United States
Department of
Agriculture

Economic
Research
Service

Agriculture
Information
Bulletin
Number 465

Honey

Background for 1985 Farm Legislation

- STRUCTURE OF THE HONEY INDUSTRY
- TRENDS IN DOMESTIC PRODUCTION AND USE
- U.S. HONEY TRADE
- HISTORY OF HONEY PROGRAMS
- PROGRAM EFFECTS

HONEY: BACKGROUND FOR 1985 FARM LEGISLATION. Economic Research Service, U.S. Department of Agriculture. Agriculture Information Bulletin No. 465.

ABSTRACT

The U.S. Government has supported the price of honey at between 60 and 90 percent of parity since 1952 to provide market price stability to honey producers and encourage maintenance of sufficient bee populations for pollination. Colony numbers have stabilized between 4.1 and 4.3 million since 1970. With honey support prices well above the average domestic wholesale price since 1981, domestic honey producers and packers have imported lower priced honey for domestic use and have sold domestically produced honey to the Government. The Government acquired about 115 million pounds of 1983 crop honey at an estimated $71.5 million and will incur additional costs to process and dispose of the honey.

Keywords: Beekeepers, farm programs, honey, honeybees, policies, price supports.

FOREWORD

In 1985, Congress will consider new farm legislation to replace the expiring Agriculture and Food Act of 1981. In preparation for these deliberations, the Department of Agriculture and many groups throughout the Nation are studying the experience under the 1981 law and earlier legislation to see what lessons can be learned that are applicable to the eighties. The Economic Research Service has prepared a series of background papers summarizing in a nontechnical form the experience with various farm programs and the key characteristics of the commodities and the farm industries which produce them. They may not answer all the questions but will provide a beginning. For more information, see the Additional Readings listed at the end of the text.

This report was prepared by the National Economics Division. It was written by Frederic L. Hoff with contributions from Frederick Gray.

Washington, D.C. 20250

September 1984

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Honey: Background for 1985 Farm Legislation

INTRODUCTION

Honey is the sweet viscous fluid produced by honeybees from nectar obtained mainly from flowers. The color, flavor, and chemical and physical composition of honey depends primarily upon the floral source(s) of the nectar. The principal components of honey are fructose, glucose, and water.

In addition to producing honey, honeybees produce beeswax and perform an important pollination service to agricultural crops. Field tests have shown that honeybees are a necessary requirement for the production of many food and fiber crops. In 1973, it was estimated that about 3.5 million acres of fruits, vegetables, oilseeds, and legume seed crops were produced in the United States that were dependent upon insect pollination. Another 63 million acres derived some benefit from insect pollination.

Although beekeeping spread rapidly throughout the United States in the 1700's and 1800's, it was not until near the turn of the 20th century that honey was first produced by beekeepers on a commercial basis. During World War II, sugar rationing and requests by the Government to increase the production of honey led to a large increase in colony numbers and a proportionate increase in honey production. With the end of sugar rationing after the War, honey prices dropped close to pre-War levels. Consequently, a price-support program was legislated for extracted honey in the Agricultural Act of 1949 and put into effect in 1950. After 1951, the program evolved into a two part program--a loan program and purchase program.

Since 1952, the price of extracted honey has been supported at not less than 60 percent and not more than 90 percent of parity. From 1952 through 1974, beekeepers obtained price support by taking out loans using the honey, valued at an established fraction of the parity price, as collateral, or selling honey to the U.S. Department of Agriculture's (USDA's) Commodity Credit Corporation (CCC) at the support price. In November 1974, the loan portion of the program was deactivated for the 1975 and 1976 crop years. A loan and purchase program has been used to provide price support for extracted honey since 1976.

Although extracted honey has been supported at 60 percent of parity since 1973, the national average support price for honey has jumped upwards in recent years due to the significant increase in the parity price for honey. During the 1970-79 period, price supports averaged 24.6 cents per pound. In 1980, honey support prices leaped to 50.3 cents, and the national average support price for 1984 crop honey is 65.8 cents per pound. Since 1981, support prices have been well above the average wholesale price of honey in the domestic market.

Domestic packers have found it profitable under recent support levels to import lower priced honey in quantities larger than necessary to supplement domestic use, exports, and stock requirements. For the Government, the result has been a dramatic increase in honey forfeitures and loan disbursements. The CCC acquired 6 million pounds of the 1980 honey crop. This quantity jumped to 38.7 million

pounds for the 1981 crop and 74.5 million for the 1982 crop. Forfeitures of the 1982 crop represented nearly one-third of that year's production. For the 1983 crop, 115 million pounds of honey were forfeited, which is the largest level of forfeitures since price supports were initiated.

This paper provides background information on the structure of the honey industry, including trends in domestic and world production, consumption, imports, exports, and stocks. The history of the domestic honey program is discussed as it relates to the changes that have occurred in the structure of the beekeeping industry. Understanding the characteristics and trends in honey production in the United States and the history of sugar programs is important for developing future honey policy.

THE STRUCTURE OF THE BEEKEEPING INDUSTRY

Bee culture is practiced throughout the United States, in areas with widely different types of climate and flora. Consequently, beekeeping systems vary greatly with respect to geographic area, farming practices, and colony size. Some beekeepers move their bees up to 30 times a year or more (for several miles or several thousand miles) to provide pollination services or increase honey production by providing bees with abundant sources of nectar during most months of the year. Fees are frequently collected by beekeepers for the pollination services they provide to many fruit, vegetable, tree nut, field, and seed crops. In areas of good bee pasture, some beekeepers specialize in honey production. Other beekeepers in California and the southern tier of States specialize in producing packaged bees and queens for stocking hives.

Like many farm enterprises, beekeeping is very specialized, but it is quite different in many respects from raising crops, poultry, and livestock. It requires an extensive knowledge of biology, a mechanical aptitude, and a relatively large capital investment. The operation is often a family business and frequently handed down from one generation to the next. The peak labor loads for the beekeeper usually occur when caring for the bees during the spring, when moving bees for pollination (commonly at night), and when harvesting and extracting honey. Beekeeping is not as dependent on landownership as most other farm enterprises. However, most beekeepers own a small acreage which serves as a base of operation.

There are few barriers to entry into beekeeping and honey processing. However, nearly all States employ county apiary inspectors to make unannounced hive inspections in the field to insure that each apiary is free from disease. State laws and regulations relating to honeybees and beekeeping are designed primarily to control bee diseases. However, they may also attempt to regulate movement and entry of bees, issuances of permits and certificates, apiary location control, quarantines, inspections, and methods of treating diseased colonies.

Beekeeper Population

In 1975, there were about 211,600 beekeepers in the United States. The largest concentration of beekeepers was reported in North Carolina and West Virginia. However, these are not major honey-producing States because of significantly low honey yields per colony. Generally, beekeepers are classified as either hobbyist, part-time, or commercial producers.

Hobbyist Beekeepers

The beekeeping industry has a preponderance of small operators who keep bees as a hobby or for small-scale pollination of orchard and field crops. Although hobbyist beekeepers are recognized in the industry, they are not clearly defined. For previous studies, a hobbyist beekeeper was defined as an individual who owns less than 25 colonies of honeybees. In 1975, the International Trade Commission (ITC) estimated there were about 200,000 active hobbyists in the Nation--95 percent of all beekeepers.

Hobbyists represent a wide variety of people and are drawn from numerous occupations, including all the professions and many skilled trades. Most honey produced by hobbyists is consumed at home, given to friends and relatives, or distributed through local outlets.

Part-Time Beekeepers

Part-time beekeepers own from 25 to 299 colonies of honeybees. Units of this size are not large enough to employ a beekeeper full time and generally do not serve as the principal source of income. The ITC estimated there were about 10,000 part-time beekeepers in the United States in 1975. Together, hobbyist and part-time beekeepers accounted for about half the colonies and 40 percent of the honey extracted during 1975.

Commercial Beekeepers

Commercial beekeepers, those with 300 or more colonies, can be divided into two groups: migratory and nonmigratory. Most professional beekeepers relocate their bee colonies several times during the year to provide pollination services, to reach the most abundant sources of nectar, or often to escape damage from pesticides. By migrating, beekeepers can also provide their bees with a longer supply of nectar to extend the production season. The nonmigratory beekeepers seldom move their colonies over any significant distance. The colonies are normally left in the same location, summer and winter. A small group of beekeepers specializes in the production of queens and packaged bees.

In 1975, commercial beekeepers numbered about 1,600, or approximately 0.8 percent of the estimated total beekeeping population. However, the group produced about 60 percent of the honey extracted in 1975.

Colony Numbers

Colony numbers peaked at 5.9 million in 1947 (table 1). 1/ The Government had asked beekeepers to increase the production of honey during the period of sugar rationing and at a time when honey prices were high. In the succeeding 25 years, the beekeeping industry gradually dropped to 4.1 million colonies in 1972. Colony numbers continued to decline even after Congress legislated a honey price-support program in the Agricultural Act of 1949.

After reaching a low in 1972, colony numbers increased slightly in 1973-77, reaching 4.3 million in 1977. This was probably due to the increase in domestic honey prices. In recent years, the number of honeybee colonies in the United

1/ The crop year for honey statistics is the calendar year.

States has stabilized at about 4.2 million. The number of colonies from 1945 to 1981 is shown in figure 1. The number of honeybees in a colony determines the colony's strength. In the spring, a colony may consist of a queen and from 5,000 to 10,000 worker bees. During the active part of the season, a strong colony of honeybees may consist of 50,000 to 80,000 workers and several hundred drones. The life span of worker bees during the summer is about 35 to 40 days and rarely exceeds 6 weeks.

Major contributing factors to the decline in honeybee numbers from the midfifties to the seventies include the low rate of return on invested capital, high labor demand, heavy loss of bees due to insecticides, and the dwindling size of bee pasture due to urban expansion and more intensive farming. The industry has been concerned primarily with honey production and pollination. Little attention has been given to developing new markets for honey.

Table 1--Colonies of honeybees, United States, 1945-83 crop years 1/

Crop year	Colonies	Crop year	Colonies
	Thousands		Thousands
1945	5,460	1965	4,718
1946	5,787	1966	4,646
1947	5,916	1967	4,635
1948	5,724	1968	4,539
1949	5,578	1969	4,433
1950	5,601	1970	4,285
1951	5,546	1971	4,107
1952	5,493	1972	4,085
1953	5,520	1973	4,124
1954	5,461	1974	4,210
1955	5,252	1975	4,206
1956	5,195	1976	4,285
1957	5,199	1977	4,346
1958	5,152	1978	4,081
1959	5,109	1979	4,155
1960	5,005	1980	4,140
1961	4,992	1981	4,213
1962	4,900	2/ 1982	4,250
1963	4,849	2/ 1983	4,275
1964	4,840		

1/ Data not reported after 1981 by the Statistical Reporting Service, USDA.
2/ Estimated by the Agricultural Stabilization and Conservation Service, USDA.

Source: Statistical Reporting Service, USDA.

Honey and Beeswax Production

Honey production varies widely among regions and from year to year depending on rainfall, soil conditions, temperature, various other environmental factors, cropping patterns, and management. Production has ranged from the 1952 peak of 272 million pounds to 178.1 million pounds in 1977 (table 2). During 1955-64, U.S. honey production averaged nearly 250 million pounds a year. From 1965 through 1974, the average declined to 222 million pounds a year. Since 1974, the average has dropped closer to 200 million. Declining colony numbers--largely due to lower honey prices, fewer easily accessible floral sources of nectar, rising costs of operation, and pesticides--are the major reason for the decline in honey production. Honey production is shown in figure 2.

There has been no significant change in honey yield per colony in the United States over the past three decades. During the fifties, sixties, and seventies, the annual yield per colony averaged 45, 51, and 50 pounds, respectively. For 1980 through 1983, honey yields per colony averaged 49 pounds.

In 1981, the largest concentrations of honeybee colonies were located in California and Florida, 500,000 and 360,000 colonies, respectively (table 3). However, because of significant variations in colony yields among States, total honey production was the largest in Florida and North Dakota. Honey yields ranged from 18 pounds per colony in California to 125 pounds in Hawaii.

The value of U.S. honey production was relatively stable from 1945 through 1971, averaging $42.3 million. In 1972 and 1973, however, a drawdown of domestic honey stocks from decreased honey production in 1970 and 1971 boosted honey

Figure 1

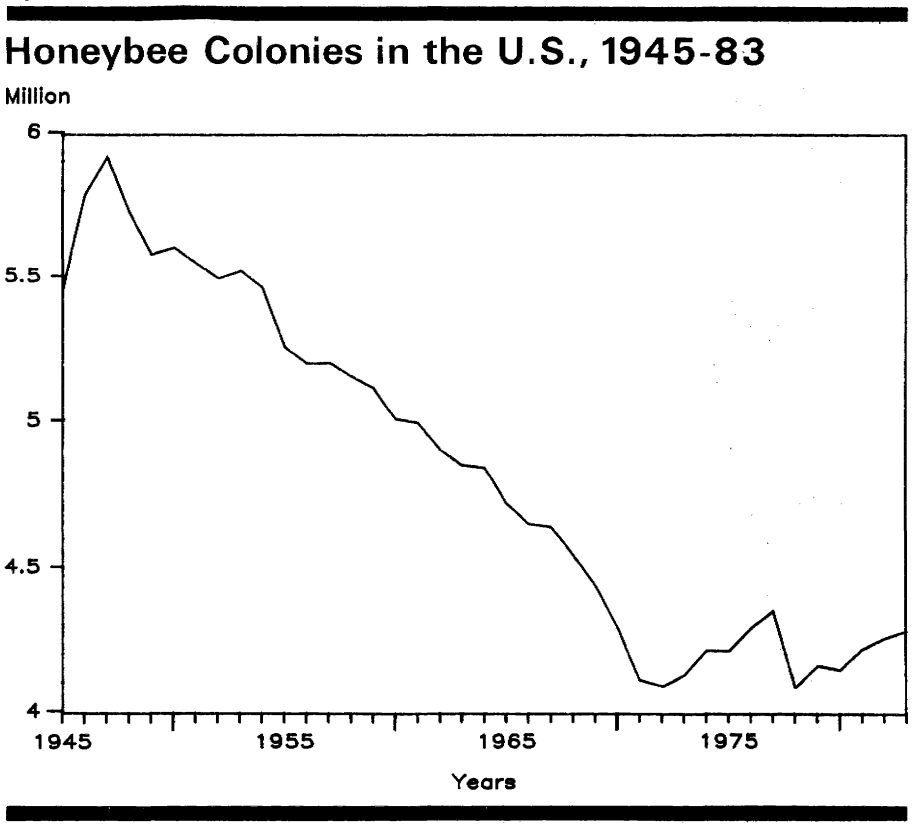


Table 2--Honey and beeswax production, yield per colony, price, and value, United States, 1945-83 crop years 1/

Crop year	Honey production				Beeswax production			
	Quantity	Yield per colony	Average price for all honey	Value 2/	Quantity	Yield per colony	Average price for beeswax	Value 3/
	Million pounds	Pounds	Cents/ pound	Million dollars	Million pounds	Pounds	Cents/ pound	Million dollars
1945	233.1	42.7	18.6	43.4	4.5	0.82	41.3	1.9
1946	213.8	36.9	24.4	52.2	4.4	.76	44.4	2.0
1947	228.6	38.6	24.9	56.9	4.5	.76	43.8	2.0
1948	206.3	36.0	17.9	36.9	4.0	.70	43.2	1.7
1949	226.3	40.6	15.0	33.9	4.1	.73	37.6	1.5
1950	232.4	41.5	15.3	35.6	4.3	.77	42.8	1.8
1951	257.5	46.4	16.0	41.2	4.7	.85	50.4	2.4
1952	272.0	49.5	16.2	44.1	4.8	.87	43.1	2.1
1953	223.8	40.5	16.5	36.9	4.1	.74	41.0	1.7
1954	216.8	39.7	17.0	36.9	4.0	.73	44.1	1.8
1955	255.2	48.6	17.8	45.4	4.6	.88	51.2	2.4
1956	214.0	41.2	19.0	40.7	4.1	.79	54.6	2.2
1957	241.2	46.4	18.7	45.1	4.5	.87	57.0	2.6
1958	260.5	50.6	17.4	45.3	4.7	.91	46.0	2.2
1959	236.6	46.3	17.0	40.2	4.2	.82	44.4	1.9
1960	242.8	48.5	17.9	43.5	4.4	.88	44.0	1.9
1961	255.9	51.3	18.0	46.1	4.7	.94	44.1	2.1
1962	249.6	50.9	17.4	43.4	4.8	.98	44.1	2.1
1963	266.8	55.0	18.0	48.0	4.8	.99	44.2	2.1
1964	251.2	51.9	18.6	46.7	4.7	.97	44.3	2.1
1965	241.8	51.3	17.8	43.0	4.7	1.00	44.9	2.1
1966	241.6	52.0	17.4	42.0	4.6	.99	46.5	2.1
1967	215.8	46.6	15.6	33.7	4.4	.95	58.8	2.6
1968	191.4	42.2	16.9	32.3	3.8	.84	61.6	2.3
1969	267.5	60.3	17.5	46.8	5.2	1.17	61.1	3.2
1970	221.7	51.7	17.4	38.6	4.4	1.03	60.2	2.6
1971	197.8	48.2	21.8	43.1	3.6	.88	61.3	2.2
1972	215.6	52.8	30.2	65.1	4.0	.98	62.1	2.5
1973	239.1	58.0	44.4	106.2	4.3	1.04	74.4	3.2
1974	187.9	44.6	51.0	95.8	3.5	.83	114.0	4.0
1975	199.2	47.4	50.5	100.6	3.4	.81	103.0	3.5
1976	198.0	46.3	49.9	99.0	3.4	.79	112.0	3.4
1977	178.1	41.0	53.0	94.4	3.1	.71	158.0	4.9
1978	231.5	56.7	54.5	126.2	3.9	.96	174.0	6.8
1979	238.7	57.4	59.0	140.8	3.8	.91	175.0	6.7
1980	199.8	48.3	61.4	122.7	3.9	.94	183.0	7.1
1981	185.9	44.1	63.2	117.5	3.7	.87	191.0	7.1
1982 4/	230.0	54.1	NA	NA	NA	NA	NA	NA
1983 4/	205.0	48.0	NA	NA	NA	NA	NA	NA

NA = Data not available. 1/ Data not reported after 1981 by the Statistical Reporting Service. 2/ Represents the quantity of honey produced multiplied times the average price for all honey. 3/ Represents the quantity of beeswax produced multiplied times the average price for beeswax. 4/ Agricultural Stabilization and Conservation Service estimates.

Source: Statistical Reporting Service, USDA.

prices and caused a sharp jump in the value of the honey crop to $65.1 million and $106.2 million, respectively (table 2). The average price of all honey increased steadily after 1975. The average price of beeswax has exhibited trends similar to honey prices. The value of the 1981 honey crop was $117.5 million.

With the number of honeybee colonies apparently stabilizing at about 4.2 million in recent years and with an annual honey yield of 45 to 50 pounds per colony, the U.S. honey industry has the capacity to produce 190 to 210 million pounds of honey annually. Since 1945, honey production has dipped under 185 million pounds only once and in only 3 years has it been less than 190 million pounds. However, no information exists to verify the current colony numbers and trends due to the discontinuance of the Honey Production report by SRS.

Pollination Services

Many fruit, vegetable, legume, and oilseed crops depend on insects for assistance in reproduction (table 4). Although many different kinds of insects visit flowers, the amount of accidental pollination effected in this way is small. Bees are the most efficient and only dependable pollinators because they visit flowers methodically to collect nectar and pollen, do not destroy the plant by feeding on it in the pollination process, and can adapt to many environments. Bee colonies can be easily concentrated when and where needed to satisfy pollination requirements. Although various species of bees contribute to the pollination of agricultural crops, an estimated 80 percent of this pollination is done by honeybees.

Figure 2

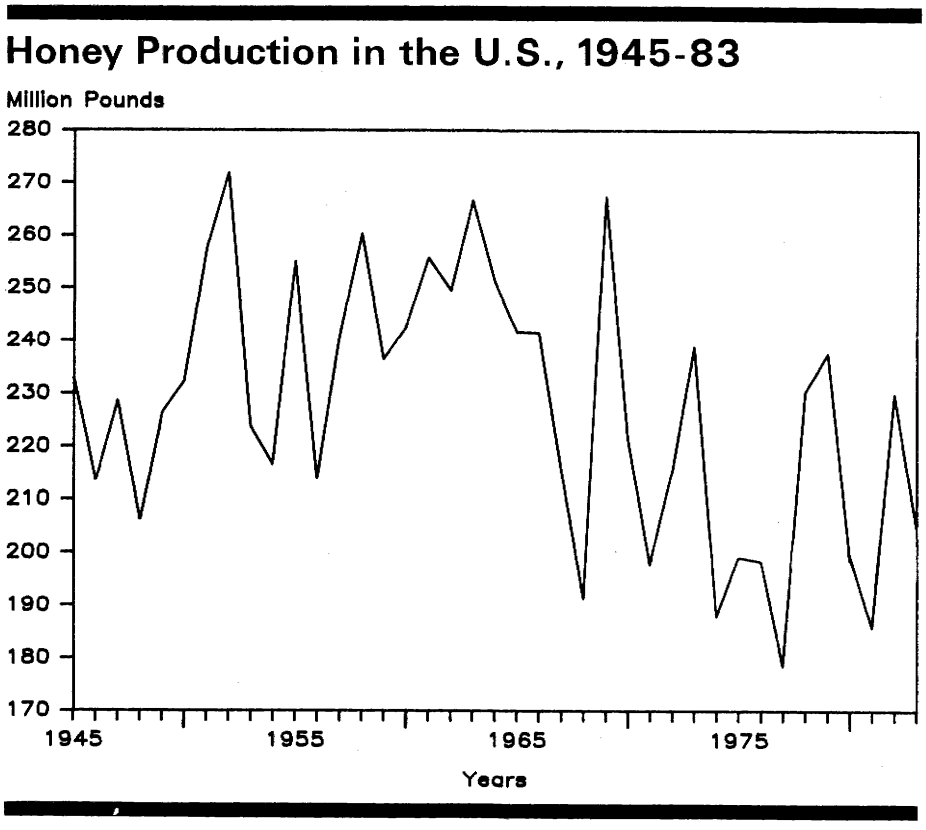


Table 3--Colony numbers, yield per colony, and production of honey and beeswax, by States, 1981 crop year 1/

State	Colonies of honeybees	Honey yield per colony	Production	
			Honey	Beeswax
	Thousands	Pounds	1,000 pounds	
Alabama	42	43	1,806	43
Arizona	64	53	3,392	58
Arkansas	31	44	1,364	31
California	500	18	9,000	234
Colorado	41	62	2,542	61
Connecticut	8	24	192	4
Delaware	4	23	92	2
Florida	360	67	24,120	362
Georgia	145	37	5,365	64
Hawaii	7	125	875	16
Idaho	108	37	3,996	96
Illinois	41	26	1,066	23
Indiana	76	22	1,672	42
Iowa	88	39	3,432	89
Kansas	40	49	1,960	43
Kentucky	56	21	1,176	32
Louisiana	30	65	1,950	35
Maine	8	28	224	5
Maryland	15	26	390	9
Massachusetts	11	23	253	4
Michigan	98	50	4,900	103
Minnesota	190	43	8,170	188
Mississippi	41	45	1,845	35
Missouri	128	36	4,608	101
Montana	108	100	10,800	184
Nebraska	122	40	4,880	122
Nevada	12	35	420	7
New Hampshire	4	23	92	2
New Jersey	38	35	1,330	32
New Mexico	18	39	702	12
New York	116	34	3,944	91
North Carolina	187	29	5,423	141
North Dakota	265	87	23,055	369
Ohio	85	22	1,870	39
Oklahoma	48	36	1,728	38
Oregon	59	33	1,947	39
Pennsylvania	85	30	2,550	64
Rhode Island	1	24	24	1
South Carolina	52	22	1,144	24
South Dakota	180	51	9,180	220
Tennessee	150	34	5,100	107
Texas	190	60	11,400	239
Utah	46	37	1,702	41
Vermont	9	45	405	6
Virginia	73	31	2,263	38
Washington	87	35	3,045	52
West Virginia	62	20	1,240	10
Wisconsin	125	33	4,125	87
Wyoming	44	72	3,168	67
United States	4,213	44	185,927	3,712

1/ Data not reported after 1981.

Source: Statistical Reporting Service, USDA.

Table 4--Major crops pollinated by honeybees in the United States

Crop type	Crops dependent 1/		Crops increased 2/	
Fruit and nut crops	Almond	Orange	Apple	Mandarin
	Apple--most varieties	Peach--some varieties	Apricot	Mango
	Apricot--some varieties	Pears--some varieties	Bushberry	Nectarine
	Avocado	Plum	Blackberry	Passion fruit
	Cherry	Tangelo	Blueberry	Peach
	Chestnut	Tangerine	Cranberry	Pear
	Grapefruit	Tung	Dewberry	Persimmon
	Lychee fruit		Gooseberry	Raspberry
			Huckleberry	Strawberry
			Macadamia nut	
Forage seed crops	Alfalfa	Ladino clover	Crimson clover	
	Alsike			
	Berseem	Red clover		
	Bird's-foot	Sanfoin		
		Crownvetch		
Vegetable seed crops	Asparagus	Kohlrabi	Eggplant	
	Broccoli	Leek		
	Brussels sprouts	Melon		
	Cabbage	Mustard		
	Carrot	Onion		
	Cauliflower	Parsley		
	Celery	Parsnip		
	Chinese cabbage	Pumpkin		
	Collards	Radish		
	Cucumber	Rutabaga		
	Kale	Squash		
Vegetable crops	Cucumber	Pumpkin		
	Melon	Squash		
Oilseed crops			Flaxseed	
			Rape	
			Safflower	
Tree seed crops	Catalpa	Yellow poplar		
	Black locust			
	Red maple	Holly		

1/ These are unable to produce a commercial crop without cross-pollination.
2/ These generally produce a larger crop when honeybee pollinated.

The bulk of the pollination of plants in the United States by bees is provided either by wild bees or colonies managed by beekeepers who are engaged only in honey production and receive no pollination fee. However, research on pollination in the early 1900's by horticulturists showed the need for cross-pollination to obtain commercial crops of the many varieties of fruit being developed. Horticulturists recognized that interplanting of compatible varieties should be based on knowledge of bee foraging behavior. The need for this information encouraged apiculturists to study bee foraging in orchards during the early decades of the century.

After USDA scientists showed that high populations of honeybees combined with appropriate insect control could greatly increase alfalfa seed production, the practice of renting bees for alfalfa seed production expanded rapidly. The recognition of grower benefits from renting bees soon carried over to other crops. Renting of honeybee colonies for apple pollination started in 1910 and the practice grew rapidly. Now thousands of colonies are used each year in Washington, New York, and other apple-producing States. To pollinate California's approximately 356,000 bearing acres of almonds, it is estimated that 250,000 colonies must be borrowed from other States to add to the 500,000 colonies already in the State.

Growers of tree fruits, legume and vegetable seeds, all kinds of cucurbits, oilseeds, and many other crops rent bees to distribute pollen on the large scale required by modern agriculture to produce a commercial crop. For example, about 38 million flowers must be tripped and cross-pollinated per acre to set a 500-pound-per-acre crop of alfalfa seed. In California and Arizona, two to three colonies per acre are used which supply a field population of two or three bees per square yard--5 to 20 percent of which are pollen collectors. In northern Utah, where pollen collectors rarely exceed 1 to 3 percent, 8 to 10 bees per square yard are required. High yields of alfalfa seed are rare from honeybee pollination farther north and into Canada.

For U.S. agriculture, the value of honeybees as pollinators for many fruit, vegetable, tree nut, field, and seed crops far exceeds the value of the honey and beeswax produced. However, for most beekeepers the value of honey and beeswax produced far exceeds fees received for pollination services. The amount of pollination fees paid is usually inversely proportional to the value of honey produced, since little honey is produced from some crops requiring pollination service. In some cases, colonies have less honey in them after the crop is pollinated than before they were located at the crop.

Most pollination service for rent to growers in the United States is provided by the large commercial beekeepers. Hobbyists and part-time beekeepers are generally not engaged in providing pollination services for rent because they cannot economically justify investment in equipment to transport honeybees from one pollination site to another.

An estimated 15 percent of the plant-derived portion of the human diet comes from plants dependent upon or benefited by insect pollination. Most animal products consumed in the United States consist of beef and dairy products, much of which is produced on insect-pollinated legumes (alfalfa, clovers, lespedeza, etc.). About one-third of the total human diet is derived directly or indirectly from insect-pollinated plants.

Processing, Packing, Storage, and Distribution

Honey attains peak quality when it is properly cured and sealed in the comb by honeybees. Deterioration begins when honey is converted from this state. The extent of deterioration depends largely on the processing methods and storage conditions between the time the honey is extracted from the comb and its utilization by the consumer.

Processing

Processing of the honey crop beyond the extraction stage is generally done by a producer or a packer. Honey from the extracting operation usually flows into a sump. The sump is a tank, usually water jacketed, that collects honey from the extracting process and delivers it for further processing at a uniform rate. A series of baffles or screens in the sump remove coarse wax particles and other foreign material.

After the bulk of the wax has been removed from the honey by the sump tank, coarse straining, or centrifugal separators, the very fine material, such as insect parts, must be removed. To remove most of the remaining foreign material, honey may be pumped into settling tanks at a temperature of at least 100°F and held for a sufficient time to permit the separation of suspended particles. The honey is next passed through some type of straining operation to be certain that the honey contains no foreign material and will meet the desired grade requirements. Many types and sizes of strainers are used and the straining media may be metal screen, crushed granite, silica sand, or cloth. Honey is usually moved through the strainer by pressure (pumping) or by gravity flow.

Packing and Storage

The packing and trading segment of the honey industry is composed of a relatively small group of firms, practically all of which buy either bulk or, more commonly, processed honey for their own account for resale. A recent research report indicates there are 35 major honey packers and dealers in the United States, mostly in Florida, Pennsylvania, Michigan, the Midwest, and California.

Few changes have occurred in honey packaging during the past two decades. Honey is still sold in one of several forms--liquid, granulated, creamed, and comb, cut comb, or chunk. Honey producers may sell their honey in bulk containers to a packer or dealer or in smaller size containers to retail markets and consumers. Honey marketed in bulk is generally packed in 60-pound cans or 55-gallon drums. It is estimated that about half of the honey produced in the United States is marketed by producers in bulk. Although glass is the most popular container for packing and selling honey in retail markets, tin, plastic, and paper containers are also often used. The current trend is toward smaller containers due to the larger profit margins and the decrease in family size.

Most deterioration in honey during storage can be prevented by maintaining storage temperatures below 50°. Honey stored at freezer temperatures, 0° to -10°, for years cannot be distinguished from fresh extracted honey in color, flavor, or aroma. Honey in bulk containers, 60-pound cans or 55-gallon drums, should be stored in a dry place at as near 70°F as possible. Long periods of

storage above 70° will damage honey the same as excessive heating. Storage of unheated honey at 50° to 70° is conducive to granulation and fermentation.

Distribution

Honey marketing in the United States involves several combinations of marketing channels to move honey from producers to final consumers (see flow chart). Producers may sell their production to cooperative marketing associations, private processors or handlers, or even directly to the public. Honey producers who package and retail part or all of their honey crop are referred to as producer-packers. The producer-packer usually receives a higher price per pound than does the producer who sells to a wholesaler in bulk containers. However, producer-packers generally have additional costs for processing and packaging equipment.

Following procurement, most honey (including imports) is processed for industrial consumption by bakeries, cereal manufacturers, dairy processors, confectioners, and other food processors. In addition, cooperatives or private dealers may export a small amount of honey.

Trends in World Honey Trade

Honey is produced and consumed in all continents of the world. Approximately one-fourth of the world production enters world trade, with the remainder being consumed within the producing country (appendix table 3).

Production

Of the countries that report honey statistics, the leading honey-producing countries are the USSR, China, the United States, and Mexico. These four countries accounted for about half of the 1983 world honey production of 2 billion pounds (table 5). From 1977 to 1983, world honey production has been relatively stable and within the range of 1.7 to 2.0 billion pounds. However, China has expanded honey production sharply since 1977.

Exports 2/

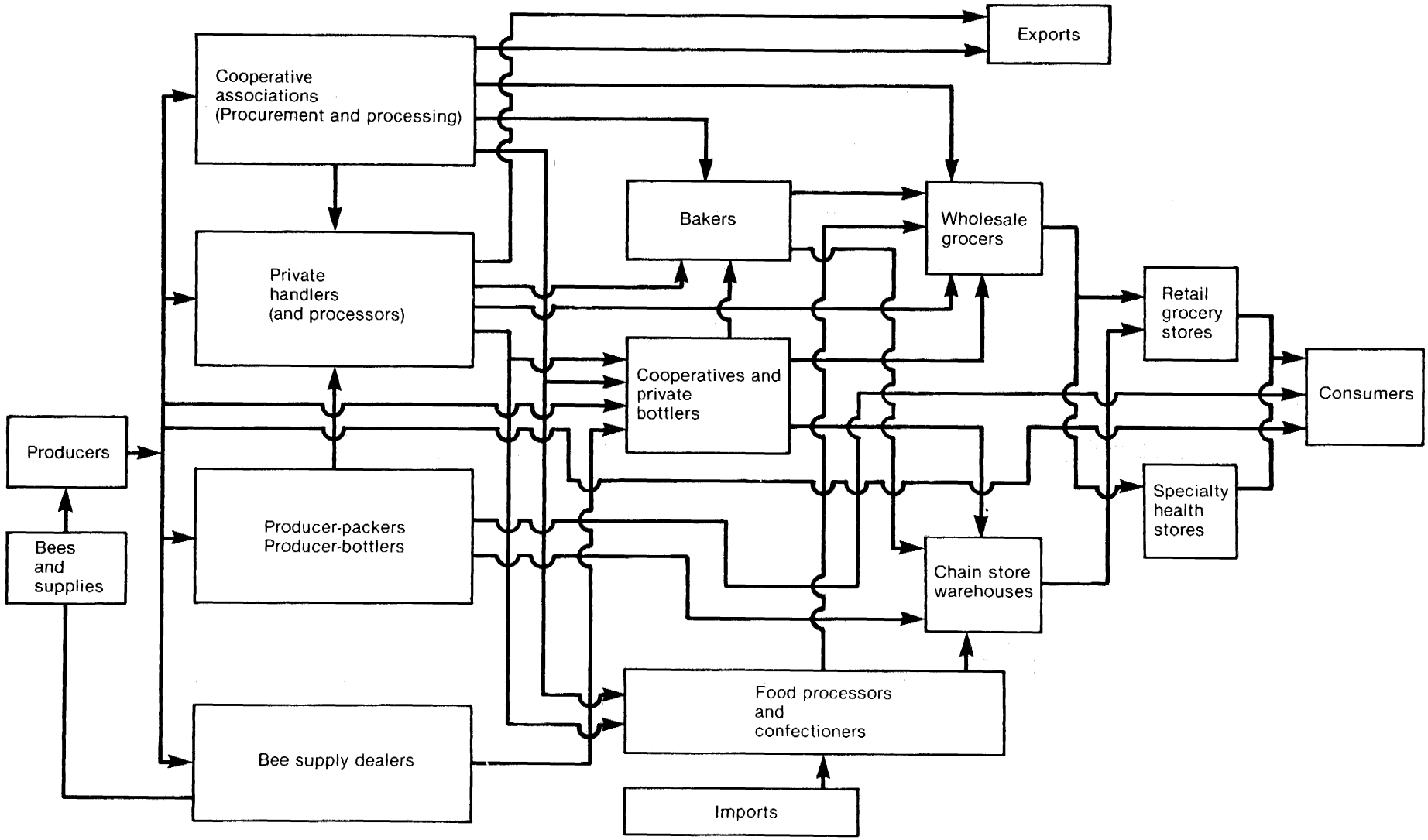
Most honey is consumed in the country where it is produced. However, Mexico and Argentina exported 90 percent, and China exported nearly 50 percent, of their 1982 domestic honey production. Other leading world honey exporters are the USSR and West Germany. In 1982, these five countries accounted for about three-fourths of the 472.4 million pounds of honey exported worldwide (table 6). China has almost tripled its honey exports since 1976 while West Germany's exports have increased over fivefold.

Imports 2/

Principal importers of honey besides the United States include West Germany, Japan, and the United Kingdom. These four countries accounted for almost three-fourths of the 495.4 million pounds of honey imported in 1982 (table 7). Most countries have increased the quantity of honey imported since 1976.

2/ Exports and imports of honey do not balance due to data differences among the countries reporting.

Flow Chart of the U.S. Honey Industry



Source: University of California, Division of Agricultural Sciences, Leaflet 21219, 1980.

Table 5--Honey production in specified countries, 1977-83, calendar years 1/

Country	1977	1978	1979	1980	1981	1982	1983
	Million pounds						
USSR	458.6	394.6	416.7	403.4	405.6	410.1	418.9
China	132.2	165.3	242.5	178.6	255.7	264.6	220.5
United States	178.1	231.5	238.7	199.8	185.9	229.9	205.0
Mexico	132.3	119.0	114.6	132.3	132.3	99.2	141.1
Canada	56.0	67.5	72.5	64.4	72.5	67.2	76.7
Argentina	39.7	77.2	66.1	72.8	66.1	72.8	61.7
Brazil	30.9	35.3	39.7	44.1	52.9	55.1	48.5
Australia	32.8	40.3	55.1	43.0	54.7	46.3	47.4
Other	676.1	683.2	688.2	707.7	713.7	758.3	734.1
World total	1,736.8	1,813.9	1,934.1	1,846.1	1,939.4	2,003.4	1,953.9

1/ Estimates refer to a calendar year except Australia where the crop year is July/June.

Source: Foreign Agricultural Service, USDA.

Table 6--Honey exports by specified countries, 1976-82, calendar years

Country	1976	1977	1978	1979	1980	1981	1982 1/
	Million pounds						
China	44.2	36.0	42.2	90.3	101.7	119.3	128.1
Mexico	105.5	117.4	99.4	92.1	86.9	102.8	88.2
Argentina	65.5	47.9	79.1	55.1	43.3	63.3	65.9
USSR	15.9	19.7	22.4	24.2	27.6	31.1	35.3
West Germany	4.4	5.4	8.4	14.0	18.3	28.6	28.6
Hungary	15.5	16.2	15.2	19.1	16.4	17.6	22.5
Canada	10.5	19.8	14.7	18.0	24.0	18.1	21.5
Other	112.7	87.8	93.0	98.7	91.7	84.6	82.3
World total	374.2	350.2	374.4	411.5	409.9	465.4	472.4

1/ Preliminary.

Source: Foreign Agricultural Service, USDA.

Stocks

In 1983, world stocks of honey totaled 332 million pounds and represented 16.7 percent of consumption (appendix tables 1 and 3). Over half of these world stocks were held in the United States (appendix table 2). Other countries with sizable stocks include France, Mexico, and Canada. Data that indicate the proportion of world honey stocks held by the private sector are unavailable.

Consumption

World honey consumption was estimated to total almost 2 billion pounds in 1983 (appendix table 1). Since 1979, world honey consumption has increased only 7 percent. Honey utilization is the largest in the Soviet Union and the United States. In 1983, 388 million pounds of honey were consumed in the Soviet Union. Other leading countries in honey consumption include West Germany and Japan. Such important exporting countries as Mexico, Argentina, and Australia are relatively minor consuming countries. On a per-capita basis, West Germany consumed 2.6 pounds; Canada, 2.2 pounds; Australia, 1.8 pounds; the Soviet Union, 1.3 pounds; and the United States, 1.2 pounds in 1983.

Trends in U.S. Honey Trade

Honey is graded according to color and floral source with the lighter colors usually being the most valuable. Most of the honey consumed in the United States is for table use and is generally light and mild. Dark honey is primarily demanded for industrial use in baked goods and other prepared foods.

Table 7--Honey imports by specified countries, 1976-82, calendar years

Country	1976	1977	1978	1979	1980	1981	1982 1/
	Million pounds						
West Germany	110.4	113.0	127.1	137.0	144.6	164.7	167.2
United States	66.4	63.9	56.0	58.6	49.0	77.3	92.0
Japan	52.4	54.8	53.9	54.3	44.3	56.1	62.1
United Kingdom	30.2	38.0	37.4	39.6	38.0	37.7	45.8
Italy	2.4	6.3	8.2	22.3	19.1	23.3	24.0
France	12.4	11.2	16.3	16.9	15.2	16.5	18.2
Netherlands	13.0	9.5	12.2	14.6	13.4	17.4	18.2
Belgium and Luxembourg	7.8	9.0	10.4	11.8	12.7	13.5	14.1
Switzerland	10.4	8.8	9.6	9.8	11.4	13.7	12.4
Other	35.5	30.8	31.6	39.1	47.5	42.6	41.4
World total	340.9	345.3	362.7	404.0	395.2	462.8	495.4

1/ Preliminary.

Source: Foreign Agricultural Service, USDA.

Most of the honey marketed through supermarkets in the United States is treated with heat to retard granulation, prevent yeast fermentation, and facilitate filtering. However, the market share accounted for by unheated honey may be growing. Most foreign honey is not heat treated because many foreign markets prefer unheated honey.

Imports

The United States imports honey in a variety of types, qualities, and containers. Most of the honey imported into the United States before 1972 consisted of bulk shipments of dark, industrial grades of honey, with a small portion of table grades shipped in bulk. Since 1972, bulk shipments have shifted from industrial grades to the lighter table grades. A small portion of U.S. imports consists of exotic honey from rare floral sources that sell at premium prices in the retail market.

While the United States was a net exporter of honey until about 1967, it has been a net importer in recent years (fig. 3). Imports reached record levels in 1975, 1976, 1981, 1982, and 1983 (table 8). This surge in honey imports can be attributed to the lower price of imports relative to U.S. honey prices and the decline in U.S. honey production.

The countries trading in honey with the United States have been fairly constant for a number of years. In 1982, the leading suppliers of honey to the United States were Mexico, The People's Republic of China, Argentina, Canada, and Australia. These principal suppliers shipped 82.5 million or 90 percent of the 92 million pounds imported from all countries.

Figure 3

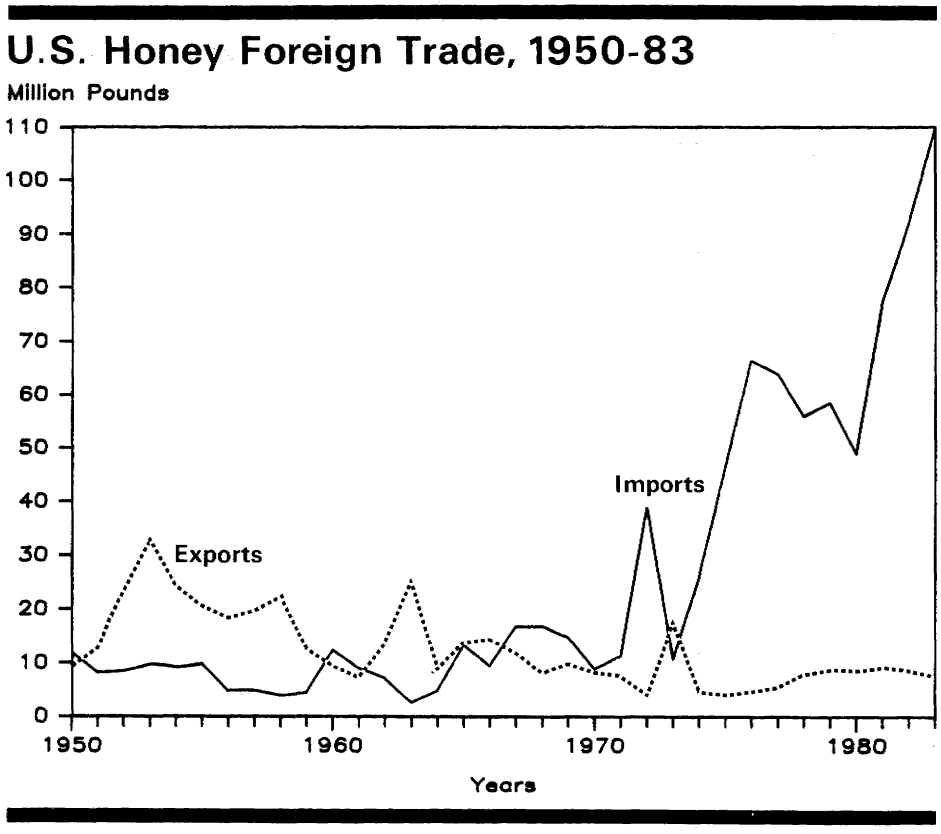


Table 8--Honey imports, exports, stocks, and domestic use, United States, 1950-83, crop years

Crop year	Imports	Exports	Ending stocks	Domestic use	Per capita consumption	Ratio of ending stocks to use
		Million pounds			Pounds	Percent
1950	12.0	9.4	90.8	228.3	1.50	39.8
1951	8.2	12.7	89.2	255.2	1.65	35.0
1952	8.5	23.4	84.2	262.1	1.66	32.1
1953	9.8	32.9	85.5	229.5	1.43	37.2
1954	9.2	24.3	42.2	215.0	1.32	19.6
1955	9.9	20.5	56.6	229.1	1.38	24.7
1956	4.8	18.2	49.5	207.7	1.23	23.8
1957	4.8	19.8	64.0	211.7	1.23	30.2
1958	3.9	22.4	71.1	234.9	1.34	30.3
1959	4.5	12.5	60.0	259.7	1.46	23.1
1960	12.4	9.4	52.2	253.6	1.40	20.6
1961	9.0	7.2	68.1	241.8	1.32	28.2
1962	7.1	13.6	55.9	255.3	1.37	21.9
1963	2.6	25.1	55.1	245.1	1.30	22.5
1964	4.9	8.9	65.8	236.5	1.23	27.8
1965	13.3	13.8	57.7	249.4	1.28	23.1
1966	9.5	14.4	55.3	239.1	1.22	23.1
1967	16.8	11.7	56.7	219.5	1.10	25.8
1968	16.9	8.1	41.0	215.9	1.08	19.0
1969	14.7	9.9	62.7	250.6	1.24	25.0
1970	8.9	8.1	50.6	234.6	1.14	21.6
1971	11.4	7.6	32.3	219.9	1.06	14.7
1972	39.0	4.1	30.1	252.7	1.20	11.9
1973	10.7	17.6	37.4	224.9	1.06	16.6
1974	26.0	4.6	34.4	212.3	.99	16.2
1975	46.4	4.0	33.2	242.8	1.12	13.7
1976	66.5	4.7	34.3	258.7	1.19	13.3
1977	63.9	5.5	30.0	240.8	1.09	12.5
1978	56.0	8.0	32.2	277.3	1.25	11.6
1979	58.6	8.8	38.0	282.7	1.26	13.4
1980	49.0	8.5	52.1	226.2	.99	23.0
1981	77.3	9.2	74.1	232.0	1.01	31.9
1982	92.0	8.5	136.8	250.8	1.08	54.5
1983 1/	109.8	7.5	165.2	277.9	1.19	59.8

1/ Estimated.

Source: U.S. Department of Commerce and Foreign Agricultural Service, USDA.

Exports

Except for 1973, the United States has been a net importer of honey since 1967. The dramatic increase in exports in 1973 to 17.6 million pounds was the result of a bumper domestic honey crop and a significant increase in world honey prices which encouraged the liquidation of domestic stocks. Since 1978, U.S. exports of honey have ranged between 7.5 and 9.2 million pounds (table 8). Although the United States exports honey to many countries, West Germany, Saudi Arabia, the Netherlands, Japan, and Canada have been principal markets in recent years. West Germany has high standards for honey imports which are difficult for many countries to meet. However, U.S. table-grade honey is of high quality and readily accepted in West Germany.

Consumption

Annual consumption of honey in the United States from 1950 to 1983 ranged between 208 and 278 million pounds (table 8). Although domestic honey use can vary considerably from year to year, there has not been a large increase in use since the late fifties. Domestic use increased from an average of 240.7 million pounds in the sixties to 244.7 million in the seventies and for 1980-83 has averaged 246.7 million.

Even though population has been increasing in the United States, average U.S. per capita consumption of honey has declined each decade from the fifties to the eighties. Per capita honey consumption averaged 1.4 pounds in the fifties, 1.3 pounds in the sixties, 1.2 pounds in the seventies, and 1.1 pounds from 1980 to 1983. However, since 1981, per capita honey consumption has begun to increase, largely from the rising share of CCC stocks disposed through the School Lunch and other Government-sponsored food distribution programs.

Since 1965, honey producers have lost a significant share of the industrial market (which is estimated to account for 40 percent of the commercial crop) to less expensive sugar syrups such as isomerose, which closely resembles the sugar chemistry of honey. The darker grades of honey have been more popular with bakeries and other food processors because they have more pronounced flavors and are less expensive than lighter grades. Consequently, commercial demand for the darker honey has been susceptible to competition from corn syrup substitutes.

Stocks

Ending stocks of honey in the United States have increased annually from 30 million pounds in 1977 to an estimated 165 million pounds in 1983 (table 8). Since 1980, ending stocks have more than tripled, largely through increases in CCC inventories of honey due to the price-support program. In 1983, ending stocks of U.S. honey represented almost 60 percent of consumption. An estimated three-fourths of the stocks are being held by the Government.

HISTORY OF HONEY PROGRAMS

Federal price-support programs for agricultural commodities were instituted in the thirties as a result of the Great Depression. However, operations were first restricted to "basic" commodities (corn, cotton, peanuts, rice, tobacco, and wheat). Gradually, other commodities were included.

With the termination of sugar rationing at the end of World War II, honey prices dropped close to pre-War levels. Due to the depressed economic situation facing them, representatives of the beekeeping industry requested assistance from Congress. In taking note of the industry's request, the House Committee on Agriculture had this to say:

> "Since the close of the War, the price of honey has dropped to the point where beekeepers are finding it impossible to obtain their cost of production. It appears obvious to the committee that, if these vitally important insects are to be maintained in sufficient numbers to pollinate our crops, the beekeeping industry must have immediate assistance. Until the time comes when beekeepers can receive an adequate return from pollination services, the committee believes that a price support program for honey, as provided in this bill, is the only answer to this problem."

Honey Price-Support Legislation

The price-support program for honey is permanent legislation established by the Agricultural Act of 1949, Title II, Section 201, which required that honey, along with several other commodities under the heading "Designated Nonbasic Agricultural Commodities," be supported at a level between 60 and 90 percent of parity. To set a level of support in excess of the minimum level within the prescribed limits, according to Section 401(b) of the 1949 Act, the Secretary of Agriculture is directed to consider the following factors:

(1) Supply in relation to demand,
(2) Price levels at which other commodities are being supported,
(3) Availability of funds,
(4) Perishability of honey,
(5) Importance of honeybees and honey to agriculture and the national economy,
(6) Ability to dispose of stocks acquired through price-support operations,
(7) Need for offsetting temporary losses of export markets, and
(8) Ability and willingness of producers to keep supply in line with demand.

Parity prices are a measure of the price levels needed to give agricultural commodities a purchasing power, with respect to articles that farmers buy, equivalent to the purchasing power of those agricultural commodities in a base period. The technique used to determine parity prices for agricultural commodities has been outlined by Congress. The parity price for honey is shown in table 9 for the 1950-84 crop years. However, a criticism of parity prices is that they fail to take account of productivity growth over time.

Early Support Programs

USDA first decided that mandatory honey price supports could be most widely and effectively assured by working through existing marketing machinery. Under the 1950 program, packers of honey signed contracts with USDA under which they agreed to pay beekeepers 9 cents per pound (delivered to their packing plants) for all honey acquired from them that met the requirements of the program. These requirements were especially concerned with the cleanliness of the honey, its moisture content, and flavor. USDA, in turn, agreed to accept all the honey offered by the contracting packers at the support price, plus established charges for handling, storage, and any processing requested by USDA.

Table 9--Honey price support activity, 1950-84, crop years

Crop year	National average price support rate 1/	Parity price, adjusted	Support as a percent of parity	Quantity placed under loan: Amount	Quantity placed under loan: As a percent of production	Quantity acquired by CCC
	Cents/pound		Percent	Million pounds	Percent	Million pounds
1950	9.0	15.0	60.0	2/	0	7.4
1951	3/ 10.0	16.7	60.0	2/	0	17.8
1952	11.4	16.3	70.0	9.3	3.4	7.0
1953	10.5	15.0	70.0	3.1	1.4	.5
1954	10.2	17.0	60.0	1.5	.7	0
1955	9.9	13.2	75.0	1.8	.7	0
1956	9.7	13.9	70.0	1.6	.7	0
1957	9.7	13.9	70.0	2.9	1.2	.1
1958	9.6	13.7	70.0	5.6	2.1	2.0
1959	8.3	13.8	60.0	1.3	.5	0
1960	8.6	14.3	60.0	1.1	.4	0
1961	11.2	14.9	75.0	4.2	1.6	1.1
1962	11.2	15.1	74.0	3.4	1.4	0
1963	11.2	16.7	67.0	3.2	1.2	0
1964	11.2	17.2	65.0	9.5	3.8	2.2
1965	11.2	17.8	63.0	17.3	7.2	3.3
1966	11.4	18.6	61.3	33.9	14.0	4.1
1967	12.5	19.5	64.0	31.0	14.4	5.4
1968	12.5	18.7	66.8	24.9	13.0	.1
1969	13.0	19.5	66.7	45.7	17.1	3.5
1970	13.0	20.4	63.7	40.6	18.3	4/
1971	14.0	21.0	66.7	22.9	11.6	0
1972	14.0	22.3	62.8	19.8	9.2	0
1973	16.1	26.7	60.2	12.1	5.1	0
1974	20.6	34.3	60.0	13.9	7.4	0
1975	25.5	42.4	60.1	5/	0	0
1976	29.4	49.0	60.0	5/	0	0
1977	32.7	54.4	60.0	14.1	7.9	0
1978	36.8	61.3	60.0	40.5	17.5	0
1979	43.9	73.1	60.0	49.1	20.6	0
1980	50.3	83.9	60.0	41.1	20.6	6.0
1981	57.4	95.6	60.0	55.2	29.7	38.7
1982	60.4	100.7	60.0	88.4	6/ 38.4	74.5
1983	62.2	103.7	60.0	7/ 112.0	6/ 54.6	114.9
1984	65.8	109.7	60.0	NA	NA	NA

NA = Data not available.

1/ For extracted honey in 60-pound or larger container. 2/ Direct packer purchase program. 3/ On March 22, 1951, support for most flavors of honey was announced at 10 cents per pound with about a dozen flavors of limited domestic acceptability supported at 9 cents. On April 5, 1951, it was announced that the support price for honey of wide table acceptability would be increased from 10.0 to 10.1 cents per pound. 4/ 5,900 pounds. 5/ Loan program discontinued. 6/ Estimated: production data were discontinued in 1981. 7/ Estimated.

Source: Agricultural Stabilization and Conservation Service, USDA.

A similar program was operated in the 1951 season, except a price support differential was introduced related to the degree of acceptability of honey for table use. The differential was 1.1 cents per pound between honeys of "general national acceptability" and "limited acceptability" for table use, reflecting to a degree the difference in market value for variations in this regard.

Subsequently, a honey price-support loan program and purchase agreement program were developed for the 1952 season. These programs have remained in use through the current 1984 crop of honey.

Operating Features

The price of honey is supported on the basis of color and class through warehouse- or farm-storage loans, purchases, or both. Loans at the applicable price-support rate on warehouse- and farm-stored honey are made available to beekeepers during the crop year on any or all the honey produced during that year. The loan allows beekeepers to pay operating costs without selling the honey immediately. However, if the market price fails to rise above the support price, they may cancel their loans by delivering honey of value equal to the loan value at the end of the loan period, unless arrangements have been made for earlier delivery.

Beekeepers who have not made use of the loan feature of the program may use the purchase option. The CCC will buy at the support price any honey a beekeeper wishes to sell which is not already obligated to the CCC as loan collateral. Honey loans and payment from CCC purchases of honey are made at county Agricultural Stabilization and Conservation Service (ASCS) offices.

1984 Support Program

The national average support price for 1984 crop honey is 65.8 cents per pound, 3.6 cents more than for the 1983 crop. Loans on 1984 crop honey are being made available for extracted honey in 60-pound and larger containers. The support level represents 60 percent of the April 1984 adjusted parity price of 109.7 cents per pound. Differentials are provided according to color and class.

The loan and purchase program for 1984 applies to domestically produced honey. Support is available to eligible producers through loans and purchases obtained at county ASCS offices during the period from April 1, 1984, through January 31, 1985. Loans mature not later than April 30, 1985.

Loan Activity

Much of the honey price-support program's history has been centered around loan activity rather than purchases by the CCC (table 9). The wholesale price of honey in 60-pound and larger containers, minimum quantity eligible for loan or delivery under a loan or purchase, has usually been above the price-support level and discouraged deliveries to the CCC. The relationship of support prices to the parity price and wholesale market price for honey is shown in figure 4. The support price has never exceeded 75 percent of parity and, since 1973, has been near the minimum 60 percent.

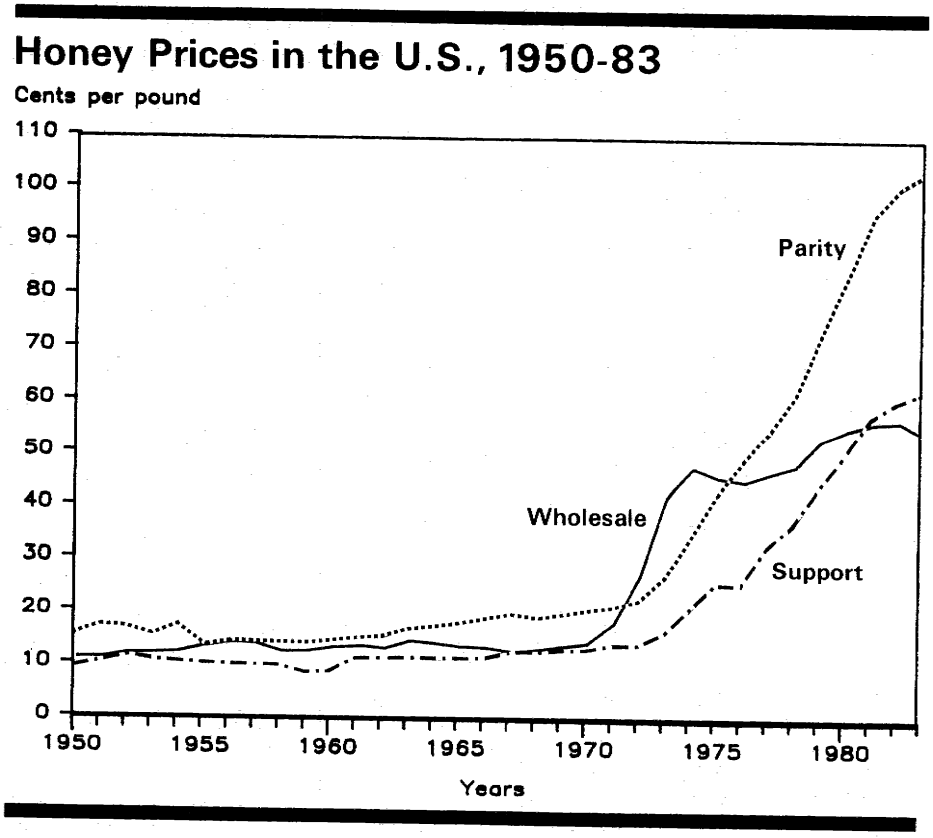
Since 1980, the amount of honey placed under loan and the quantity forfeited to the CCC have increased dramatically. After not acquiring any honey through the

seventies, the CCC acquired 6 million pounds of the 1980 crop. For the 1981 crop, this figure jumped to 38.7 million pounds and 74.5 million for the 1982 crop. Forfeitures of the 1983 crop increased further to 115 million pounds, which is more than half the estimated year's production.

The recent jump in honey forfeitures is the result of the support price increasing above the world and domestic wholesale honey price, which has encouraged the consumption of imported honey at the expense of domestic honey. For example, in 1981 the average price of imported honey was 41 cents per pound--much lower than the domestic wholesale price of 56.5 cents per pound and the average support price of 57.4 cents. In 1982, the average support price exceeded the wholesale price by 3.6 cents per pound. This margin grew to 7.8 cents in 1983 and is estimated to reach 15 cents in 1984. This price relationship has made it profitable for honey producers to forfeit domestic honey to the CCC rather than sell it in the domestic market. Consequently, domestic honey needs are being purchased from the lower priced world market.

From 1950 through 1974, honey imports averaged 11.2 million pounds while exports averaged 14.4 million pounds (table 8). However, in 1975 imports increased sharply to 46.4 million pounds and by 1983 more than doubled to an estimated 109.8 million pounds. Conversely, exports declined to an average of 7.2 million pounds annually for 1975-83--about half the average quantity exported during 1950-74.

Figure 4



Legislative Authority to Limit Honey Imports

With the large takeover of domestic honey production by the CCC and the import of 35 to 40 percent of domestic needs in recent years, pressure is mounting for protective measures. Under Section 22 of the Agricultural Adjustment Act of 1933, honey imports could be limited by either an import quota or an import fee. Quotas or import fees up to a maximum of 50 percent ad valorem of the value of the honey, but not both, can be initiated through Presidential proclamation under the emergency powers of the act pending results of an investigation by the International Trade Commission (ITC). Under Section 201 of the Trade Act of 1974, the ITC investigates whether honey imports are materially interfering with the honey price-support program or rendering the program ineffective; it then makes a policy recommendation to the President. The last investigation by the ITC on honey imports was conducted in early 1976 and reported to the President on June 29 under investigation No. TA-201-14.

By a 3 to 2 vote, the Commission found that increased imports of honey constitute a threat of serious injury to the domestic honey industry, thereby entitling it to import relief. The Commission recommended to the President that import relief be established in the form of a tariff rate quota system. The system recommended would allow up to 30 million pounds of honey to be imported each year into the United States at the current tariff of 1 cent per pound. All imports exceeding that amount in any given year would be subject to an additional tariff of 30 percent ad valorem during the first 3 years after the relief becomes effective. During the fourth year the additional tariff would decrease to 20 percent ad valorem. The relief would terminate at the end of the fifth year. However, the President decided it was not in the Nation's economic interest to impose import restrictions on honey.

Tariffs may be imposed on imported honey, which is classified for tariff purposes under item 155.70 of the Tariff Schedules of the United States (TSUS). A rate of 1 cent per pound is applicable to honey imports under TSUS item 155.70 from all countries, except designated nonmarket economy countries whose imports are assessed a 3-cents-per-pound duty. The 1 cent reflects a concession granted by the United States in the General Agreement on Tariffs and Trade (GATT) effective January 1, 1948.

Disposal of CCC Honey Stocks

The Commodity Credit Corporation disposes of the majority of its honey stocks through food assistance programs operated by the Food and Nutrition Service. A small amount of honey is sometimes sold on the open market. However, except for certain circumstances, the CCC is precluded from selling its honey at less than 105 percent of the acquisition cost. The food assistance programs generally involve donations of honey to nonprofit schools, public or private welfare agencies, charitable institutions, child care centers, summer camps, and emergency and disaster relief organizations.

When honey is forfeited to CCC, it is in 60-pound or larger tins and unprocessed. It is estimated that the CCC has paid between 15.0 to 16.5 cents a pound to store, process, package, and transport the 1980 to 1983 honey crops to the ultimate consumer. Disposition costs have declined in recent years due to the economies of handling and processing larger volumes of honey.

PROGRAM EFFECTS

Producers

The honey price-support program has benefited producers by smoothing out the market price fluctuations and providing a market for honey at an assured price. Since 1981, honey producers have also benefited from the higher price received by selling honey to the CCC under the price-support program rather than in the domestic market. It is estimated that the average price support for the 1982 honey crop was about 4 cents per pound higher than the wholesale price for 60-pound and larger containers in 1982 and about 8 cents per pound higher for the 1983 crop. Because program benefits are based on the quantity of extracted honey forfeited or sold to the CCC, large beekeeping operations receive greater payments than small operations.

As of April 30, 1984, loans made under the honey price-support program totaled 3,108 for the 1982 crop and 4,734 for the 1983 crop. Almost 45 percent of these loans were made to honey producers in California, Florida, and North Dakota. Each loan represented an average of about 28,450 pounds for the 1982 crop and 23,950 for the 1983 crop.

Consumers

Program effects on consumers are measured by the changes in prices paid and quantities consumed that are attributable to the honey program. However, as the honey price series has not been reported by SRS since 1981, it is difficult to determine the impact of the honey price-support program on consumers.

However, from the early seventies through 1981, the average price for all honey increased gradually and it is likely that this trend has continued (table 2). During the same time period, the national average price support for honey increased each year which suggests that the honey program has impacted the price consumers have paid for honey. However, it is also likely that the increased consumption of cheaper imported honey has lessened the consumer cost impact. The net effect of the honey program is that consumer prices are probably higher than they would be under no program. Also, recipients of honey products through the Federal disposal programs have benefited from the honey program.

Taxpayers

Taxpayers bear the cost of Government expenditures on the honey program. The Government expenditures are primarily a transfer of income from taxpayers to honey producers.

Government expenditures to purchase and dispose of honey have increased significantly from an estimated $4 million in 1980 to almost $89 million in 1983. Valuing the honey acquired by the CCC at the national average support price and allowing another 15.0 to 16.5 cents per pound to cover the disposition costs incurred by the CCC for the 1980 to 1983 crops, the Government costs for the honey program during 1980-83 are estimated in table 10. These costs may be partially offset with revenues collected from the tariff on imported honey and the sale of CCC honey stocks that are deteriorating in quality.

Indirect

The value of honeybees in pollinating many food and fiber crops in the United States is well established. Consequently, many individuals besides beekeepers are concerned that with the termination of the honey price-support program there will be a decline in the number of honeybee colonies in the United States, particularly those available to provide pollination services to fruit and vegetable producers.

Any decline in the number of honeybee colonies in the United States that may result from changes in the honey price support program will directly impact on the number of honeybees available for pollination. Of most concern will be pollination of those agricultural crops that require large concentrations of bees for a commercial crop. Production of these agricultural crops is generally concentrated in a few geographic locations of the United States. Consequently, it is unlikely that these areas contain a sufficient number of wild bees or honeybees managed by local beekeepers to provide adequate pollination. Also, while some farmers do maintain a small number of honeybee colonies to pollinate their agricultural crops, it is unlikely that large producers would have the expertise, labor, capital investment, or bee pasture needed to maintain large numbers of honeybee colonies permanently.

Research conducted by the Economic Research Service in 1976 on the Beekeeper Indemnity Payment Program showed that pollination costs were a very small part of the total cost of producing crops requiring pollination services and could be increased to compensate those beekeepers who provide pollination services for rent and incur pesticide damage to their colonies. Likewise, increased pollination fees could also offset or reduce the economic effect of lower domestic honey prices for those beekeepers actively engaged in providing pollination services for a fee.

Another indirect impact of the honey program to the U.S. honey industry is the loss of a substantial portion of the domestic honey market to imports since 1980. In 1980, imported honey accounted for 22 percent of domestic use. In 1983, imports captured 40 percent of the domestic market, largely at the expense of domestic honey.

Table 10--Estimated Government cost of honey purchases by the CCC, 1980-83 crop years

Crop year	CCC acquisitions	National average support price	Estimated CCC disposition cost	Estimated total cost to CCC
	Million pounds	Cents per pound		Million dollars
1980	6.0	50.3	16.5	4.0
1981	38.7	57.4	15.5	28.2
1982	74.5	60.4	15.5	56.5
1983	115.0	62.2	15.0	88.8

Source: Computed from data compiled by the Agricultural Stabilization and Conservation Service, USDA.

To enable honey producers and handlers to finance a nationally coordinated research, promotion, and consumer information program designed to expand the market for honey, legislation was introduced in Congress on April 4, 1984.

SUMMARY

The Agricultural Act of 1949 legislated a price-support program to provide market stability to honey producers and to encourage maintenance of bee populations which are vital for pollination of many agricultural crops. Since 1952, the price of honey has been supported at not less than 60 percent and not more than 90 percent of parity through a loan and/or purchase program.

Since 1981, honey support prices have been above the average domestic market price. The domestic price has not been bid up because domestic producers and packers have found it profitable to import lower priced honey for domestic use and sell the domestically produced honey to the CCC at the support price. The CCC acquired about 115 million pounds, or over half of the 1983 honey crop, at an estimated cost of $71.5 million. The result of recent CCC purchases and loan forfeitures has been a massive buildup in honey stocks in the United States to over 165 million pounds in 1983, which represents half the world stocks of honey. Several important issues will likely receive much debate as the new farm legislation is being developed. Major policy issues include:

- Should the United States maintain a profitable honey industry, particularly when world honey prices are low?
- Would there be a significant reduction in honey production and in the number of honeybee colonies available to provide needed pollination service if honey price supports are lowered significantly or eliminated?
- Should import quotas be used to restrict the quantity of honey entering the domestic market even though they conflict with the objective of free trade?
- What level of farm program cost is acceptable to ensure a domestic supply of honey and honeybees?

Several important developments and trends in the beekeeping industry must be considered in finding appropriate honey policy:

- An estimated 90 to 95 percent of the beekeepers in the United States are hobbyists who own less than 25 colonies of honeybees. In 1975, the International Trade Commission (ITC) estimated there were about 200,000 hobbyists who primarily produced honey for home use. Few hobbyists are thought to use the honey price-support program. Commercial beekeepers, those with 300 or more colonies, represented less than 1 percent of the beekeepers in 1975, but accounted for half the honeybee colonies and produced about 60 percent of the honey extracted. The commercial beekeepers and larger part-time beekeepers (those with 25-299 colonies) are considered the primary users of the honey program.
- Since 1970, the number of honeybee colonies in the United States (excluding wild honeybees) has stabilized between 4.1 and 4.3 million. With honey yields of 45 to 50 pounds per colony, the honey industry has the capacity to produce 190-210 million pounds of honey annually. Consumption of honey has averaged about 250 million pounds since 1980.

- Honey imports increased 125 percent from 1980 through 1983. During the same period, domestic stocks of honey increased over 200 percent and now represent almost 60 percent of annual domestic use.

The honey price-support program has likely contributed to the stabilization of colony numbers in the United States in recent years. The support price at no less than 60 percent of parity has been substantially higher than the average price of honey in the world market. If the honey price-support program is terminated or support prices are reduced substantially below the legislated minimum of 60 percent of parity, the reduced return from the sale of honey would likely force many beekeepers--especially commercial beekeepers--from the industry. The result could be a substantial decline in the number of honeybee colonies and honey production.

The majority of plants grown in the United States are pollinated at no cost by wild bees and honeybees managed by local beekeepers. However, many fruit, vegetable, legume, and oilseed crops require pollination by a large concentration of honeybees for a commercial crop. The impact of any significant reduction in colony numbers from changes in the honey price-support program on pollination of these crops will depend on whether the beekeepers that provide honeybees for pollination can obtain a higher fee for their services. Since pollination costs are a very small part of the total cost of producing crops requiring pollination services, it is likely that rental fees could be increased to reduce or offset the economic effects of lower domestic honey prices for those beekeepers actively engaged in providing pollination services for a fee. However, it is unknown just how many of the domestic beekeepers that utilize the honey price-support program provide pollination services for a fee.

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Appendix table 1--Honey: World production, consumption, trade, and stocks, 1977-83 crop years

Crop year	Beginning stocks	Production	Consumption	Foreign trade balance 1/	Ending stocks
			Million pounds		
1977	396.0	1,736.8	1,771.2	4.9	356.7
1978	356.7	1,813.9	1,841.7	11.7	317.2
1979	317.2	1,934.1	1,864.6	7.5	379.2
1980	379.2	1,846.1	1,906.5	16.3	302.5
1981	302.5	1,939.4	1,929.7	-6.4	318.6
1982	318.6	2,003.5	1,965.6	9.7	346.8
1983 2/	346.8	1,953.9	1,991.6	-22.9	332.0

1/ A minus sign indicates imports were larger than exports. These trade data differ from those shown in tables 6 and 7 due to revisions in the data series.
2/ Preliminary.

Source: Foreign Agricultural Service, USDA.

Appendix table 2--Honey: U.S. share of world production, trade, consumption, and ending stocks, 1977-83 crop years

Crop year	U.S. share of world--				
	Production	Imports	Exports	Consumption	Ending stocks
	Percent				
1977	10.3	18.5	1.6	13.6	8.4
1978	12.8	15.4	2.1	15.1	10.2
1979	12.3	14.5	2.1	14.6	10.0
1980	10.8	12.4	2.1	11.9	17.2
1981	9.6	16.7	2.0	12.0	23.3
1982	11.5	18.6	1.8	12.8	39.4
1983	10.5	NA	NA	14.0	50.1

NA = Data not available to compute the percentage.
Source: Computed from data compiled by the Foreign Agricultural Service, USDA.

Appendix table 3--Ratio of world honey statistics, 1977-83 crop years

Crop year	Ratio of world--			
	Trade		Ending stocks	
	Production	Consumption	Production	Consumption
	Percent			
1977	20.2	19.8	20.5	20.1
1978	20.6	20.3	17.5	17.2
1979	21.3	22.1	19.6	20.3
1980	22.2	21.5	16.4	15.9
1981	24.0	24.1	16.4	16.5
1982	24.0	24.0	17.3	17.6
1983	NA	NA	17.0	16.7

NA = Data not available to compute the percentage.
Source: Computed from data compiled by the Foreign Agricultural Service, USDA.