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

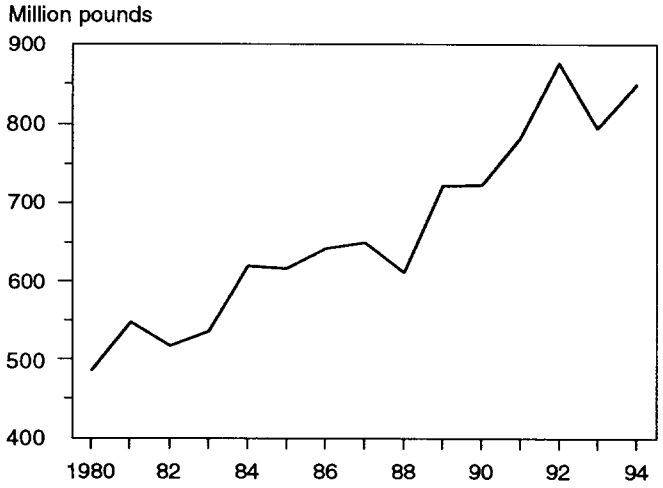
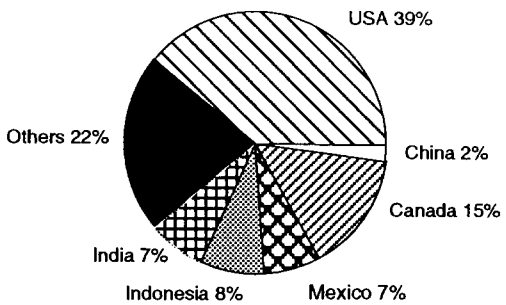


Figure 8
U.S. spice consumption by major source of supply, 1990-94[1]



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.

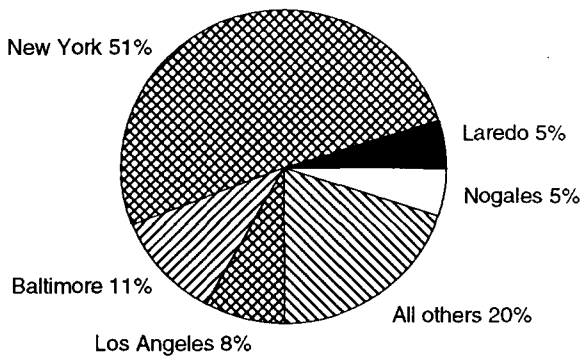
At the port of entry, fumigation (with methyl bromide) costs, and subsequently at the grinder level, cleaning and reconditioning (when necessary) costs, are involved. It is estimated that the net profit to the grinder/packer is between 5-15 percent at the retail stage since processing, packaging, and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

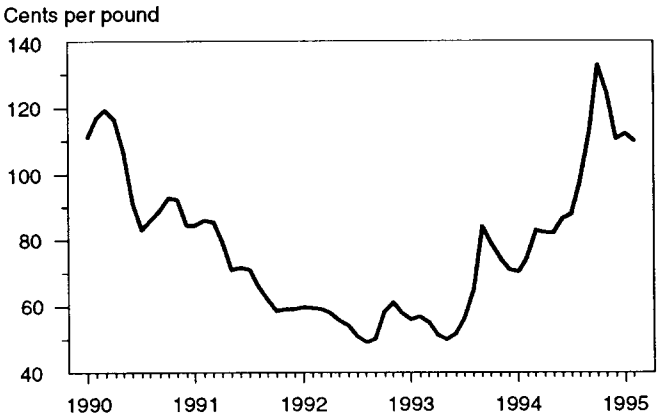
Developments in the global pepper market, the world's most widely traded spice, provide a typical example of market information related to harvest conditions, inventories, and price trends that affect the U.S. spice industry--the world's largest importer of pepper. In the early 1990's world pepper prices 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 9
U.S. spice imports by ports, 1990-94



Percent by value

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 preprepared 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.

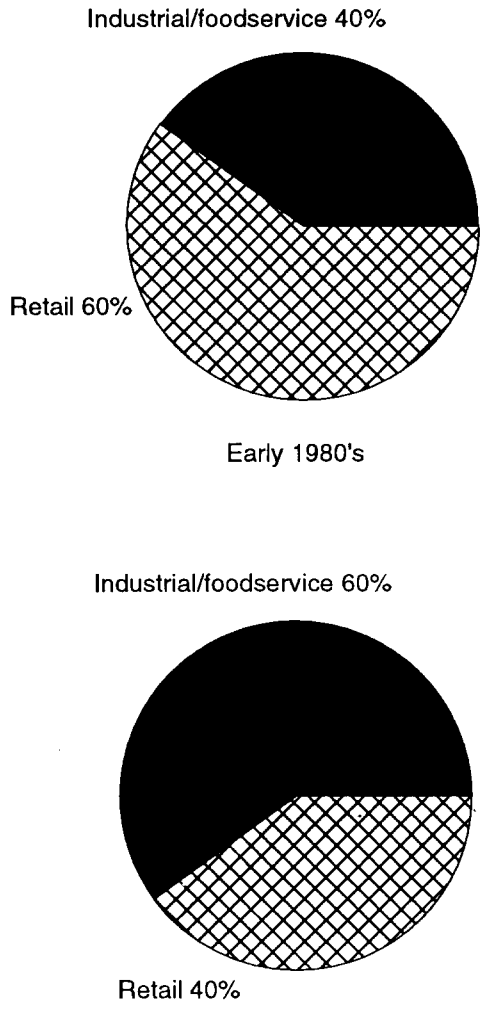
It is estimated that Americans eat a third of their meals in public eating places, including restaurants, hotels, schools, employee cafeterias, institutions, and snack stands. The foodservice sector uses sizable quantities of spices. Since convenience foods, or "fast foods," make up a large proportion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



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.