7	258,277.8
1985	4,702.7	31,013.6	9.3	2,661.1	47,578.3	4,612.6	273,774.9
1986	6,135.4	25,747.0	13.6	2,615.2	61,130.0	6,029.3	377,929.1
1987	6,411.7	26,541.8	24.6	1,836.2	77,499.2	7,279.5	424,321.3
1988	5,621.0	25,702.1	20.5	2,021.9	61,937.5	8,659.4	333,519.4
1989	6,832.7	39,961.7	123.4	1,807.2	46,125.3	8,559.1	354,647.3
1990	4,742.4	56,869.0	89.0	1,374.5	47,757.9	5,612.2	334,051.6
1991	4,655.6	40,643.0	121.2	2,063.6	69,044.1	7,009.6	340,362.6
1992	5,567.7	42,729.7	132.1	4,075.5	65,700.0	6,555.1	347,633.8
1993	4,500.0	34,819.5	101.2	2,035.4	63,483.2	7,298.5	332,378.5
1994	4,354.6	43,195.6	126.6	1,735.1	61,855.3	7,821.4	387,146.1

1/ Excluding thyme. 2/ Others include marjoram, rosemary, savory, and tarragon, which were previously listed separately.
3/ USDA total imports differ somewhat from ASTA import totals on table 1, reflecting some differences in spice and herbs categories.
Sources: U.S. Department of Agriculture and U.S. Department of Commerce.

Appendix table 2--U.S. volume of spice imports, by type

Year	Allspice (Pimento)	Anise	Basil	Capsicum or Red pepper				
				Anaheim and Ancho	Other	Ground	Paprika	Total
	1,000 pounds							
1980	1,620.6	1,177.3	1,246.1	1,569.7	9,566.1	261.2	7,761.4	19,158.4
1981	1,797.9	1,155.7	1,649.3	1,754.9	9,592.1	378.5	9,919.7	21,645.2
1982	1,155.0	1,365.8	2,490.3	2,689.9	9,976.4	344.4	9,014.9	22,025.5
1983	1,676.0	1,438.5	2,622.0	1,869.3	13,117.7	1,021.0	11,111.5	27,119.5
1984	1,870.8	1,896.0	3,227.8	1,851.0	14,777.4	678.4	14,726.7	32,033.4
1985	1,540.6	2,135.2	4,044.8	1,975.1	13,645.9	845.0	19,062.0	35,528.1
1986	1,704.4	1,853.6	3,135.9	2,306.7	14,689.2	1,482.6	14,505.5	32,984.0
1987	1,919.1	2,626.6	3,652.8	1,827.6	16,620.0	1,944.7	11,612.0	32,004.3
1988	2,045.7	1,690.5	3,981.3	2,566.6	17,770.6	2,082.3	10,840.8	33,260.3
1989	2,487.3	2,438.1	4,390.7	2,785.1	29,136.1	9,242.0	9,252.4	50,415.5
1990	2,231.3	2,170.0	4,037.8	3,310.9	25,777.8	14,903.9	9,078.2	53,070.8
1991	2,305.2	2,447.8	4,714.1	3,141.1	23,541.2	12,117.7	8,569.6	47,369.6
1992	1,898.8	2,265.7	4,746.1	2,569.5	33,179.3	23,569.4	6,784.2	66,102.4
1993	2,495.0	2,951.1	5,398.6	2,340.0	32,629.4	16,790.2	9,093.1	60,852.7
1994	2,227.5	2,843.7	7,084.5	1,653.9	33,747.6	13,873.5	9,909.0	59,184.0

Year	Caraway	Cardamom	Cassia and Cinnamon quills	Cassia and Cinnamon ground	Celery seed	Cloves	Coriander	Cumin	Curry and Curry powder
	1,000 pounds								
1980	6,838.1	263.9	21,899.6	127.0	4,593.8	2,105.4	8,553.1	7,993.1	421.1
1981	6,682.7	184.5	19,880.2	691.4	4,499.4	2,082.3	10,281.0	10,420.4	487.2
1982	7,915.7	262.4	20,064.9	1,063.5	4,318.9	2,439.9	9,902.1	8,888.8	612.4
1983	7,361.9	192.0	21,641.5	867.1	5,095.3	1,479.1	9,223.3	7,038.7	863.6
1984	8,758.3	176.6	29,891.6	791.7	4,800.3	2,363.6	13,978.0	9,700.1	676.2
1985	7,930.7	447.3	27,363.8	630.5	5,617.8	2,475.1	5,438.1	8,688.4	609.1
1986	8,286.1	317.9	28,161.2	729.5	5,712.0	2,364.7	7,532.3	8,239.8	624.6
1987	8,628.9	394.0	31,382.4	1,044.1	4,271.7	2,238.8	7,258.3	10,358.6	592.2
1988	6,255.6	296.1	24,736.1	532.6	4,967.7	2,915.8	13,090.6	8,157.1	854.5
1989	7,597.1	360.7	31,777.4	843.0	6,396.3	2,500.9	5,330.3	10,377.6	1,049.6
1990	6,799.5	485.2	24,076.9	1,576.3	4,856.1	4,080.3	4,763.3	10,296.9	944.5
1991	8,150.7	367.7	30,639.8	950.2	5,850.2	2,513.7	5,410.8	8,850.5	932.8
1992	7,206.8	372.4	33,170.5	1,165.6	5,877.5	2,547.9	5,101.0	14,187.2	1,028.5
1993	8,565.0	520.3	29,744.2	2,052.9	6,851.5	2,744.7	4,793.7	11,532.0	1,237.2
1994	8,356.1	553.4	32,392.8	2,720.7	5,961.9	2,906.8	5,287.1	15,044.0	1,341.9

Year	Dill	Fennel	Garlic (dehydrated)	Ginger			Laurel (Bay) leaves and Thyme
				Ground	Sweet	Total	
	1,000 pounds						
1980	921.3	2,616.4	290.8	203.7	129.6	333.3	2,072.8
1981	1,185.4	3,121.7	262.1	119.3	120.6	239.9	2,142.7
1982	1,329.4	3,042.2	3,520.8	117.9	238.8	356.7	2,578.1
1983	1,317.5	3,840.5	843.7	178.8	574.1	752.9	2,933.9
1984	1,633.2	4,378.8	396.8	80.2	647.3	727.5	2,788.2
1985	988.6	3,545.3	621.3	56.7	893.5	950.2	2,942.5
1986	1,710.8	5,040.0	3,080.3	65.0	960.1	1,025.1	3,620.4
1987	1,464.1	5,291.5	4,073.0	498.9	1,106.3	1,605.2	4,013.3
1988	802.7	3,867.8	3,052.3	220.5	833.3	1,053.8	3,421.4
1989	1,355.0	6,194.8	7,045.5	1,036.2	412.9	1,449.1	3,651.5
1990	1,307.1	6,400.0	13,827.4	2,991.0	472.5	3,463.5	3,230.4
1991	1,200.2	5,477.6	9,543.8	1,559.1	261.7	1,820.8	3,150.6
1992	1,592.6	6,955.7	5,858.1	348.8	550.5	899.3	3,930.8
1993	1,829.9	5,977.3	8,440.0	255.3	897.7	1,153.0	4,162.5
1994	2,086.7	6,197.1	12,223.2	634.7	1,648.4	2,283.1	4,108.9

Continued--

Appendix table 2--U.S. volume of spice imports, by type--Continued

Year	Laurel (Bay) leaves other than crude 1/	Mint leaves	Mustard Seed	Mustard Ground	Mustard Total	Nutmegs, whole and ground	Mace, whole and ground	Onions (dehydrated)
	1,000 pounds							
1980	4.2	443.1	64,922.6	2,845.7	67,768.3	4,527.6	469.8	91.3
1981	3.3	549.0	77,362.8	2,477.6	79,840.4	4,855.7	588.6	219.6
1982	6.6	680.1	69,787.3	2,709.3	72,496.6	5,393.8	493.4	26.2
1983	1.1	657.9	70,394.9	3,473.6	73,868.5	4,602.6	620.4	32.0
1984	33.7	534.8	82,104.1	6,012.4	88,116.5	4,455.3	516.5	243.6
1985	6.0	577.8	87,832.1	7,048.8	94,881.0	4,701.1	690.3	121.3
1986	0.7	517.6	91,079.3	8,121.8	99,201.2	4,035.8	454.4	80.5
1987	0.0	410.5	100,535.8	8,024.2	108,560.0	4,729.6	699.3	1,463.6
1988	4.9	378.8	90,301.5	8,458.7	98,760.2	3,397.8	440.5	235.0
1989	98.8	56.0	102,549.1	8,236.5	110,785.6	4,222.1	648.2	3,023.2
1990	97.7	193.1	122,632.8	8,203.6	130,836.4	3,771.9	651.9	5,587.8
1991	35.1	320.8	121,901.7	9,406.7	131,308.4	4,097.1	395.3	4,696.5
1992	64.8	640.7	122,846.0	9,870.0	132,716.0	3,715.2	484.8	2,653.2
1993	76.5	517.9	116,720.0	11,221.7	127,941.7	4,069.9	497.1	4,805.0
1994	204.6	548.7	140,954.0	11,898.0	152,852.0	5,178.2	340.8	733.7

Year	Origanum	Origanum (other than crude)	Parsley manufactured	Pepper Black	Pepper White	Pepper Ground	Pepper Total	Poppy seed	Saffron
	1,000 pounds								
1980	6,060.7	197.3	420.0	65,353.6	7,041.1	25.1	72,419.8	5,866.3	--
1981	6,763.6	124.1	402.3	62,971.5	5,518.4	111.8	68,601.7	6,265.8	--
1982	8,360.6	661.8	788.4	61,312.7	5,998.6	179.9	67,491.2	7,305.5	--
1983	7,921.4	72.1	907.9	62,492.4	6,899.4	367.3	69,759.1	6,836.1	--
1984	9,563.9	27.1	1,765.0	76,071.4	8,030.6	381.4	84,483.3	9,581.1	--
1985	7,905.8	206.6	1,415.1	60,453.8	10,498.9	148.8	71,101.5	7,847.6	--
1986	12,116.8	140.9	2,222.3	83,914.7	7,887.7	869.7	92,672.2	10,557.9	--
1987	11,536.6	395.3	2,297.0	69,163.6	9,994.2	957.0	80,114.9	8,325.5	--
1988	7,615.4	844.4	2,125.3	59,391.2	9,538.1	683.0	69,612.3	8,141.4	--
1989	7,465.5	2,246.5	591.3	70,148.4	12,233.4	850.3	83,232.2	9,171.9	6.7
1990	10,339.0	1,035.7	733.5	72,707.6	12,612.9	1,620.8	86,941.3	7,396.1	7.0
1991	11,834.6	1,483.3	589.1	85,671.2	11,407.4	1,428.6	98,507.1	10,998.4	7.4
1992	11,336.5	884.1	500.4	89,486.0	12,221.2	1,121.0	102,828.2	10,762.2	7.0
1993	14,515.3	613.3	1,515.4	79,298.3	12,082.3	1,456.4	92,836.9	11,380.8	17.4
1994	15,033.6	1,222.2	2,904.6	94,822.1	13,452.0	1,159.6	109,433.7	12,862.2	19.0

Year	Sage	Sesame seed	Thyme (other than crude)	Turmeric	Vanilla beans	Mixed spice and others 2/	Total 3/
	1,000 pounds						
1980	4,306.1	69,603.0	7.5	3,415.4	756.2	3,765.1	322,353.7
1981	3,299.2	83,674.2	22.7	4,106.1	1,411.4	3,440.3	352,576.8
1982	3,210.2	73,222.1	5.3	3,536.7	1,948.4	4,786.9	343,746.0
1983	3,375.9	94,334.5	26.9	3,527.6	2,154.8	5,089.1	370,094.5
1984	4,182.2	81,039.7	8.8	3,944.3	1,855.0	5,453.8	415,893.6
1985	4,402.6	82,307.8	6.8	4,630.4	1,638.3	5,641.6	399,578.9
1986	4,999.4	80,063.1	12.3	4,561.6	2,310.9	7,282.3	437,352.3
1987	4,387.6	80,508.2	38.4	4,258.2	3,058.7	7,640.3	441,242.5
1988	3,672.7	73,075.1	39.2	3,614.0	2,682.4	8,645.0	398,266.1
1989	4,505.6	89,318.3	156.3	4,733.5	2,441.4	10,005.5	478,368.9
1990	3,651.7	94,531.5	69.0	3,728.2	2,149.9	4,030.0	503,369.2
1991	4,991.3	80,381.6	149.0	4,120.7	2,883.4	6,579.7	505,074.8
1992	5,323.5	77,145.3	119.9	5,744.3	2,781.4	5,950.5	528,565.0
1993	4,063.5	81,401.5	64.6	4,390.0	2,936.1	5,950.4	518,895.1
1994	4,232.8	89,321.4	169.3	3,814.8	2,744.3	6,599.0	581,018.3

1/ Excluding thyme. 2/ Others include marjoram, rosemary, savory, and tarragon, which were previously listed separately.

3/ USDA total imports differ somewhat from ASTA import totals on table 1, reflecting some differences in spice and herbs categories.

Sources: U.S. Department of Agriculture, and U.S. Department of Commerce.

Appendix table 3--U.S. unit value of spice imports, by type

Year	Allspice (Pimento)	Anise	Basil	Capsicum or Red pepper: Anaheim and Ancho	Capsicum or Red pepper: Other	Capsicum or Red pepper: Ground	Capsicum or Red pepper: Paprika	Capsicum or Red pepper: Total
	$ per pound							
1980	0.78	0.88	0.46	0.81	0.55	0.82	0.81	0.68
1981	0.80	1.10	0.43	0.87	0.55	1.01	0.77	0.69
1982	0.97	1.19	0.55	0.66	0.61	1.11	0.04	0.68
1983	0.96	0.80	0.61	0.38	0.53	0.99	0.67	0.59
1984	1.05	0.70	0.52	0.56	0.53	1.07	0.61	0.58
1985	1.02	0.55	0.55	0.69	0.52	0.99	0.61	0.59
1986	0.86	0.69	0.62	0.47	0.44	0.94	0.67	0.57
1987	0.88	0.85	0.55	0.59	0.48	0.71	0.75	0.60
1988	0.76	0.83	0.62	0.70	0.61	0.68	0.78	0.68
1989	0.73	0.73	0.56	0.85	0.97	0.44	0.81	0.84
1990	0.79	0.73	0.66	0.94	0.80	0.34	0.83	0.69
1991	0.81	0.83	0.62	1.36	1.05	0.40	1.02	0.90
1992	0.90	0.99	0.64	2.39	1.16	0.41	0.89	0.91
1993	0.88	1.15	0.64	1.47	0.85	0.42	0.74	0.74
1994	0.68	0.88	0.65	1.44	0.71	0.43	0.66	0.66

	Caraway	Cardamom	Cassia and Cinnamon quills	Cinnamon ground	Celery seed	Cloves	Coriander	Cumin	Curry and Curry powder
	$ per pound								
1980	0.58	2.95	0.47	0.90	0.30	3.84	0.17	0.67	1.48
1981	0.47	2.66	0.55	0.52	0.30	3.89	0.18	0.59	1.54
1982	0.51	2.99	0.52	0.51	0.31	4.51	0.19	0.67	1.60
1983	0.48	3.12	0.46	0.65	0.35	3.84	0.19	0.69	1.51
1984	0.61	6.32	0.48	0.62	0.62	2.84	0.17	0.55	1.54
1985	0.69	3.53	0.51	0.49	0.52	1.80	0.18	0.38	1.21
1986	0.51	2.54	0.60	0.66	0.38	1.87	0.19	0.51	1.38
1987	0.42	2.16	0.85	0.96	0.33	1.50	0.24	0.66	1.59
1988	0.39	1.95	0.89	0.93	0.36	1.28	0.45	0.55	1.62
1989	0.33	1.51	1.15	1.06	0.35	0.93	0.23	0.44	1.37
1990	0.32	2.23	0.92	0.93	0.34	0.89	0.22	0.45	1.35
1991	0.36	1.76	0.86	1.64	0.33	0.89	0.26	0.63	1.44
1992	0.42	2.09	0.80	1.23	0.27	0.59	0.29	0.89	1.47
1993	0.44	2.55	0.84	1.06	0.23	0.44	0.33	0.80	1.50
1994	0.79	2.93	0.92	1.05	0.34	0.44	0.27	0.63	1.41

	Dill	Fennel	Garlic (dehydrated)	Ginger: Ground	Ginger: Sweet	Ginger: Total	Laurel (Bay) leaves and Thyme
	$ per pound						
1980	0.45	0.37	0.86	0.51	0.82	0.63	0.91
1981	0.42	0.41	0.59	0.55	0.91	0.73	0.79
1982	0.39	0.42	0.60	0.74	0.77	0.76	0.67
1983	0.40	0.55	0.68	0.74	0.69	0.70	0.61
1984	0.38	0.41	0.75	1.15	0.64	0.70	0.52
1985	0.36	0.29	0.53	0.98	0.45	0.48	0.51
1986	0.49	0.32	0.42	0.50	0.60	0.60	0.64
1987	0.57	0.42	0.43	0.58	0.69	0.65	0.91
1988	0.69	0.47	0.44	0.87	0.78	0.80	0.89
1989	0.39	0.48	0.56	0.41	0.90	0.55	0.82
1990	0.39	0.59	0.62	0.53	1.08	0.60	0.92
1991	0.40	0.81	0.51	1.33	1.24	1.32	1.10
1992	0.48	0.49	0.45	1.32	0.82	1.01	1.15
1993	0.47	0.45	0.50	1.15	0.69	0.79	1.05
1994	0.50	0.44	0.38	0.72	0.55	0.60	0.99

Continued--

Appendix table 3--U.S. unit value of spice imports, by type--Continued

Year	Laurel (Bay) leaves other than crude 1/	Mint leaves	Mustard Seed	Mustard Ground	Mustard Total	Nutmegs, whole and ground	Mace, whole and ground	Onions (dehydrated)
	$ per pound							
1980	1.19	1.03	0.13	0.73	0.79	0.91	0.99	0.69
1981	0.91	0.87	0.14	0.73	0.60	0.74	0.92	0.46
1982	1.12	0.82	0.17	0.65	0.00	0.67	1.25	1.31
1983	3.36	1.00	0.15	0.82	0.15	0.65	1.62	0.81
1984	0.75	0.97	0.16	0.49	0.16	0.68	2.58	0.69
1985	0.45	0.90	0.16	0.44	0.17	0.70	2.85	0.80
1986	1.51	1.06	0.15	0.45	0.18	1.71	3.78	0.44
1987	--	1.35	0.11	0.46	0.00	2.72	4.64	0.13
1988	1.40	1.53	0.10	0.48	0.18	2.91	4.98	0.23
1989	0.55	0.74	0.12	0.44	0.17	2.62	2.87	0.37
1990	0.44	0.74	0.15	0.48	0.13	1.35	2.53	0.64
1991	1.37	0.60	0.14	0.45	0.15	0.74	1.07	0.54
1992	0.77	0.69	0.12	0.43	0.00	0.63	0.94	0.61
1993	1.04	0.80	0.12	0.38	0.17	0.60	0.71	0.66
1994	1.02	0.66	0.11	0.37	0.13	0.68	1.12	0.78

	Origanum	Origanum (other than crude)	Parsley manufactured	Pepper Black	Pepper White	Pepper Ground	Pepper Total	Poppy seed	Saffron
	$ per pound								
1980	0.81	0.60	0.54	0.78	1.09	1.62	0.81	0.33	--
1981	0.76	0.56	0.69	0.58	0.81	1.37	0.60	0.37	--
1982	0.83	0.37	0.61	0.50	0.71	1.21	0.52	0.58	--
1983	0.78	0.89	0.61	0.47	0.65	0.98	0.49	0.63	--
1984	0.51	0.73	0.47	0.75	1.15	1.34	0.79	0.33	--
1985	0.53	0.72	0.74	1.21	1.52	1.21	1.26	0.25	--
1986	0.68	0.73	0.52	1.82	2.34	1.74	1.87	0.20	--
1987	1.12	0.73	0.49	2.14	2.47	1.84	2.18	0.40	--
1988	0.87	0.69	0.53	1.60	2.02	1.13	1.66	0.49	--
1989	0.74	0.45	0.95	1.10	1.38	1.22	1.14	0.41	486.1
1990	0.71	0.60	1.31	0.81	0.82	1.04	0.81	0.40	459.5
1991	0.86	0.76	1.35	0.61	0.62	0.95	0.62	0.35	459.8
1992	0.97	0.75	1.46	0.47	0.59	1.07	0.49	0.29	450.4
1993	1.03	0.66	1.45	0.52	0.99	0.93	0.59	0.44	241.3
1994	1.12	0.53	1.46	0.75	1.32	1.16	0.82	0.75	168.5

	Sage	Sesame seed	Thyme (other than crude)	Turmeric	Vanilla beans	Mixed spices and others 2/	Total 3/
	$ per pound						
1980	1.44	0.48	1.36	0.35	24.62	0.75	0.14
1981	1.48	0.42	1.12	0.28	22.14	0.80	0.14
1982	1.14	0.44	1.61	0.27	23.20	0.77	0.13
1983	0.97	0.42	1.13	0.39	23.58	0.91	0.00
1984	0.89	0.41	2.02	0.55	26.92	0.92	0.00
1985	1.07	0.38	1.36	0.57	29.04	0.82	0.56
1986	1.23	0.32	1.10	0.57	26.45	0.83	0.62
1987	1.46	0.33	0.64	0.43	25.34	1.06	0.59
1988	1.53	0.35	0.52	0.56	23.09	1.13	0.62
1989	1.52	0.45	0.79	0.38	18.89	0.86	0.00
1990	1.30	0.60	1.29	0.37	22.21	1.39	0.86
1991	0.93	0.51	0.81	0.50	23.95	1.07	0.96
1992	1.05	0.55	1.10	0.71	23.62	1.10	0.84
1993	1.11	0.43	1.57	0.46	21.62	1.23	0.74
1994	1.03	0.48	0.75	0.45	22.54	1.19	0.67

1/ Excluding thyme. 2/ Others include marjoram, rosemary, savory, and tarragon, which were previously listed separately.
3/ USDA total imports differ somewhat from ASTA import totals on table 1, reflecting some differences in spice and herbs categories.
Sources: U.S. Department of Agriculture and U.S. Department of Commerce.

Appendix table 4--U.S. spot prices for selected spices (New York, annual average)

Year	Anise seed 1/	Black pepper 2/	Celery seed 3/	Dill seed 4/	Ginger 5/	Mustard seed 6/	Sesame seed 7/	Poppy seed 8/	Pimento (allspice) 9/	Turmeric 10/
					Cents per pound					
1980	92.5	87.6	41.7	49.7	43.5	24.3	70.4	47.6	83.6	48.1
1981	---	68.8	44.7	47.7	52.2	25.9	62.3	60.6	97.7	38.3
1982	122.8	66.3	44.9	40.9	95.5	23.4	66.6	80.3	101.0	41.9
1983	73.6	72.1	55.6	39.8	139.4	27.4	75.0	77.4	110.9	61.4
1984	54.3	98.6	105.7	46.4	179.5	47.8	57.9	59.6	116.8	101.5
1985	49.2	169.6	83.6	48.2	96.3	26.8	53.6	66.2	109.4	94.7
1986	75.6	215.0	50.5	70.5	57.5	24.0	52.4	46.1	92.9	78.5
1987	109.8	237.0	46.4	86.2	81.2	14.3	50.6	70.1	98.4	70.3
1988	97.0	173.9	47.4	74.0	98.6	27.4	48.7	76.1	84.3	66.8
1989	74.8	138.2	47.5	57.4	81.7	30.6	79.9	66.5	80.3	54.6
1990	82.7	99.1	47.0	49.1	86.8	28.0	84.0	62.4	82.5	53.0
1991	105.6	71.1	45.9	45.5	77.0	27.3	66.5	52.2	93.5	79.5
1992	113.9	56.1	36.7	48.1	63.9	26.0	67.3	54.3	101.0	95.7
1993	112.7	62.5	36.1	53.3	65.7	26.0	59.7	102.9	94.1	60.7
1994	92.2	95.3	56.3	53.3	74.4	26.0	69.2	142.2	94.2	58.2

	Cardamom 11/	Cinnamon 12/	Cloves 13/	Nutmeg 14/	Saffron 15/	Vanilla 16/
			Dollars per pound			
1980	NA	1.18	4.42	1.25	549.0	60.0
1981	NA	1.32	4.78	1.14	450.0	61.5
1982	NA	1.33	5.09	0.91	389.0	28.0
1983	4.42	1.23	4.64	0.86	290.0	30.5
1984	10.34	0.99	3.28	0.85	284.0	31.3
1985	6.52	0.96	1.96	0.88	250.0	37.0
1986	3.71	1.09	2.19	2.54	261.0	35.5
1987	2.35	1.24	1.93	3.20	381.0	36.5
1988	1.95	1.80	1.76	3.35	498.0	35.0
1989	2.07	2.34	1.23	3.38	593.0	35.0
1990	2.21	2.58	1.39	3.23	521.0	36.5
1991	1.62	2.62	1.04	2.98	506.0	36.5
1992	1.63	2.56	0.68	1.99	471.0	36.5
1993	2.40	2.34	0.51	1.19	355.0	32.0
1994	2.97	1.95	0.49	1.05	274.0	29.0

1/ Turkish. 2/ Indonesian (Lampong black). 3/ Indian. 4/ Indian dewhiskered. 5/ Indian-Cochin. 6/ Canadian No. 1 yellow. 7/ Central American, hulled. 8/ Dutch A-1. 9/ Guatemalan, hulled. 10/ Indian Alleppey. 11/ Guatemalan Mixed greens. 12/ Ceylon H-2. 13/ Madagascar/Zanzibar. 14/ West Indian whole. 15/ Spanish. 16/ Madagascar-Bourbon, spot each March.

Appendix table 5--U.S. spot prices for selected spices--March of each year, New York

Year	Basil 1/	Capsicum pepper 2/	Caraway 3/	Coriander seed 4/	Cumin seed 5/	Fennel seed 6/	Fenugreek 7/	Laurel (Bay) leaves 8/
	Cents per pound							
1980	54	86-100	72	30	82	40	35	85
1981	50	76-90	59	30	76	42	39	94
1982	97	88-93	71	37	85	42	38	55
1983	90	75	56	37	92	68	34	64
1984	57	77	71	38	80	65	33	50
1985	60	72	85	30	64	37	33	56
1986	98	77	68	30	78	37	32	55
1987	46-98	68	54	34	95	57	34	250
1988	50-99	85	52	39	160	40-60	40	83
1989	49-107	125	47	36	140	49-68	35-38	65-85
1990	47-100	73	43	36	75	50-69	*	67-78
1991	48-67	95	44	36	85-105	50-63	*	95-115
1992	48-72	175	50	43	150	55-70	35	95-115
1993	45-72	115	52	62	115	50-57	34	105-120
1994	46-73	85	115	52	*	48-55	38	95-115
1995	53-71	80	100	45	87	48-59	38	95-105

Year	Marjoram 9/	Mint leaves: Peppermint	Mint leaves: Spearmint	Origanum 10/	Paprika 11/	Parsley 12/	Rosemary 13/	Sage 14/
	Cents per pound							
1980	52	285	220	50	104	100	42	188
1981	60	250	225	70	110	125	46	215
1982	65	250	235	115	102	145	46	185
1983	150	240	225	108	92	75	46	160
1984	155	270	225	67	91	195	40	160
1985	58	275	225	53	91	210	37	170
1986	46	285	225	63	*	195	39	175
1987	57	260	150	85	*	195	51	207
1988	64	175	140	95	110	180	62	215
1989	66	225	175	85	125	135	62	215
1990	63	265	250	125	*	210	64	215
1991	63	250	200	102	175	205-215	64	205
1992	63	240	190	95	160	230	68	165
1993	65	240	190	250	135	240	76	180
1994	73	230	190	140	130	175-240	76	175
1995	68	230	190	250	125	175-230	68-79	175

Year	Savory 15/	Tarragon 16/	Thyme 17/	Vanilla beans 18/
	Cents per pound			
1980	140	*	125	5,500
1981	110	900	105	3,150
1982	60	900	94	2,800
1983	55	900	78	3,000-3,100
1984	60	900	78	3,125
1985	67	*	62	3,700
1986	65	*	72	3,550
1987	75	*	76	3,600-3,700
1988	66	645	89	3,500
1989	66	700	88-108	3,500
1990	70	650	87-105	3,650
1991	75	665	89-105	3,650
1992	105	*	89-115	3,650
1993	105	*	89-130	3,600
1994	*	800	89-130	3,200
1995	120	775	88-135	2,900

Note: The Fruit and Vegetable Division of the Agricultural Marketing Service of the USDA publishes a weekly "National Wholesale Herb Market News Report," providing price quotations for 18 major U.S. cities. For subscription call (312) 353-0111 FAX (312) 886-3766.
* Quotation not available. 1/ Egyptian. 2/ Chinese. 3/ Dutch. 4/ Moroccan. 5/ Indian. 6/ Egyptian. 7/ Indian. 8/ Turkish. 9/ Egyptian. 10/ Mexican. 11/ Spanish. 12/ Imported. 13/ Portuguese/Spanish/Moroccan. 14/ Dalmatian No. 1. 15/ Yugoslavian. 16/ Domestic. 17/ Spanish. 18/ Madagascar-Bourbon.
Source: New York Market area spice brokers.