

UNITED STATES INTERNATIONAL TRADE COMMISSION

HONEY

**Report to the President
on Investigation No. TA-201-14
Under Section 201 of the Trade Act of 1974**



**USITC Publication 781
Washington, D. C.
June 1976**

UNITED STATES INTERNATIONAL TRADE COMMISSION

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USITC 76-062

USITC RECOMMENDS TARIFF RATE QUOTA FOR HONEY INDUSTRY

The United States International Trade Commission today recommended to the President that import relief in the form of a tariff rate quota system be established for the U.S. honey industry.

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. Commissioners Will E. Leonard, Daniel Minchew, and George M. Moore formed the majority, with Commissioners Catherine Bedell and Joseph O. Parker dissenting. Commissioner Italo H. Ablondi did not participate.

The tariff rate quota system recommended to the President 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 three years after the relief becomes effective. During the fourth year the additional tariff would decrease to 20 percent ad valorem, and during the fifth year it would decrease to 10 percent ad valorem. The relief would

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terminate at the end of the fifth year.

A petition was filed with the USITC on December 29, 1975 on behalf of a number of honey producers' associations and independent beekeepers seeking import relief. Following receipt of the petition, the USITC instituted an investigation to determine whether honey is being imported into the United States in such increased quantities as to be a substantial cause of serious injury or the threat of serious injury to the domestic honey industry. This investigation, which included public hearings in Orlando, Fla., San Francisco, Cal., Kansas City, Mo., and Washington, D.C., resulted in today's decision and recommendation of remedy.

Most honey consumed in the United States in 1975 went for table use, but a small portion was used commercially in baked and other prepared foods. It is regarded as a "natural" health food by organic food enthusiasts as a source of quick energy.

The leading honey-producing States are California, Florida, and South Dakota, with Minnesota, North Dakota, Texas, Montana, and Nebraska also producing substantial amounts. Some honey is produced in virtually every State. It is estimated that honey is produced or processed by more than 230,000 people, although many of them are part-time producers or processors.

The United States produced about 17 percent of the known world honey in 1975. Domestic production in that year amounted

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to about 196.5 million pounds, valued at nearly \$100 million.

In 1975, total U.S. imports of honey amounted to a record 46 million pounds, valued at more than \$16 million. This represented 20.1 percent of domestic consumption. In 1973, honey imports totaled 4.9 percent of domestic consumption. The principal sources of U.S. imports of honey in 1975 were Mexico, Argentina, Canada, Australia, and Brazil. Collectively, these countries accounted for about 91 percent of U.S. imports of honey.

The United States also exports honey to a number of countries, including West Germany, Japan, the Netherlands, and Canada. In 1975, exports totaled less than 4 million pounds, valued at about \$2.4 million.

In addition to the production of honey, bees are used for crop pollination purposes. It is estimated that in 1975 the value of crops pollinated by bees was \$8 billion.

Copies of the Commission's report, Honey (USITC Publication 781), containing the views of the Commissioners and information developed during the course of investigation No. TA-201-14, can be obtained from the Office of the Secretary, United States International Trade Commission, 701 E Street NW., Washington, D.C. 20436.

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REPORT TO THE PRESIDENT

U.S. International Trade Commission,
June 29, 1976

To the President:

In accordance with section 201(d)(1) of the Trade Act of 1974 (88 Stat. 1978), the United States International Trade Commission herein reports the results of an investigation made under section 201(b)(1) of that act, relating to honey.

The investigation to which this report relates was undertaken to determine whether--

honey, provided for in item 155.70 of the Tariff Schedules of the United States, is being imported into the United States in such increased quantities as to be a substantial cause of serious injury, or the threat thereof, to the domestic industry producing an article like or directly competitive with the imported article.

The investigation was instituted on January 29, 1976, upon receipt of a petition filed on December 29, 1975.

Notice of the institution of the investigation and of the hearings to be held in connection therewith was published in the Federal Register of February 6, 1976 (41 F.R. 5454). Public hearings in connection with the investigation were conducted on March 2 in Orlando, Florida; March 10 in San Francisco, California; April 6 in Kansas City, Missouri; and April 8 in Washington, D.C. All interested parties were afforded an opportunity to be present, to produce evidence, and to be heard. A transcript of the hearing and copies of briefs submitted by interested parties in

connection with the investigation are attached. 1/

The information for this report was obtained from fieldwork, from responses to questionnaires sent to the domestic manufacturers, importers, and consumers, and from the Commission's files, other Government agencies, and evidence presented at the hearings and in briefs filed by interested parties.

There are imports of honey from countries whose imports are presently subject to the rates of duty set forth in column 2 of the TSUS. The import relief recommended herein is not addressed to imports from such countries. The recommended import relief measure could involve the imposition of a rate of duty on imports from countries whose imports are currently subject to the rate of duty in column 1 which is higher than the present rate set forth in column 2. Should such recommended, or any other, rate of duty that could be higher than the column 2 rate be proclaimed by the President, it would be necessary for him to conform column 2 by proclaiming a rate therefor that is the same as that proclaimed for column 1, but not less than the current rate in column 2. Thus, if the recommended import relief were to be proclaimed, the conforming column 2 treatment would be "1¢ per lb.+ 30% (or 20%, or 10% ad valorem, respectively) but not less than 1¢ per lb."

1/ Attached to the original report sent to the President, and available for inspection at the U.S. International Trade Commission, except for material submitted in confidence.

Determination, Findings, and Recommendations
of the Commission

Determination.--On the basis of its investigation, the Commission determines (Commissioners Bedell and Parker dissenting, Commissioner Ablondi not participating) that honey, provided for in item 155.70 of the Tariff Schedules of the United States (TSUS), is being imported into the United States in such increased quantities as to be a substantial cause of the threat of serious injury to the domestic industry producing articles like or directly competitive with the imported article.

Findings and recommendations.--The Commission (Chairman Leonard, Vice Chairman Minchew, and Commissioner Moore) finds that--

(1) a tariff-rate quota system, as hereinafter specified, is necessary to prevent the threatened injury;

(2) whenever, in calendar year 1976, or in any of the four ensuing calendar years, the aggregate quantity of imports of honey, as provided for in item 155.70 of the TSUS, exceeds a tariff-rate quota of 30 million pounds, honey in such item entered during the remainder of such calendar year shall be subject to rates of duty as follows:

For calendar years 1976, 1/ 1977 & 1978..... 1¢ per lb. +
30% ad val.

For calendar year 1979..... 1¢ per lb. +
20% ad val.

For calendar year 1980..... 1¢ per lb. +
10% ad val.

1/ To avoid possible retroactive application of the over-quota rate of duty for calendar year 1976, the President's proclamation should provide for the application of such rate of duty to be effective on the date of the proclamation or at the time the quota is exceeded, whichever occurs last.

(3) the existing rate of duty shall apply to imports of such honey entered within the tariff-rate quota for each calendar year;

(4) such tariff-rate quota shall be established and allocated to countries subject to the rate of duty provided for in rate of duty column numbered 1 of the TSUS; and

(5) whenever the over-quota rate of duty specified in (2) exceeds the rate of duty (3 cents per pound) applicable to imports of honey from countries whose imports are currently subject to the rate of duty set forth in column 2 of the TSUS, such column 2 rate should be made to conform with rates proclaimed for column 1.

Views of Chairman Will E. Leonard, Vice Chairman Daniel Minchew,
and Commissioner George M. Moore 1/

On December 29, 1975, the United States International Trade Commission (Commission) received a petition filed by the Mid-U.S. Honey Producers Association, the Great Lakes Honey Marketing Association, the Michigan Beekeepers Association, and certain independent Kansas and Missouri beekeepers requesting an investigation under section 201(b)(1) of the Trade Act of 1974 (Trade Act) with respect to imports of honey. On January 29, 1976, the Commission instituted an investigation to determine whether honey, provided for in item 155.70 of the Tariff Schedules of the United States (TSUS), is being imported into the United States in such increased quantities as to be a substantial cause of serious injury, or the threat thereof, to the domestic industry producing an article like or directly competitive with the imported article.

Section 201(b)(1) of the Trade Act requires that each of the following criteria be met if the Commission is to make an affirmative determination in this investigation and thus find a domestic industry eligible for import relief:

- (1) That imports of the article concerned are entering the United States in increased quantities;
- (2) That the domestic industry producing an article like or directly competitive with the imported article concerned is being seriously injured or threatened with serious injury; and

1/ Commissioner Moore concurs with the views expressed herein insofar as they relate to the domestic industry consisting of the facilities in the United States devoted to the commercial production of honey.

- (3) That the increased imports of the article concerned are a substantial cause of the serious injury, or the threat thereof, to the domestic industry producing an article like or directly competitive with the imported article.

Determination

On the basis of the evidence developed by the Commission in this investigation, we determine that honey, provided for in item 155.70 of the TSUS, is being imported into the United States in such increased quantities as to be a substantial cause of the threat of serious injury to the domestic industry producing a like or directly competitive product.

Further, we find, pursuant to section 201(d)(1) of the Trade Act, that the import restrictions set forth previously in this report are necessary to prevent such injury.

Domestic industry

In considering whether increased imports are a substantial cause of serious injury or the threat thereof to the domestic industry, it is first appropriate to determine what is "the domestic industry" which may be suffering the requisite injury. The Trade Act does not expressly define the term "domestic industry," but section 201(b)(1) does provide that the domestic industry is that which produces "an article like or directly competitive with the imported article." The Trade Act also provides guidelines for arriving at a finding of what constitutes the domestic industry, and permits the Commission to use its best judgment

in light of those guidelines and the relevant economic factors in a given case. 1/

The statutory guidelines, legislative history, and economic factors in the present investigation support the conclusion that the facilities of U.S. beekeepers which produce and extract honey and the domestic facilities used for the buying, processing, packaging, and marketing of honey constitute the domestic industry relevant to this investigation. More than half the honey produced in the United States finds its way to the consumer without going through commercial wholesale channels, that is, it is produced and processed by the same individual. In addition, nearly half the honey sold through commercial wholesale channels is marketed by producer-owned cooperative marketing associations, such as the Sioux Honey Association. In all cases the value added to the product as a result of processing operations is small relative to the value of the product, and is primarily the cost of the container. Further, to be sold to the ultimate retail purchaser, most honey must be processed, including being put in bottles or containers. For these reasons, there is a single industry consisting of the facilities devoted to the producing and processing of honey.

Increased imports

As indicated above, the first criterion which must be satisfied if an industry is to be eligible for import relief is that the imports

1/ For a further discussion of the meaning of the term "domestic industry" as used in sec. 201(b)(1), see Bolts, Nuts, and Screws of Iron or Steel: Report to the President on Investigation No. TA-201-2 . . . , USITC Publication 747, 1975, pp. 4-8 and 27-29.

concerned must be entering in increased quantities. This criterion is met at least when there is an increase in absolute levels of imports, or when imports have increased relative to domestic production. ^{1/}

Evidence gathered during the present investigation shows that imports of honey increased from 11 million pounds in 1971 to 46 million pounds in 1975. The increasing trend in imports is apparently continuing; imports in January-April 1976 were 20 million pounds, indicating that imports in 1976 may exceed 60 million pounds inasmuch as there is little seasonality in imports. In addition, the ratio of imports to domestic production of honey increased from 6 percent in 1971 to 24 percent in 1975. Thus, we find this criterion satisfied.

Substantial cause of the threat of serious injury

In addition to satisfying the increased imports criterion, in order to find the relevant industry in this investigation eligible for import relief the increased imports must be a substantial cause of any serious injury, or the threat thereof, to such industry. These additional requirements are in effect criteria 2 and 3 set out above, and, because of their intimate interrelationship in this investigation, they will be discussed together.

The "serious injury, or threat thereof" criterion is expressed in the disjunctive--that is, this criterion is satisfied if a finding of either "serious injury" or "threat" of serious injury is made. In

^{1/} For a further discussion of the meaning of the criterion "increased imports," see Birch Plywood Door Skins: Report to the President on Investigation No. TA-201-1 . . ., USITC Publication 743, 1975, pp. 13-19.

this investigation, we find that the subject increased imports are a substantial cause of the threat of serious injury to the relevant domestic industry.

Section 201(b)(1) of the Trade Act provides no definition of "threat" of serious injury, as is the case with "serious injury." Under section 201(b)(2)(B), the Commission is to consider all economic factors which it considers relevant, including (but not limited to)--"a decline in sales, a higher and growing inventory, and a downward trend in production, profits, wages, or employment (or increasing underemployment) in the domestic industry concerned" The failure of any one of these factors to be present in a particular investigation does not necessarily require that a negative finding be made with respect to threat of serious injury, since these factors are provided as guidelines to the Commission, with the specific importance of each factor in any given investigation being a matter of judgment for the Commission. Further, a threat of serious injury, according to the report of the House Committee on Ways and Means on the bill which became the Trade Act, exists "when serious injury, although not yet existing, is imminent." 1/ The report of the Senate Committee on Finance on the same bill (Finance Committee report) supports the above interpretation. 2/

With respect to substantial cause, section 201(b)(4) of the Trade Act defines the term to mean "a cause which is important and not less than any other cause." Thus, a dual test must be satisfied: a cause must

1/ Trade Reform Act of 1973: Report of the Committee on Ways and Means . . . , H. Rept. No. 93-571 (93d Cong., 1st sess.), 1973, p. 47.

2/ Trade Reform Act of 1974: Report of the Committee on Finance . . . , S. Rept. No. 93-1298 (93d Cong., 2d sess.), 1974, p. 121.

be both "important" and "not less than any other cause." Further, section 201(b)(2) provides that the Commission, in making its determinations, shall take into account all economic factors which it considers relevant, including (but not limited to)--

- (C) with respect to substantial cause, an increase in imports (either actual or relative to domestic production) and a decline in the proportion of the domestic market supplied by domestic producers.

The Finance Committee report explained the term "substantial cause" and described the decisionmaking procedure with respect to it which the Commission should follow in this way (at pp. 120-121):

The Committee recognizes that "weighing" causes in a dynamic economy is not always possible. It is not intended that a mathematical test be applied by the Commission. The Commissioners will have to assure themselves that imports represent a substantial cause or threat of injury, and not just one of a multitude of equal causes or threats of injury. It is not intended that the escape clause criteria go from one extreme of excessive rigidity to complete laxity. An industry must be seriously injured or threatened by an absolute increase in imports, and the imports must be deemed to be a substantial cause of the injury before an affirmative determination should be made.

Regarding substantial cause of threat of serious injury specifically, the same report notes (at p. 121):

With respect to threat of serious injury, the Commission should consider a decline in sales, a higher and growing inventory, and downward trend in production, profits, wages, or employment (or increasing underemployment) in the affected domestic industry. The existence of any of these factors such as the growth in inventory would not in itself be relevant to the threat of injury from imports if it resulted from conditions unrelated to imports. Such conditions could arise from a variety of other causes, such as changes in technology or in consumer tastes, domestic competition from substitute products, plant obsolescence, or poor management. It is the intention of the Committee that the threat of serious injury exists when serious injury, although

not yet existing, is clearly imminent if imports [sic] trends continued unabated. 1/

The evidence in this investigation with respect to current import trends leads to the conclusion that honey imports into the United States will continue to increase. Foreign producers are increasing their productive capacities with the addition of new colonies, and some of the leading suppliers of U.S. imports have government programs to encourage the production of honey for exportation. These honey-exporting countries pose a continuing threat of increased imports into the U.S. market. At the same time, the evidence reveals that the trend toward lower purchase prices for U.S. imports is also continuing. Unit values of imports in 1974 equaled 43 cents per pound, fell to 34 cents per pound in 1975, and continued to decline in the first 4 months of 1976 to 30 cents per pound.

The Commission heard testimony at its public hearings that low-priced imports tend to depress domestic prices. Evidence obtained by the Commission indicated a high correlation between import prices and domestic prices, and import prices in any given year were found to predict domestic prices in the following year (see pp. A-116 - A-117, infra). The high level of honey inventories in the domestic industry (discussed below) coupled with the long delay in final payments for honey to producers which are members of cooperative marketing associations is probably responsible for the delayed time response of domestic prices

1/ A more detailed analysis of the meaning of the term "substantial cause" can be found in Wrapper Tobacco: Report to the President on Investigation No. TA-201-3 . . . , USITC Publication 746, 1975, pp. 4-7.

to import prices. We conclude that import prices have tended to depress domestic prices and will continue to do so in 1976.

The ratio of imports to domestic production for honey increased from 6 percent in 1971 to 24 percent in 1975, while the ratio of imports to total domestic consumption increased from 5 percent in 1971 to 20 percent in 1975. This indicates a decline in the proportion of the domestic market supplied by domestic producers from 95 percent in 1971 to 80 percent in 1975. The continued increases in honey imports in 1976 indicate that a further decline in the proportion of the domestic market supplied by domestic producers is probable in 1976.

Evidence of higher and growing inventories in the domestic honey industry was obtained in the Commission's investigation. Yearend honey inventories in 1971 were 53 million pounds, compared with 75 million pounds in 1975. Imported honey accounted for only 3 million pounds, or 4 percent, of the inventory of 75 million pounds in 1975, despite the record imports of 46 million pounds of honey in 1975. Hence, imported honey has been sent into the market quickly and has forced domestic honey into these higher and growing inventories. Testimony of honey producers at the Commission's public hearings indicated that they were holding substantial inventories of bulk extracted honey for which they had not received offers. Their testimony revealed that calls to buyers through early 1976 indicated that no offers were being made because the buyers were able to procure imported honey at lower prices.

The ratio of net profit before taxes to sales decreased from 1973 through 1975 for both producers and processors of honey. It should be

noted that producers' profit figures can be misleading in that net operating income is inclusive of wages. Producers were unable to recover all their increased costs of production because of declining prices during this period, even in the face of lower U.S. production, which would normally have resulted in increased prices. The evidence indicates a continuation of the trend of increasing costs of production. Costs of production for honey producers increased more than twofold from 1971 to 1975 (see pp. A-61 - A-81, *infra*). Continued declines in honey prices will lead to substantially lower profit margins in 1976 than in 1975, indicating an imminent threat of serious injury, of which increased imports in 1975 and beyond are a substantial cause.

Several other causes of the threat of serious injury to the relevant domestic industry have been put forward to the Commission. The Commission investigation found with respect to the industrial honey market that while such market declined because of other sweeteners taking the place of honey, the demand for the same types of honey for table use has increased substantially in recent years, and has more than used up any honey that was displaced by other sweeteners in industrial uses. In any case, any displacement of domestically produced and processed honey from the industrial market by competitive sweeteners was relatively minor compared with the effects of imports' capturing 20 percent of domestic consumption. Thus, this loss of market is not a more important cause of threat of serious injury than increased imports.

Reduced yields per colony due to pesticide losses, unfavorable weather conditions, and declining bee pasturage have been mentioned as

a more important cause of serious injury or the threat thereof than imports. While collectively these factors have had a substantial effect on reduction of U.S. honey production, they cannot be considered a more important cause of the threat of serious injury than imports and do not explain the other indicators of threat of serious injury. For example, usually when the demand for a commodity is strong and production declines, one would anticipate higher prices for that commodity. This has not been true for honey; declining production has been accompanied by declining domestic prices, and the most important factor that can explain this phenomenon is the increasing quantities of honey imports at declining prices.

Finding with respect to import relief

Section 201(d)(1) of the Trade Act provides, in part, that if the Commission finds with respect to any article, as a result of its investigation, the serious injury or threat thereof described in section 201 (b)(1), it shall--

(A) find the amount of the increase in, or imposition of, any duty or import restriction on such article which is necessary to prevent or remedy such injury, or

(B) if it determines that adjustment assistance under chapters 2, 3, and 4 can effectively remedy such injury, recommend the provision of such assistance

The appropriate remedy we have found for the threat of serious injury to the domestic honey industry, a substantial cause of which is an increase in honey imports, is a tariff quota for 1976 through 1980 which will provide the current duty of 1 cent per pound for the first 30 million pounds of honey imports from any most-favored-nation (MFN) source in a

calendar year and 1 cent per pound plus 30 percent ad valorem (decreasing over time) on all additional honey imports from any MFN source in the same calendar year. 1/

Since the remedy proposed by the Commission is intended to give the industry time to adjust to competition from imports, we propose a reduction in the duty rate for imports over 30 million pounds in a calendar year from 1 cent per pound plus 30 percent ad valorem in 1976, 1977, and 1978 to 1 cent per pound plus 20 percent ad valorem in 1979 and to 1 cent per pound plus 10 percent ad valorem in 1980. This will

1/ Although he concurs in the recommendation of the Commission as to both the efficacy of a tariff-rate quota and the levels to be established under the quota, Commissioner Minchew feels that the President may wish to consider an apportionment of the overall poundage under quota among the foreign sources of supply, in accordance with amounts historically imported from each source. Commissioner Minchew feels that this approach more nearly satisfies the intent of art. XIX of the General Agreement on Tariffs and Trade (GATT). This conclusion is supported by an Interpretative Note in the Havana Charter (ad. art. 40, at 65), and the acceptance of this view in GATT Doc. L/76 (1953). This passage in question states--

It is understood that any suspension, withdrawal or modification under paragraphs 1(a), 1(b) and 3(b) must not discriminate against imports from any Member country, and that such action should avoid to the fullest extent possible, injury to other supplying Member countries.

Should the President decide to allocate the poundage among the foreign source of supply, he might recommend the following distribution of the 30 million pounds, which represents an average poundage imported over the base period:

Mexico-----	12 million pounds
Argentina-----	6 million pounds
Canada-----	4 million pounds
Australia-----	2 million pounds
Brazil-----	2 million pounds
All other-----	<u>4 million pounds</u>
Total-----	30 million pounds

give the domestic industry a chance to adjust to import competition through improved technology, better marketing techniques, and other programs currently being pursued by honey producers.

This remedy is considered appropriate to the finding that while the domestic industry has not yet shown evidence of serious injury caused by increased imports, such serious injury is threatened if the trend of increasing imports continues. The duty of 1 cent per pound plus 30 percent ad valorem will discourage those imports of honey that are "excess" imports and are deemed to be a substantial cause of the threat of serious injury. At the same time this particular remedy design avoids the direct impact of a tariff increase on prices for processors and, ultimately, consumers; in addition, the tendency toward distortion of trade and inflexibility inherent in absolute quotas is avoided. Processors which do not produce honey can still acquire adequate supplies of foreign honey at current duty rates to meet their needs. Our historical foreign suppliers can still supply a substantial quantity of honey as in the past without change in the terms of trade, and can send more honey if it is demanded at prices that do not represent a threat of serious injury to the domestic industry.

The amount of 30 million pounds of honey imports that would be allowed to enter at the current duty rate of 1 cent per pound was chosen as an approximation of average imports during the period 1972-75. This period was chosen as representative of the situation where imports were required as a result of shortfalls in domestic production but where, as an average, these imports were not a substantial cause of serious injury or the threat thereof. While imports in 1975 were not found to be causing present serious injury, the import level of 1975 is not considered appropriate

because there is an imminent threat of serious injury to the domestic industry arising in 1976 caused by the increased imports which occurred in 1975. Evidence obtained in the Commission's investigation shows that the adverse impact of imports is often delayed by as much as a year because of the large inventories of honey generally maintained in the domestic industry.

Conclusion

On the basis of the evidence developed in this investigation, we conclude that increased imports of honey are a substantial cause of the threat of serious injury to the domestic industry producing a like or directly competitive product. We further find that the import restraints set out above are necessary to prevent such threat of serious injury from materializing into serious injury.

Before concluding and in fitting tribute to the Bicentennial anniversary of the birth of this nation we celebrate within a few days, we are constrained to note that the outcome of this investigation indicates the process by which someone, no matter how small, unorganized, or lacking in legal representation, can prevail before the Commission if only the facts presented satisfy the requirements of the statute. The citizen can petition his government for a redress of grievances and get it so long as we remain a nation of laws, not of men.

Views of Commissioners Catherine Bedell
and Joseph O. Parker

On December 29, 1975, the United States International Trade Commission received a petition filed by the Mid-U.S. Honey Producers Marketing Association, the Nebraska Honey Producers Association, the Great Lakes Honey Marketing Association, the Michigan Beekeepers Association, and certain independent Kansas and Missouri beekeepers requesting an investigation under section 201 of the Trade Act of 1974 (Trade Act) with respect to imports of honey. On January 29, 1976, the Commission instituted an investigation to determine whether honey, provided for in item 155.70 of the Tariff Schedules of the United States (TSUS), is being imported into the United States in such increased quantities as to be a substantial cause of serious injury, or the threat thereof, to the domestic industry producing an article like or directly competitive with the imported article.

Section 201(b)(1) of the Trade Act requires that each of the following criteria be met if the Commission is to make an affirmative determination in this investigation and thus find a domestic industry eligible for import relief:

(1) That imports of the article concerned are entering the United States in increased quantities;

(2) That the domestic industry producing an article like or directly competitive with the imported article concerned is being seriously injured or threatened with serious injury; and

(3) That increased imports are a substantial cause of serious injury, or the threat thereof, to the domestic industry producing an article like or directly competitive with the imported articles concerned.

Determination

On the basis of the evidence developed by the Commission in this investigation we have determined that honey is not being imported into the United States in such increased quantities as to be a substantial cause of serious injury, or the threat thereof, to the domestic industry producing an article like or directly competitive with imported honey.

Domestic industry

The domestic industry in this investigation embraces beekeepers which only produce honey, beekeepers which also process honey, cooperatives, and proprietary honey processors. The information available is insufficient to permit a definitive analysis of each of these groups in relation to the statutory criteria. We would, therefore, define the domestic industry as embracing all of these segments. However, irrespective of whether the domestic industry is defined as the total of all these segments or as one or more segments, we do not find that the statutory criteria of injury are satisfied.

Increased imports are not a substantial cause of serious injury

The Trade Act does not define the term "serious injury". Section 201(b)(2) does, however, direct the Commission to take into account all relevant economic factors in making its determination and in section

201(b)(2)(A) sets forth the following guidelines to be considered with respect to serious injury:

. . . the significant idling of productive facilities in the industry, the inability of a significant number of firms to operate at a reasonable level of profit, and significant unemployment or underemployment within the industry.

Imports of honey into the United States over a number of years have increased and declined erratically. Imports of honey in 1945 were higher than in any other year prior to 1972. In 1972, imports reached what was then an all-time high of 39 million pounds, but decreased to 10.7 million pounds in 1973, when U.S. production increased because of exceptionally high yields. Imports of honey increased in 1974 and 1975 and in the latter year exceeded the total amount imported in 1972. Analysis of the data developed in this investigation indicates that imports increase whenever the U.S. honey industry does not produce a sufficient quantity of honey to meet domestic requirements. In 1974 and 1975, average annual production was approximately 25 million pounds below the average production for the 10 years 1966-75, and production in 1974 was 50 million pounds below that in 1973.

This supply/demand relationship was reflected by increases in honey prices. In 1970, producers of raw honey received an average price of 14.2 cents per pound for honey in containers holding 60 pounds or more. By 1975, this price had increased to 45.7 cents per pound. Similarly, the average annual retail price of honey increased

from 32.1 to 71.0 cents per pound between 1970 and 1975 and currently remains at historically high levels.

Profits also rose during the 1970-75 period. While the profit-and-loss experience of those beekeepers with 300 or more colonies which responded to the Commission's questionnaire appears to vary with their yield per colony, the aggregate level of profits of these beekeepers in 1975 was 150 percent higher than in 1971. The ratio of net beekeeping profit before income taxes to total beekeeping income ranged from 27 percent in 1971 to a high of approximately 40 percent in 1973. That ratio was 28 percent in 1975. Net profit before income taxes per colony approximately doubled from 1971 to 1975, as did the average price per pound of honey sold. The information available to the Commission indicates that sales of honey by producer cooperative organizations more than doubled from 1971 to 1974. Those proprietary honey processors that responded to the Commission's questionnaire were, with the exception of one firm, also able to maintain profitable operations throughout the period 1971-75. Testimony indicated that the unprofitable operations of this one firm were clearly due to causes unrelated to imports.

There is no evidence of any significant idling of productive facilities in the domestic industry. On the contrary, the facts established by the Commission's investigation reveal that for the first time since the late 1940's the number of bee colonies in the United States increased in 1974 and 1975, and projections indicate a possible further increase in 1976. While domestic production of honey has declined,

it is not because of imports. The decline is attributable to declining yields because of reduced pasturage and adverse weather conditions. There have been no closings of any major honey-processing plants, and additional honey-processing capacity has been added in recent years.

Evidence obtained from responses to the Commission's questionnaires by beekeepers with more than 300 hives clearly shows that there has not been any significant unemployment or underemployment in the industry. Total manhours reported by beekeepers rose from 689,000 in 1971 to 993,000 in 1975. Man-hours of employees other than immediate family members engaged in the production and extraction of honey rose from 258,000 in 1971 to 460,000 in 1975. Responses to the Commission's questionnaires by honey processors showed that both the number of employees and the man-hours worked in honey processing in recent years have remained relatively stable.

The evidence developed in this investigation abundantly demonstrates that increased imports are not a substantial cause of serious injury to a domestic industry producing an article like or directly competitive with imported honey.

Increased imports not a substantial cause of
threat of serious injury

Having found that increased imports have not been a substantial cause of serious injury to the domestic industry, we must determine whether increased imports are a substantial cause of the threat of serious injury to the domestic industry.

In its report upon the bill which became the Trade Act, the Senate Committee on Finance stated with respect to threat of serious injury:

It is the intention of the Committee that the threat of serious injury exists when serious injury, although not yet existing, is clearly imminent if imports [sic] trends continued unabated. [Emphasis added.] 1/

The Trade Act does not define the term "serious injury"; nor does it define the term "threat" as it applies to "serious injury" but provides in section 201(b)(2)(B) the following specific guidelines to be considered by the Commission in determining threat:

. . . a decline in sales, a higher and growing inventory, and a downward trend in production, profits, wages, or employment (or increasing underemployment) in the domestic industry concerned;

During the period January-April 1976, imports of honey increased in comparison with such imports in the corresponding period in 1975. The increase in imports during the first 4 months of 1976 does not establish an imminent threat of serious injury. There have been variations in imports in prior years of equal or greater magnitude without resulting in serious injury to the domestic industry. As the report shows, the United States has long been a deficit producer of honey, and imports have been necessary to meet domestic requirements. As hereinbefore shown, average domestic production in 1974 and 1975 was approximately 25 million pounds below the average production for the past 10 years, and 1974 production was 50 million pounds below 1973 production. Although prices of honey showed some decline in the

1/ Trade Reform Act of 1974: Report of the Committee on Finance . . . , S. Rept. No. 92-1298 (93d Cong., 2d sess.), 1974, p. 121.

latter half of 1975 from their historic highs in 1974, the percentage of decline was not as great as the percentages of decline of prices of other sweetener products. Prices in February 1976, the last month for which price information is available, show that prices of domestic honey prices had turned upward and were then at a level higher than in any of the preceding 7 months. The wholesale price was higher than at any other time except 1974 and the first half of 1975. Prices of imported honey purchased by processors in 1976 had also increased by about 4 cents per pound or about 10 percent above their January level.

There is no evidence obtained in this investigation which indicates a downward trend in production, profits, wages, or employment. The information which is available indicates that the number of bee colonies in 1976 are projected to increase by about 5 percent over 1975 number. Similarly, there is no indication of a decline in sales of the available domestic product, and producers' inventories are well below their historic levels.

During the period 1965-75, annual domestic consumption of honey in the United States ranged between approximately 210 million pounds and 250 million pounds. In 8 of the 11 years of that period, domestic producers were unable to meet the requirements of domestic consumers. When domestic production declined by over 50 million pounds between 1973 and 1974, as the industry experienced a sharp drop in the yield per colony, imports increased by approximately 14 million pounds. Low yields per colony again in 1975 resulted in domestic production considerably below 1973 levels and imports again filled the gap between

domestic production and consumption. Although these imports reached a record high of 46 million pounds, the available supply resulting from domestic production and imports did not exceed the 15-year average of available supply. Prices increased sharply, employment increased, and profits rose during this period.

There is nothing to indicate that the volume of imports in 1976 together with domestic production will exceed domestic consumption requirements. There is no information available on domestic production in 1976. Total consumption has remained stable and with a stronger economy can be expected not to fall below historic levels.

There are other factors, however, which indicate that increased imports are not an "imminent" threat of serious injury to the domestic industry. The five countries that are the largest exporters of honey to the United States--Mexico, Argentina, Canada, Australia, and Brazil--account for more than 90 percent of U.S. imports of honey. Prospects are not favorable for a 1976 Mexican honey crop as large as the 1975 crop, although carryover stocks may prevent sharp declines in exports. The 1976 honey crop in Argentina is already in, and it is no larger than the 1975 crop. Indications are that the 1976 Australian honey crop will be smaller than the 1975 crop because of adverse weather. Adverse weather and fires are also expected to reduce the 1976 honey crop in Brazil. In addition, producer witnesses in this investigation specifically requested that if any import limitations were found necessary as a result of this investigation such limitations not be imposed with respect to Canada. Of the five largest exporters of honey to the U.S. market, four of them do not have, or are not expected to have,

honey crops any larger than, or as large as, the 1975 crop. Thus, it cannot reasonably be concluded that there is a threat of a substantial increase in supplies of honey from these major exporting countries hanging over the domestic market.

While the available supply of honey in the major honey exporting countries is not expected to grow, all indications are that demand in the major importing countries is likely to increase in 1976. Since 1970, West Germany and Japan have been the largest importers of honey. It was Japan's entry into the world honey market which is generally conceded to be a major factor in the sharp increase in honey prices since 1970. In both West Germany and Japan, honey production in 1975 was below 1974 levels. Both countries also sharply reduced their imports after 1973 as recessionary pressures increased. As recessionary pressures decline in these countries, it can only be expected that the demand for honey from the honey exporting nations by these countries should increase.

As previously discussed, the declining domestic production of honey is not because of imports, but rather is attributable to reduced pasturage and adverse weather conditions.

On the basis of the evidence obtained in this investigation as hereinbefore outlined, we have determined that increased imports are not a substantial cause of threat of serious injury to a domestic industry producing an article like or directly competitive with imported honey.

INFORMATION OBTAINED IN THE INVESTIGATION

Introduction

On December 29, 1975, the Mid-U.S. Honey Producers Marketing Association, the Nebraska Honey Producers Association, the Great Lakes Honey Marketing Association, the Michigan Beekeepers Association, and certain independent Kansas and Missouri beekeepers filed a petition with the U.S. International Trade Commission for import relief pursuant to section 201 of the Trade Act of 1974.

Following receipt of the petition, the U.S. International Trade Commission instituted an investigation on January 29, 1976, to determine whether honey, provided for in item 155.70 of the Tariff Schedules of the United States, is being imported into the United States in such increased quantities as to be a substantial cause of serious injury, or the threat thereof, to the domestic industry producing an article like or directly competitive with the imported article.

Notice of the institution of the investigation and of the public hearings was issued on February 2, 1976, and notice of the time and places of the hearings was issued March 3, 1976. The notices were posted at the Commission's offices in Washington, D.C., and New York City and were published in the Federal Register of February 6, 1976 (41 F.R. 5454), and March 8, 1976 (41 F.R. 9936), respectively. Hearings were held on March 2 in Orlando, Fla.; March 10 in San Francisco, Calif.; April 6 in Kansas City, Mo.; and April 8 in Washington, D.C. All interested parties were afforded an opportunity to be present, to produce evidence, and to be heard. The Trade Act of 1974 directs the Commission to complete

investigations under section 201 within 6 months--in this case by June 29, 1976.

The information for this report was obtained at the public hearings; from written briefs submitted by interested parties; through field visits and interviews by members of the Commission's staff with beekeepers, processors, importers, and customs officials; from other Federal agencies; from State agencies; and from responses to questionnaires sent to domestic producers, processors, and importers.

Overview

Honey, a sweetening agent with a distinctive flavor, is produced by bees from the nectar of flowers. Most honey in the United States goes for table use, although a small proportion is used industrially, principally by bakers.

The United States accounted for about 17 percent of the 1.1 billion pounds of known world honey production in 1975 and was the second largest producer, following the U.S.S.R., which accounted for about 24 percent of world production in 1975. Other large producers are Mexico, Australia, Argentina, Canada, and probably the People's Republic of China (for which production data are not available). U.S. production methods are probably the most technologically advanced in the world, and the quality and variety of U.S. honey are among the highest in the world.

The U.S. honey-producing industry can be divided into three groups. There are about 1,600 large commercial beekeepers with 300 or more colonies (hives) of bees; some have up to 30,000 colonies. These producers account for the bulk of the honey entering U.S. commercial markets. The second group includes some 10,000 part-time or sideliners beekeepers with 25 to 299 colonies, whose honey may enter commercial markets but which generally do not depend on honey as their sole source of income. Finally, as many as 200,000 hobbyists maintain less than 25 colonies apiece. Hobbyists usually produce honey for their own use, give it to relatives and friends, or sell it directly to consumers or to small retail outlets.

Less than half of U.S. honey production finds its way to the ultimate consumer through commercial (wholesale) channels. The remainder

of the honey is either consumed by the producer or sold directly to the consumer or to retail outlets.

* * * * * *

Since 1970, annual U.S. production levels have varied substantially. In 1971 there was a short crop of 197 million pounds, but production rose to 214 million pounds in 1972. In 1973 there was a bumper crop of 238 million pounds, followed by two short crops of 185 million and 196 million pounds in 1974 and 1975, respectively (table 1).

In the period from shortly after World War II until 1972, U.S. net imports of honey never exceeded 8 million pounds; however, in 1972, such imports jumped to 35 million pounds. In 1973 the United States was a net honey exporter of about 7 million pounds. Net imports amounted to 20 million pounds in 1974 and surged to over 42 million pounds in 1975. Despite the variability in annual imports, the trend has been for such imports to increase (fig. 1).

The price situation for honey producers during the period 1951-70 was characterized by a high degree of stability, as reflected by the values shown in table 2. Average annual unit values received by producers during the period only ranged from 16 to 19 cents per pound. After 1970, the average unit values rose strongly and steadily to a peak of 51.0 cents per pound in 1974, and the value for 1975 was nearly

Table 1.--Honey: U.S. production, imports, exports, stocks, and apparent consumption, 1945-75

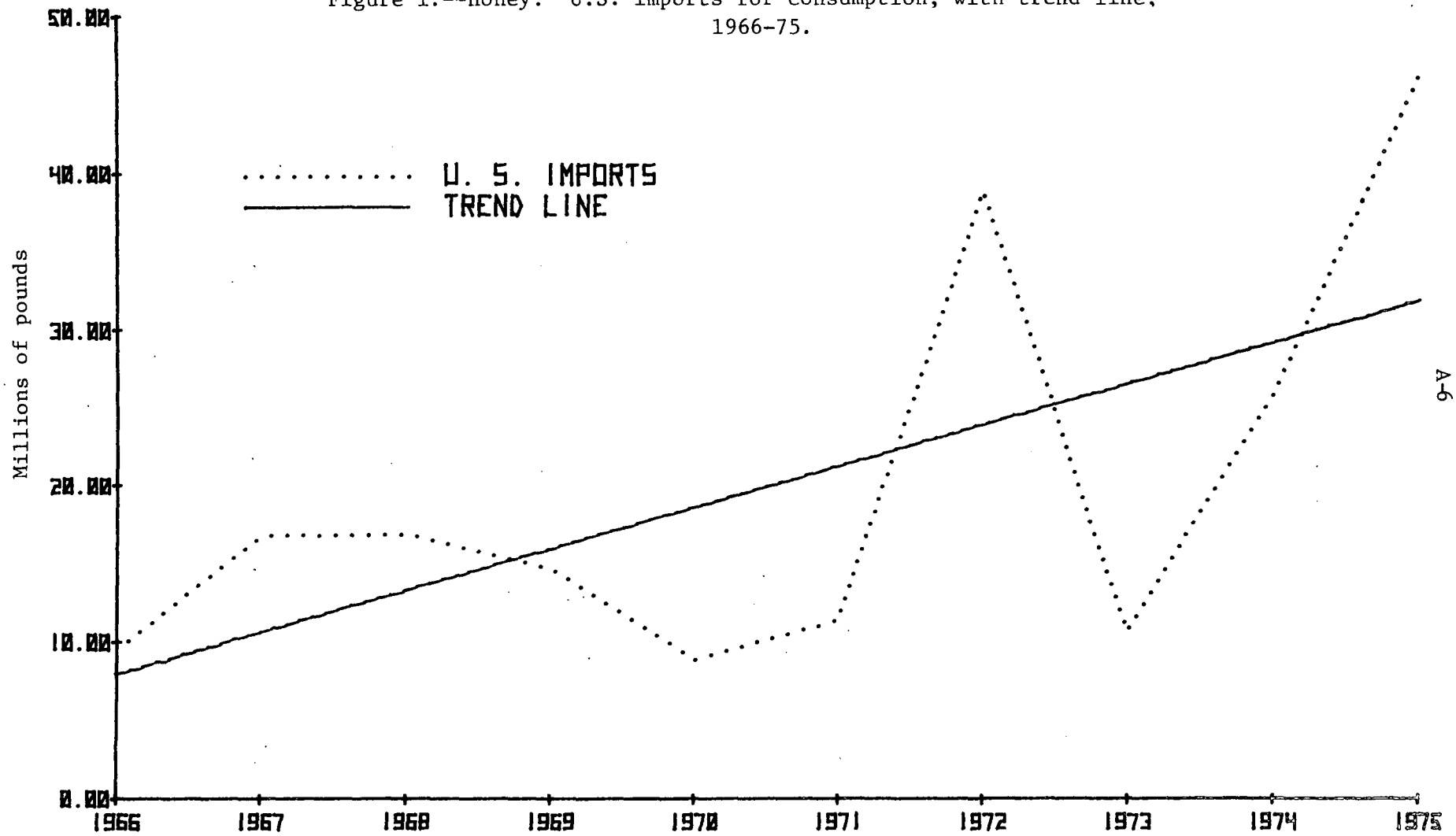
(In millions of pounds)

Year	Production ^{1/}	Imports	Exports	Producers' stocks on hand, Dec. 15	Apparent consumption
1945-----	234.6	19.5	0.2	27.1	253.0
1946-----	214.9	18.8	.2	10.8	249.9
1947-----	229.6	19.3	1.3	62.4	196.0
1948-----	267.0	8.5	11.5	70.8	195.7
1949-----	227.0	9.0	1.2	82.9	222.7
1950-----	232.7	12.0	9.4	83.1	235.1
1951-----	257.5	8.2	12.7	71.3	264.9
1952-----	272.0	8.5	23.4	77.0	251.4
1953-----	223.8	9.8	32.9	53.2	224.5
1954-----	216.4	9.2	24.3	41.0	213.5
1955-----	255.2	9.9	20.5	58.6	227.0
1956-----	214.0	4.8	18.2	49.5	209.7
1957-----	241.2	4.8	19.8	64.0	211.6
1958-----	260.5	3.9	22.4	71.1	235.0
1959-----	236.6	4.5	12.5	60.0	239.7
1960-----	242.8	12.4	9.4	52.2	253.5
1961-----	255.9	9.0	7.2	68.1	241.8
1962-----	249.6	7.1	13.6	55.9	255.3
1963-----	266.8	2.6	25.0	55.1	245.2
1964-----	251.2	4.9	8.9	65.8	236.5
1965-----	241.8	13.3	13.8	57.7	249.5
1966-----	241.6	9.5	14.4	55.3	239.0
1967-----	215.8	16.8	11.6	56.7	219.5
1968-----	191.4	16.9	8.1	41.0	215.9
1969-----	267.5	14.7	9.9	62.7	250.6
1970-----	221.8	8.9	8.2	50.6	234.7
1971-----	197.4	11.4	7.6	30.9	221.0
1972-----	214.1	39.0	4.1	29.8	250.0
1973-----	237.7	10.7	17.6	37.7	222.9
1974-----	185.1	24.6	4.6	33.7	209.1
1975-----	196.5	46.4	4.0	32.7	240.0

^{1/} Includes only shipments from Hawaii prior to April 1948 and from Puerto Rico prior to May 1951.

Source: Production and stocks compiled from official statistics of the U.S. Department of Agriculture; imports and exports compiled from official statistics of the U.S. Department of Commerce.

Figure 1.--Honey: U.S. imports for consumption, with trend line, 1966-75.



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

Table 2.--Honey: Value of U.S. production, imports, and exports, 1951-75 ^{1/}

Year	: Value : of : pro- : duction	: Value : of : imports	: Value : of : exports	: Unit : value : of pro- : duction	: Unit : value : of : imports	: Unit : value : of : exports
	: <u>Million</u> : <u>dollars</u>	: <u>Million</u> : <u>dollars</u>	: <u>Million</u> : <u>dollars</u>	: <u>Cents</u> : <u>per</u> : <u>pound</u>	: <u>Cents</u> : <u>per</u> : <u>pound</u>	: <u>Cents</u> : <u>per</u> : <u>pound</u>
1951-----	41.2	0.7	1.1	16.0	8.1	8.4
1952-----	44.1	.7	1.9	16.2	8.5	8.3
1953-----	37.0	.9	3.0	16.5	8.8	9.1
1954-----	36.7	.8	2.7	17.0	9.1	11.0
1955-----	45.4	1.0	2.7	17.8	10.5	13.1
1956-----	40.6	.6	2.7	19.0	13.0	14.5
1957-----	45.0	.6	2.8	18.7	12.6	14.0
1958-----	45.2	.4	2.9	17.4	11.1	12.9
1959-----	40.1	.4	1.7	17.0	9.6	13.3
1960-----	43.5	1.2	1.4	17.9	9.9	14.9
1961-----	46.1	1.1	1.1	18.0	11.7	15.3
1962-----	43.5	.8	1.9	17.4	11.0	14.2
1963-----	48.1	.4	4.1	18.0	15.1	16.6
1964-----	46.6	.7	1.7	18.6	13.8	19.4
1965-----	43.0	1.3	2.3	17.8	10.0	16.4
1966-----	41.9	1.1	2.4	17.4	11.2	16.4
1967-----	33.7	1.6	2.0	15.6	9.7	17.2
1968-----	32.4	1.7	1.6	16.9	10.3	19.8
1969-----	46.7	1.6	1.9	17.5	10.7	19.5
1970-----	38.6	1.1	1.8	17.4	12.5	21.7
1971-----	43.1	1.7	1.8	21.8	15.1	24.2
1972-----	64.6	8.9	1.4	30.2	22.8	34.8
1973-----	105.4	3.8	7.4	44.4	35.3	42.0
1974-----	94.4	10.6	2.5	51.0	43.1	54.4
1975-----	99.4	16.2	2.4	50.6	34.5	60.5
	:	:	:	:	:	:

^{1/} Production valued at farm; imports valued f.o.b. port of origin; and exports valued at port of export.

Source: Production compiled from official statistics of the U.S. Department of Agriculture; imports and exports compiled from official statistics of the U.S. Department of Commerce.

the same (50.6 cents). These increases in unit values raised the annual value of U.S. honey production from about \$40 million in the 1950's and 1960's to about \$100 million in the 1970's.

Description and Uses

Honey is a sweet, viscous material produced by bees from the nectar of flowers. It varies in color, flavor, and chemical composition depending primarily upon the floral source or sources. For example, honey produced from clover, cotton, or sage is light colored and mild flavored. Honey produced from buckwheat, dandelions, or most wild flowers is amber or dark colored and strong flavored.

Most honey will granulate, that is, the glucose (dextrose) content of the honey will crystallize out of solution over a period of time. Some honey, such as that produced from tupelo and sage, will not granulate owing to its high fructose (levulose) content. Honey stores well, but will darken and deteriorate in flavor if held for long periods at above-average room temperatures.

Nearly all commercial honey is extracted from the comb, although small quantities are consumed in the form of comb honey or chunk honey. There are specialty products known as granulated or creamed honeys, which are made by encouraging the development of fine crystallized dextrose in honey. There has also been some recent marketing of products consisting of honey blended with corn sirup.

Honey is graded according to color and floral source, the lighter colors usually being the most valuable. Table use accounts for most of the honey consumed in the United States. Generally light, mild honey is

preferred for table use, but there is significant table consumption of dark, strong-flavored honey, such as buckwheat honey. Most honey for industrial use in baked goods and other prepared foods is dark honey. Exotic honeys for table use, obtained from unusual domestic and foreign floral sources (e.g., sour gum, thyme, and rosemary), command premium prices.

Many regard honey as a "natural" health food. The simple sugars in honey (fructose and glucose) can be assimilated without further breakdown by the digestive system, providing a source of quick energy.

Most U.S. honey has been heat treated to retard granulation, prevent yeast fermentation, and facilitate filtering. Most foreign honey has not been heat treated because many foreign markets prefer unheated honey. The heat treatment affects the natural yeast and enzyme content of honey and, therefore, affects the flavor. However, honey that is not heat treated is more subject to fermentation or spoilage. The "natural" and "organic" food enthusiasts prefer honey that has not been heat treated.

Chemical Composition of Honey and Competitive Products

The principal components of honey are fructose, glucose, and water. It also contains small quantities of several other saccharide components, such as sucrose (sugar), mannose, and galactose, and nonsaccharide components, such as enzymes. The water content is generally around 17 percent. Honeys with high water content, such as those from tropical sources, run a high risk of fermentation if not used quickly. The glucose content

of honey ranges from 22 to 40 percent, depending on floral source. The fructose content of honey ranges from 28 to 44 percent. In general, the higher the fructose content, the sweeter and more valuable the honey.

The fructose content of honey provides its particular value for bakery uses because of its sweetness and ability to absorb moisture. Fructose and glucose are monosaccharides with the chemical formula $C_6H_{12}O_6$. Fructose is sweeter than sucrose, a disaccharide having the chemical formula $C_{12}H_{22}O_{11}$, and glucose is less sweet. Relative sweetness is a subjective phenomenon not yet subject to a quantitative measurement. In general, honey is found to be as sweet as or sweeter than sucrose in relative sweetness tests.

Sugar is usually derived from sugar cane or sugar beets. Glucose is produced by the wet corn milling industry. Fructose is not a product of commercial importance as yet, since there is no cheap natural source, and to manufacture a nearly pure fructose product requires expensive chemical processing. Until recently, the only commercial products containing fructose involved its combination with nearly equivalent quantities of glucose in liquid solution. These products were honey and invert sugar. Sugar is a product of acid hydrolysis of sucrose, which breaks up the disaccharide into its monosaccharide components, glucose and fructose, in the form of invert sugar sirup. For many years the price of invert sugar sirup acted as a floor price for industrial grade honey.

In the past 2 years, a new product of the wet corn milling industry has entered the market--high-fructose corn sirup (also known as isomerized corn sirup), which is the result of a new process. Glucose sirup results

from hydrolysis of cornstarch in the presence of certain enzymes. High-fructose corn sirup, in turn, is obtained by hydrolysis of the glucose sirup in the presence of enzymes, which results in the conversion of substantial parts of the glucose to fructose. The resulting product is as sweet as or sweeter than sugar, and it can be produced at a low cost. It is a nearly perfect substitute for honey in uses where the flavor of honey is unimportant. However, the product has its greatest potential as a substitute for sugar in many uses because of its low cost. For this reason, the U.S. capacity to produce high-fructose corn sirup is being expanded very quickly, with several new plants coming into production each year. The competition of high-fructose corn sirup with sugar for the sweeteners market is very likely to result in the near total loss of industrial markets for honey.

U.S. Producers

Beekeeping and honey production in the United States were unknown before the first European settlers arrived. The Indians referred to honeybees as "the white man's fly," and regarded their presence as indicating the coming of white settlers. 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 beekeeping became commercialized.

The number of colonies of bees operated for honey production in the United States declined from 5.9 million in 1947 to 4.1 million in 1972. Since then, colony numbers have increased slightly--reaching 4.2 million in 1975 (table 3). This increase probably largely reflects the increased honey prices of recent years. Despite the long-term

Table 3.--Honey: U.S. colonies of bees, yield per colony, and production, 1945-75

Period	Colonies of bees	Yield per colony <u>1/</u>	Production	
			Quantity	Value
	<u>Million</u> <u>colonies</u>	<u>Pounds</u>	<u>Million</u> <u>pounds</u>	<u>Million</u> <u>dollars</u>
1945-----	5.5	42.7	233.1	43.4
1946-----	5.8	36.9	213.8	52.2
1947-----	5.9	38.6	228.6	56.9
1948-----	5.7	36.0	206.2	36.9
1949-----	5.6	40.6	226.3	34.1
1950-----	5.6	41.5	232.4	35.6
1951-----	5.5	46.4	257.5	41.2
1952-----	5.5	49.5	272.0	44.1
1953-----	5.5	40.5	223.8	37.0
1954-----	5.5	39.7	216.4	36.7
1955-----	5.3	48.6	255.2	45.4
1956-----	5.2	41.2	214.0	40.6
1957-----	5.2	46.4	241.2	45.0
1958-----	5.2	50.6	260.5	45.1
1959-----	5.1	46.3	236.6	40.1
1960-----	5.0	48.5	242.8	43.5
1961-----	5.0	51.3	255.9	46.1
1962-----	4.9	50.9	249.6	43.5
1963-----	4.8	55.0	266.8	48.1
1964-----	4.8	51.9	251.2	46.6
1965-----	4.7	51.3	241.8	43.0
1966-----	4.6	52.0	241.6	41.9
1967-----	4.6	46.6	215.8	33.7
1968-----	4.5	42.2	191.4	32.4
1969-----	4.4	60.3	267.5	46.7
1970-----	4.3	51.7	221.8	38.6
1971-----	4.1	48.0	197.4	43.1
1972-----	4.1	52.6	214.0	64.6
1973-----	4.1	57.9	237.7	105.4
1974-----	4.2	44.1	185.1	94.4
1975-----	4.2	47.2	196.5	99.4

1/ Yield per colony calculated from unrounded figures.

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

decline in colony numbers, the generally increasing annual yields of honey per colony owing to technological improvements have maintained annual U.S. production at fairly stable levels.

Hobbyist and sideliner beekeepers

During 1975 there were about 200,000 active beekeeping hobbyists (with less than 25 colonies each) and about 10,000 sideliner beekeepers (25 to 299 colonies) in the United States. Sideliners and hobbyists together accounted for about half the colonies and produced about 40 percent of the honey extracted in the United States in that year. Hobbyist beekeepers, particularly those with just a few colonies, usually do not deal in commercial honey markets, since most of their production is for home use and given to friends and relatives. Most such producers do not operate primarily for profit. Their yield of honey per colony generally averages substantially less than that of commercial honey producers.

On the other hand, sideliner beekeepers are concerned with prices and costs, since they usually sell the majority of their honey, but these beekeepers generally do not depend on honey as their sole source of income. Sideliner beekeepers may be more or less efficient than commercial producers, and some sell their honey in the same commercial markets. However, it is believed that much of their honey production finds its way directly to retail markets.

Commercial beekeepers

In 1975, honey was commercially produced by approximately 1,600 professional beekeepers (with 300 or more colonies each). These commercial

beekeepers produced about 60 percent of U.S. honey extracted in that year.

Commercial production from 1971 to 1975 in the 20 major producing States by beekeepers with 300 or more colonies each is shown in table 4. In 1975, commercial beekeepers (approximately 1,300 of them) in these 20 major States accounted for 41 percent or 1.7 million of all the colonies of bees in the United States (table 5) and for 54 percent (107 million pounds) of all U.S. honey extracted. This is an increase of 2 percent in their share of colonies and an increase of 5 percent in their share of honey extracted in the United States since 1971. These commercial producers averaged 62 pounds of honey per colony in 1975. From information obtained in the investigation, it is estimated that commercial honey production in the other 30 States was less than 12 million pounds in 1975.

U.S. commercial honey production is concentrated in California, South Dakota, and Florida. Other principal producing States include Minnesota, North Dakota, Texas, Montana, and Nebraska. The percentage distribution of honey extracted by commercial beekeepers in the 20 major producing States in 1975 was as follows: California, 18 percent; South Dakota and Florida, each 10 percent; Minnesota, 8 percent; North Dakota, Texas, and Montana, each 7 percent; Nebraska, 6 percent; and all other major producing States, 27 percent.

Almost all domestic honey production occurs in April through October, when climatic conditions favor honeybee activity. However, production does occur from November through March in parts of the Southwest and Southeast.

Table 4.--Honey: U.S. commercial honey production for producers with 300 or more colonies, by States, 1971-75, and total production, by States, 1975.

(In millions of pounds)						
State	Commercial production					Total
	1971	1972	1973	1974	1975	production 1975
Arizona-----	2.5	2.2	3.6	2.5	1.8	2.3
California-----	17.2	20.9	25.0	18.5	19.5	24.5
Colorado-----	2.0	2.3	1.7	2.6	2.2	2.6
Florida-----	10.4	12.6	14.4	7.9	10.6	24.5
Georgia-----	3.7	2.6	3.4	1.8	3.2	4.3
Idaho-----	3.5	4.0	5.5	6.0	4.2	4.4
Illinois-----	1.0	.7	.7	.7	.4	1.6
Iowa-----	4.0	3.4	4.0	3.7	3.3	5.9
Michigan-----	4.3	3.4	4.6	2.7	3.1	5.2
Minnesota-----	6.6	8.9	11.5	7.9	8.9	10.9
Montana-----	4.0	7.9	7.7	6.8	7.1	7.5
Nebraska-----	5.7	8.3	8.3	10.3	6.4	6.9
New York-----	3.6	3.1	3.3	3.1	3.1	6.1
North Carolina-----	.5	.4	.4	.4	.4	3.3
North Dakota-----	4.2	8.4	6.8	6.0	7.7	8.1
Oregon-----	1.1	1.0	1.4	1.1	.9	1.7
South Dakota-----	10.3	14.3	13.8	6.9	10.7	11.2
Texas-----	3.4	7.8	5.7	6.1	7.5	12.9
Washington-----	1.8	3.3	3.6	2.6	2.8	3.4
Wisconsin-----	6.0	4.0	6.0	3.7	3.0	5.5
Other States ^{1/} -----	10.8	13.4	14.8	11.3	12.0	43.7
Total-----	106.6	132.9	146.2	112.6	118.8	196.5
	:	:	:	:	:	:

^{1/} Commercial production estimated by the U.S. International Trade Commission from data submitted by U.S. commercial beekeepers.

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

Table 5.--Honey: Commercial colonies of bees and yield per colony for U.S. producers with 300 or more colonies in 20 major producing States, by States, 1971-75

State	Commercial colonies of bees					Yield per colony				
	1971	1972	1973	1974	1975	1971	1972	1973	1974	1975
	<u>1,000</u>	<u>1,000</u>	<u>1,000</u>	<u>1,000</u>	<u>1,000</u>	:	:	:	:	:
	<u>colo-</u>	<u>colo-</u>	<u>colo-</u>	<u>colo-</u>	<u>colo-</u>	:	:	:	:	:
	<u>nies</u>	<u>nies</u>	<u>nies</u>	<u>nies</u>	<u>nies</u>	Pounds	Pounds	Pounds	Pounds	Pounds
Arizona----	41	43	47	43	40	60	52	77	57	45
California--	431	418	385	385	390	40	50	65	48	50
Colorado----	37	32	31	31	30	55	71	54	85	73
Florida----	130	130	136	136	132	80	97	106	58	80
Georgia----	67	69	70	70	72	55	38	49	25	44
Idaho-----	91	86	91	93	96	39	47	60	64	44
Illinois----	12	11	10	10	10	80	63	70	70	42
Iowa-----	42	42	36	36	37	95	80	112	103	90
Michigan----	61	61	54	58	57	70	55	85	47	55
Minnesota--	79	91	98	105	105	84	98	117	75	85
Montana----	72	72	75	77	75	55	110	102	89	95
Nebraska---	102	104	110	123	126	56	80	75	84	51
New York---	51	53	54	54	49	70	59	61	58	63
North	:	:	:	:	:	:	:	:	:	:
Carolina--	6	6	6	7	7	79	60	70	52	64
North	:	:	:	:	:	:	:	:	:	:
Dakota---	55	59	68	75	82	77	142	100	80	94
Oregon-----	28	25	25	23	21	40	41	55	48	45
South	:	:	:	:	:	:	:	:	:	:
Dakota---	106	115	125	138	150	97	124	110	50	71
Texas-----	66	81	93	100	104	52	96	61	61	72
Washington--	70	77	76	75	77	26	43	47	34	37
Wisconsin--	58	55	50	52	66	104	72	120	72	45
Total--	1,605	1,630	1,640	1,691	1,726	60	73	80	60	62
	:	:	:	:	:	:	:	:	:	:

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

Commercial producers can be divided into two groups: migratory and nonmigratory producers. Migratory producers can be further divided into two subgroups: those who move their bees many times each year and those who move their bees twice each year.

The former group of migratory beekeepers moves their bees up to 30 times a year (by several miles or several thousand miles) in order to provide pollination services and/or to maximize honey production by providing their bees with sources of nectar during more months of the year. They frequently collect fees for the pollination services of their bees.

For U.S. agriculture the value of bees as pollinators for many fruit, vegetable, nut, field, and seed crops far exceeds the \$100 million value of the honey and beeswax produced. In 1975, it is estimated that the value of crops pollinated by bees was \$8 billion.

For most beekeepers the value of honey and beeswax produced far exceeds fees received for pollination services. However, the large commercial beekeepers in the Pacific Coast States derive an average of about a third of their income from pollination services. Some beekeepers obtain significant income from providing pollination services in New England, the Middle Atlantic States, Florida, and Texas. Elsewhere the income from pollination is generally insignificant. 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 the colonies will have less honey in them after the crop is pollinated than they had before they were brought to the crop.

Migratory beekeepers who move their colonies twice a year generally make one move in the fall of the year from the colder areas of the northern United States to the Southeast or Southwest. In recent years a growing number of beekeepers have found it economically advantageous to kill a number of their colonies in the fall. The remainder are moved to southern areas, where they are overwintered and divided to make several new colonies. After a buildup of bee numbers, the new colonies are again moved north for the spring and summer flows of nectar. Some of these beekeepers may receive pollination fees incidentally with their migratory movements.

The nonmigratory honey producers as a group generally do not move their colonies over any significant distances, if at all. The colonies are normally overwintered where they were located during the summer. Overwintering often requires supplemental feeding of honey and pollen substitutes. Sugar is generally used as the honey substitute. Some northern U.S. producers and many Canadian producers kill their bees in the fall, extract all the honey produced, and start over again with purchased package bees the following spring.

Queen and package bee producers

Queen and package bee producers provide an important service to the beekeeping industry even though they generally produce an insignificant quantity of honey. In many cases, these producers must use supplemental honey and pollen substitutes in order to maintain their colonies. The industry producing queens and package bees in the United States today is a multimillion-dollar business producing hundreds of thousands of

queens and hundreds of tons of bees for beekeepers in the United States and Canada. Each year these producers supply the stock for replacing many of the colonies killed in the fall in northern areas, for strengthening weak overwintered colonies, and for new colonies. U.S. Department of Agriculture statistics on honey production include the colonies of queen and package bee producers despite their negligible honey production. This, in part, accounts for some of the low yields per colony reported in many southern States.

Most of the commercial producers of queens and package bees are located in the South and in California, where the mild winters and early springs are ideal for economical production. The majority of package bees and queens are shipped in March, April, and May. Prices of queens and package bees appear to be closely correlated to honey prices.

Processors and Importers

There are many firms which process honey in the United States, but the 15 largest firms account for 80 to 95 percent of the honey moving into U.S. wholesale and industrial outlets. * * *. The remainder of the honey that was processed in the United States and sold through wholesale and industrial outlets was handled by fewer than 50 firms. In addition,

there are unknown numbers of firms processing honey, mostly their own production, which never enters the wholesale or industrial market, but is sold by roadside stands, through direct sales to retail outlets, and by backdoor sales.

Rarely does a processor handle anything except honey. The processing can easily be spread out over the year owing to the storability of honey, thus allowing for year-round utilization of the processing plant. All of the large processing concerns purchase the majority of the honey they pack from domestic and/or foreign sources. On the other hand, the majority of the small processors depend on their own production of honey for supplies and purchase honey only when they cannot produce enough to fully utilize their facilities.

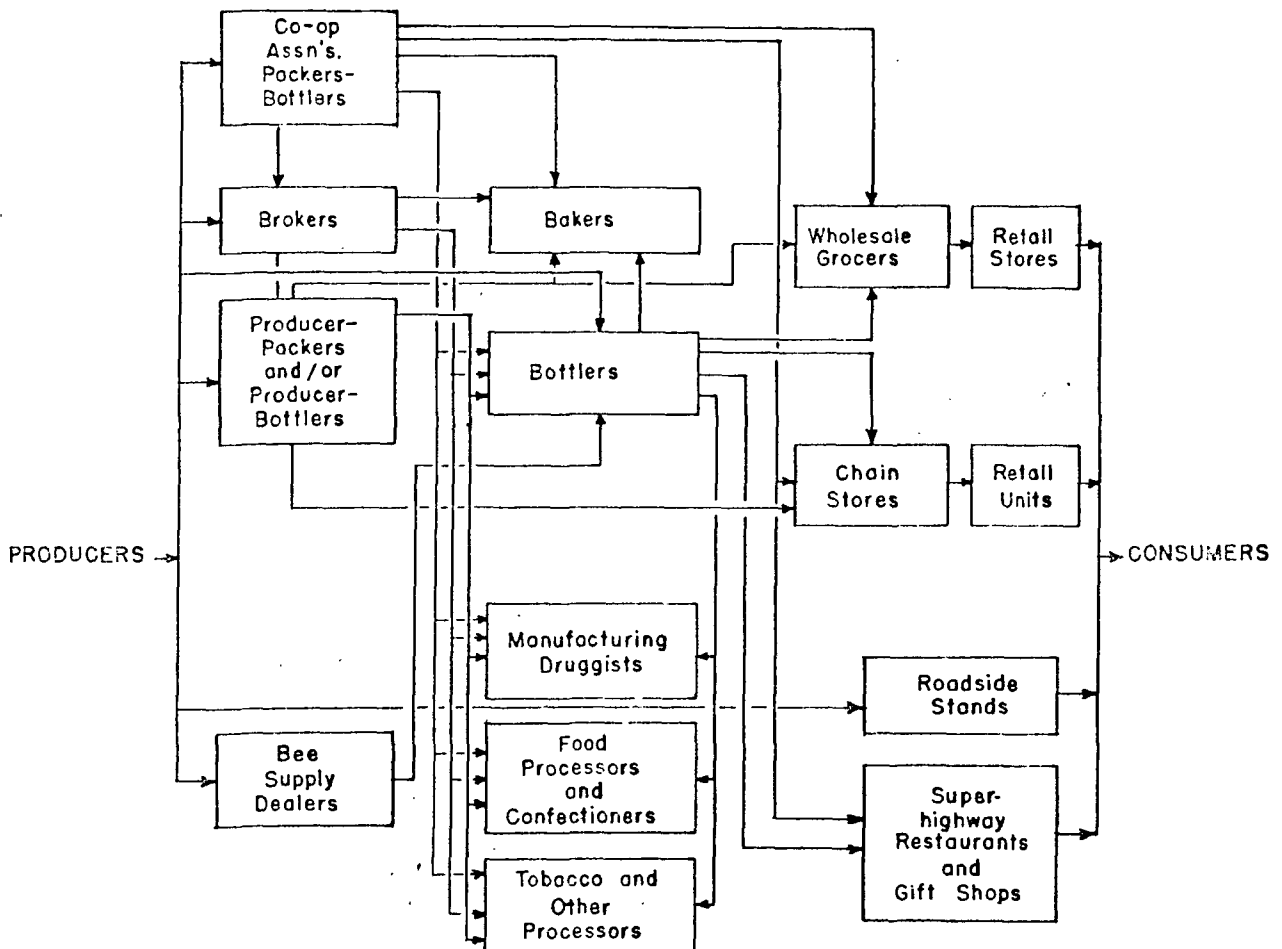
U.S. importers of honey consist mainly of processors, particularly the large ones, and firms that import for them. In 1975, 12 U.S. concerns imported large or fairly large quantities of honey; an unknown number of smaller concerns also imported honey. Data collected by the Commission indicated that the 12 concerns imported 45.9 million pounds of honey in 1975. * * *. The majority of the honey imported by these firms was in bulk. Little, if any, of this honey entered the domestic market without being blended with other honey or being processed to remove wax, pollen, and/or other foreign materials. The small quantities of honey that are imported for direct retail sale in consumer-size containers are generally exotic types commanding premium prices.

Channels of Distribution

Producers

The U.S. producer of honey has a choice of methods in disposing of his honey crop. He may sell his entire crop in bulk containers to a packer or dealer or he may pack a part or all of his crop in smaller containers and sell it directly to retail stores, to the consumer, or to both (fig. 2). The producer who markets his honey in bulk generally will ship it in 60-pound cans or 55-gallon drums. A limited quantity may be shipped to processors in tank trailers.

Figure 2.--Principal distribution channels for marketing domestic honey in the United States.



Source: Motts, G. N., Marketing handbook for Michigan honey, Michigan Agriculture Experiment Station Spec. Bulletin 433, 1961.

Processors

Processed honey is generally marketed by three types of suppliers: Producer-packers, cooperative marketing organizations, and bottlers.

Producer-packers.--Producer-packers are those honey producers who bottle and sell part or all of their honey crop. An estimated 40 percent of the honey produced in the United States is marketed this way. Honey producer-packers have generally confined their sales to salesrooms in their homes or honey houses, roadside stands, door-to-door sales, or local stores. However, some have established regular sales routes to supply retailers over a wide area, and they service these routes at regular intervals. Others have employed brokers to move their honey into retail chains. Some producer-packers may also buy small lots of honey from other producers.

Cooperative marketing organizations.--Cooperative marketing organizations receive the member producer's crop and process, pack, and distribute it under the cooperative label, or they may pool and market the members' production in bulk containers. Some of these cooperatives buy honey from nonmembers and importers if supplies from members are not adequate.

Bottlers.--The bottlers are generally large, well-organized firms. They have automatic labeling, filling, and capping equipment. Their honey is distributed and sold under their advertised brand or brands, usually in a limited area. These processors may also provide private-label packing for retail chains. They may buy honey from various parts of the country or they may buy imported honey. Honey from various

sources may be blended in the final product to keep the brands as uniform as possible in color and flavor.

A typical processing plant will consist of storage areas for the unprocessed and processed honey and a complex for processing the honey. The unprocessed honey is generally stored in 60-pound cans or 55-gallon drums in a well-ventilated building to prevent the honey from deteriorating from high temperatures.

The first stage of a typical processing operation contains an oven or heat exchanger in which the cans and drums are turned upside down on a rack of hollow tubing in which hot water circulates at controlled temperatures. The hot water warms the honey, which is generally granulated, allowing it to flow from the containers into a collecting tank, where it is cooled. From the collecting tank the honey is pumped through some type of filtering system to remove any wax, pollen, or bee fragments that may have been picked up while the honey was being extracted from the comb by the producer. The honey is then pumped to a bottling machine that draws honey from several collecting tanks in order to obtain a uniform product. The bottling machine is fully automatic and can fill various-sized retail containers. The retail containers are then packed in cartons which are placed on pallets and stored under controlled temperature to prevent deterioration from heat and to prevent granulation.

Industrial users

Industrial users generally use honey that does not measure up to table quality in color or flavor, although some demand table qualities and grades. Most of this honey is purchased, in bulk, from processors,

although some is purchased directly from producers and importers. The principal industrial users are in the baking industry, the restaurant trade, the pharmaceutical industry, confectioners and other processors of sweetened products, and tobacco companies.

Information obtained in the investigation indicates that the U.S. market for industrial honey has been shrinking. In 1975, total industrial consumption was less than 10 million pounds, the bulk of which went to the baking and dairy product industries. Less than 2 million pounds of honey went for tobacco use, and substantially less went for cosmetic and pharmaceutical uses. One firm, National Biscuit Co., utilized about 4 million pounds of this industrial honey. 1/

U.S. Tariff Treatment

Imported honey is classified for tariff purposes under item 155.70 of the Tariff Schedules of the United States (TSUS). The column 1 rate of duty currently applicable to such imported honey is 1 cent per pound, and the column 2 rate is 3 cents per pound. The column 1 rate reflects a concession granted by the United States in the General Agreement on Tariffs and Trade effective January 1, 1948. That rate is applicable to honey from all countries except designated nonmarket-economy countries, imports from which are subject to the column 2 rate. The ad valorem equivalent of the column 1 rate of duty in 1968 was 9.7 percent; in 1975 it was 2.9 percent.

TSUS item 155.70 applies only to pure honey. Honey mixed with flavorings, milk products, and so forth is classified as an edible preparation

1/Transcript of Washington, D.C., hearing, Apr. 9, 1976, p. 458.

in TSUS item 182.98 and is dutiable at 10 percent ad valorem. There are no known imports of these items.

Artificial honey and honey blended with corn sirup or sugar sirups are classified in TSUS item 155.75 as sirups, flavored or unflavored, consisting of blends of any of the products described in subpart 10A of schedule 1 of the TSUS. Such products are subject to a duty of 15 percent ad valorem, except those from designated beneficiary countries which are eligible for duty-free treatment under the Generalized System of Preferences. As far as it is known, imports of such blends have been negligible.

Government Programs and Regulations Affecting the U.S. Honey Industry

Price supports

The price-support program for honey was established by legislation in 1949 and put into effect in 1950 because of depressed honey prices resulting from overcapacity developed after World War II and in view of congressional recognition of the importance of a healthy beekeeping industry. After 1951, the program evolved into two parts--a loan program and a purchase program.

From 1952 through 1974, the beekeeper obtained price support (at not less than 60 percent and not more than 90 percent of parity 1/) by taking out a loan on his honey or selling honey to the Commodity Credit Corporation (CCC) of the U.S. Department of Agriculture (USDA) at the support price.

1/ Parity price is calculated by the Statistical Reporting Service of the U.S. Department of Agriculture as the price for a commodity which will pay for the same amount of goods, taxes, labor, and so forth as that commodity paid for in the 1910-14 base period.

Under the loan program, a producer took out a loan using honey as collateral. ^{1/} The honey was valued at an established fraction of the parity price. If the producer found a buyer for his honey, he could take the honey back, sell it, and pay off the loan. If he could not find a buyer, the ownership of the honey was transferred to the CCC. Under the purchase program, sales were made to the CCC under contract. In either case, the CCC disposed of the honey primarily by distributing it in school lunch programs.

Table 6 shows that for much of the program's history it was centered around loan activity rather than purchases by the CCC. The price of honey was usually above the price-support level, thus deliveries to the Government were discouraged. In fact, the purchase program was used on a large scale only in 1958 and 1961 and from 1964 through 1969. The relationship of support prices to the parity price for honey is shown in figure 3. The support price has never exceeded 75 percent of parity, and in recent years it has been in the vicinity of the minimum 60 percent. Market prices generally remained well below parity prices until 1972, when they rose suddenly and exceeded parity prices.

In November 1974 the loan program was deactivated for the 1975 crop year; it has not been reactivated. Although the purchase program remains in effect, no purchases have been made, and none are expected by the USDA.

^{1/} The loan was a nonrecourse loan, that is, the CCC was required to take the honey if the producer elected to deliver it to the Government rather than repaying the loan.

Table 6.--Honey: U.S. price-support program, selected statistics, 1950-76

Year	Parity price <u>1/</u>	Support price <u>2/</u>	Support price as a percent of parity	Market price as a percent of parity	Quantity placed under loan <u>3/</u>	Quantity acquired
	Cents per pound	Cents per pound			Million pounds	Million pounds
1950-----	<u>4/</u>	9.0	<u>4/</u>	<u>4/</u>	<u>5/</u>	7.4
1951-----	16.7	10.0	60.0	61.7	<u>5/</u>	17.8
1952-----	16.3	11.4	70.0	69.5	14.3	7.0
1953-----	15.0	10.5	70.0	77.2	4.1	.5
1954-----	17.0	10.2	60.0	80.3	2.2	0
1955-----	13.2	9.9	75.0	90.2	2.0	0
1956-----	13.9	9.7	70.0	97.1	1.8	0
1957-----	13.9	9.7	70.0	95.7	4.1	.1
1958-----	13.7	9.6	70.0	86.3	17.5	.2
1959-----	13.8	8.3	60.0	88.4	1.4	0
1960-----	14.3	8.6	60.0	89.6	1.1	0
1961-----	14.9	11.2	75.0	88.6	10.8	1.1
1962-----	15.1	11.2	74.0	80.5	3.7	0
1963-----	16.7	11.2	67.0	85.0	3.2	0
1964-----	17.2	11.2	65.0	80.2	9.6	2.2
1965-----	17.8	11.2	63.0	73.7	17.3	3.3
1966-----	18.6	11.4	61.3	70.4	33.9	4.1
1967-----	19.5	12.5	64.0	66.7	31.0	5.4
1968-----	18.7	12.5	66.8	68.6	24.9	.1
1969-----	19.5	13.0	66.7	68.7	45.7	3.5
1970-----	20.4	13.0	63.7	69.6	40.6	<u>6/</u>
1971-----	21.0	14.0	66.7	85.7	22.9	0
1972-----	22.3	14.0	62.8	121.1	19.8	0
1973-----	26.7	16.1	60.2	158.1	12.1	0
1974-----	34.3	20.6	60.0	139.1	12.5	0
1975-----	42.4	25.5	60.1	107.8	0	0
1976-----	49.0	29.4	60.0	<u>4/</u>	<u>4/</u>	<u>4/</u>

1/ As announced.

2/ National average support rate.

3/ Includes purchase agreements prior to 1963.

4/ Not available.

5/ Direct packer purchase program.

6/ Less than 50,000 pounds.

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

CENTS
PER POUND

50.00

45.00

40.00

35.00

30.00

25.00

20.00

15.00

10.00

5.00

0.00

Figure 3.--Honey: Parity price, support price, and market price in the United States,
1950-76.

PARITY PRICE

SUPPORT PRICE

MARKET PRICE

1950

1955

1960

1965

1970

1975

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

Beekeeper indemnity payment program

The second major Government program available to beekeepers is the beekeeper indemnity payment program. The Agricultural Act of 1970 (Public Law 91-524) authorized the Secretary of Agriculture to make indemnity payments to beekeepers that, through no fault of their own, have suffered honeybee losses as a result of the utilization of pesticides near or adjacent to the property on which their beehives are located. Large-scale killing of bees and other pollinators has resulted from the widespread application of insecticides for the control of destructive insects. The program was made retroactive to cover losses back to 1967. The authority was extended by the Agricultural Consumer Protection Act of 1973 (Public Law 93-86). The current authorization expires on December 31, 1977.

During the period January 1, 1967, through September 25, 1975, a total of 2,308 individual payees received payments under the program in 1 or more years. Nearly half the payees received less than \$500 in total payments, but 67 payees each received \$50,000 or more in total payments. Total annual payments under the program fluctuated erratically, as the following tabulation shows (in millions of dollars, based on data available March 31, 1976):

1967-----	1.8	1972-----	2.2
1968-----	1.6	1973-----	1.6
1969-----	1.7	1974-----	2.9
1970-----	1.6	1975-----	3.0-3.5 (estimated)
1971-----	3.2	1976-----	3.0-3.5 (forecast)

Although the program covers all beekeepers that register their colonies, and payments have been made for losses as small as two colonies,

not all beekeepers have registered. The program has been used most extensively in the Western States (primarily Washington, California, and Arizona), though pesticide losses are thought to be fairly evenly spread throughout the nation in areas where crops require pollination.

Grades and standards

The USDA and the Food and Drug Administration (FDA) have both established grades and standards for honey. The FDA standards (issued in November 1936) are only informal advisory definitions and standards for honey issued under the Federal Food and Drugs Act of 1906. However, in accordance with the FDA's authority to enforce the Federal Food, Drug, and Cosmetic Act of 1938, a honey product which does not conform with the FDA informal definition would be subject to legal action by that agency. 1/

The following definition is the FDA identity standard for honey marketed in the United States:

Honey. The nectar and saccharine exudations of plants gathered, modified, and stored in the comb by honeybees (Apis mellifica and A. dorsata). Honey is levorotatory, and contains not more than 25% of water, not more than 0.25% of ash, and not more than 8% of sucrose.

1/ From Jan. 1, 1975, to date, the FDA has made three seizures of honey. On Mar. 5, 1975, 742 drums of honey were seized at South Gate, Calif., on the basis of a charge of economic adulteration with invert sugar. On Oct. 9, 1975, 20 drums of honey were seized at Onsted, Mich., on the basis of economic adulteration. About the end of January 1976, four 5-gallon cans of honey were seized at Oroville, Calif., because the honey had been held under unsanitary conditions and contained ants. All three of these seizures concerned imported honey, and the seizure in 1976 was of honey adulterated after it had been imported into the United States.

Between Jan. 1, 1975, and Mar. 23, 1976, FDA made a total of 50 detentions of honey. Of these 50 detentions, 33 were based on filth, 11 were based on misbranding, 5 were based on economic adulteration, and 1 was based on adulteration with carbon tetrachloride.

There are also standards for comb honey, extracted honey, and strained honey.

The USDA grades for honey are based on flavor, color or clarity, moisture content, and freedom from defects. Most honey on the market is a blend of floral types. To be labeled as one floral type, such as clover, a package of honey must contain at least 51 percent of that floral type. Appendix A contains a copy of the United States Standards for Grades of Extracted Honey.

The Question of Increased Imports

Honey imported into the United States comes in a variety of types, qualities, and containers. Before 1972, most U.S. honey imports 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 lighter, table grades. A small portion of U.S. imports have always consisted of exotic honey from rare floral sources for retail sale at premium prices. While honey production is seasonal and many of the sources of U.S. imports have different seasons than U.S. producers, there is apparently little seasonality to imports since honey, under proper conditions, can be stored for many months.

The United States imports and exports honey and has been both a net exporter and a net importer (figs. 4, 5, and 6). Annual U.S. honey imports have varied considerably in recent years. In 1971 they amounted to 11 million pounds, surged to 39 million pounds in 1972, but then fell sharply to 11 million pounds in 1973, when the United States was a net exporter of honey. In 1974, imports rose to 25 million pounds, and in 1975 they totaled a record 46 million pounds (table 7).

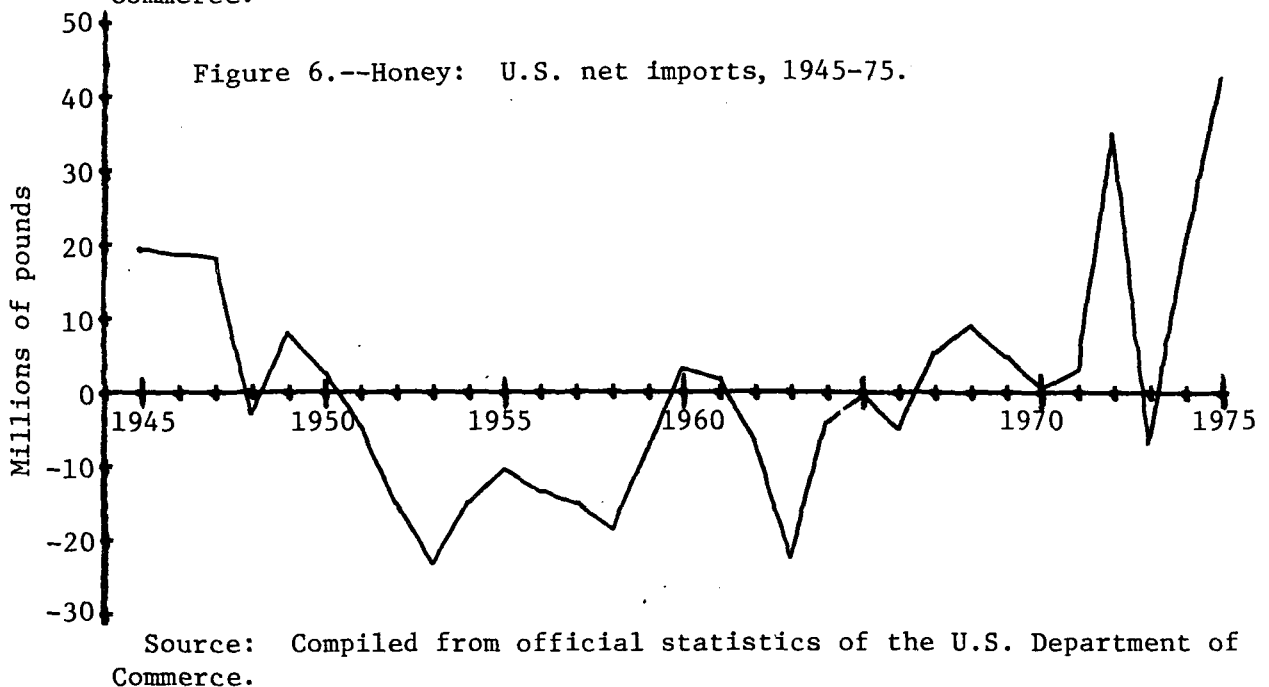
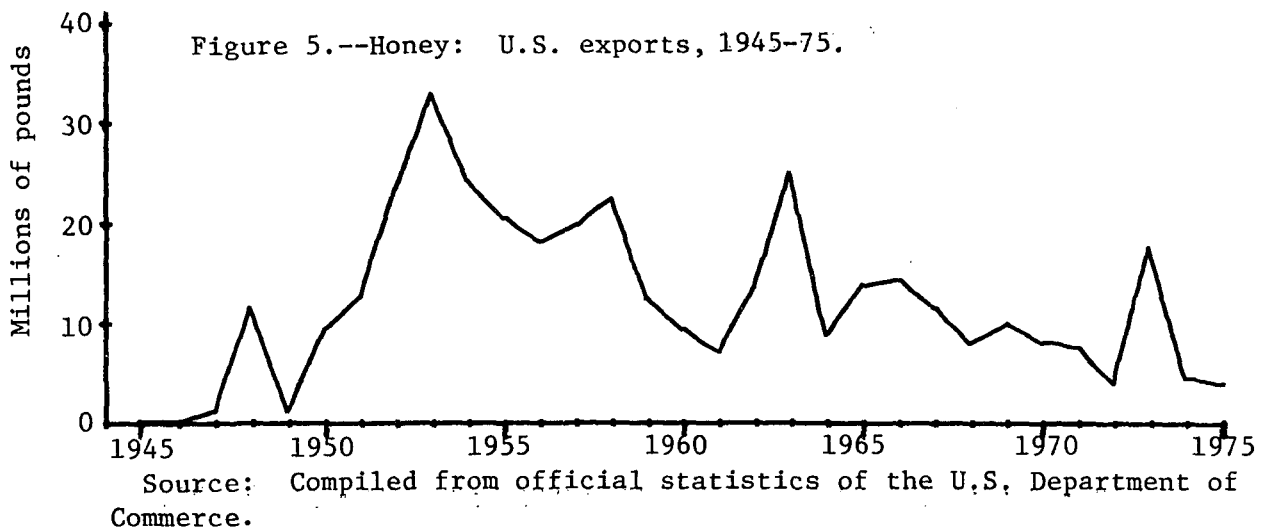
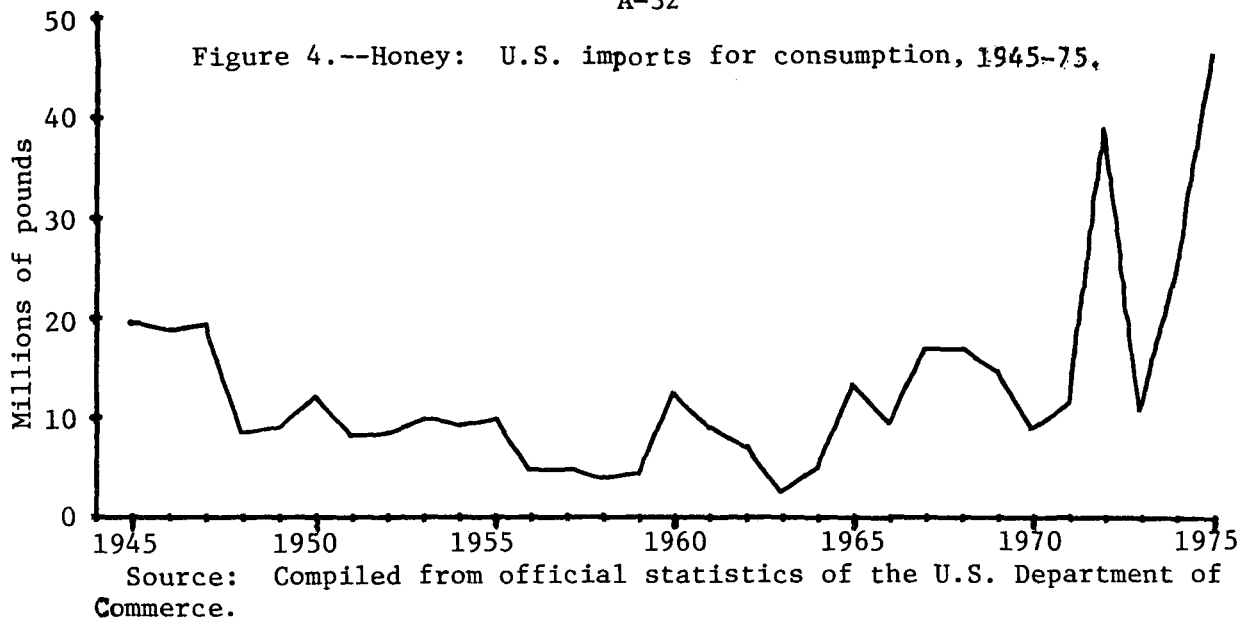


Table 7.--Honey: U.S. imports for consumption, by sources, 1971-75, January-April 1975, and January-April 1976

Source	1971	1972	1973	1974	1975	January-April 1975	January-April 1976
Quantity (1,000 pounds)							
Mexico-----	3,326	20,682	4,454	8,768	13,494	5,113	5,280
Argentina-----	909	7,690	70	5,738	12,442	4,936	8,663
Canada-----	6,204	5,076	2,249	3,112	7,264	2,125	1,822
Australia-----	12	1,267	154	368	5,055	3,653	1,593
Brazil-----	0	165	785	3,021	3,966	588	732
All other-----	995	4,245	2,946	3,619	4,159	890	2,115
Total-----	11,446	38,960	10,658	24,626	46,380	17,305	20,205
Value (1,000 dollars) <u>1/</u>							
Mexico-----	392	3,974	1,400	3,424	4,725	1,765	1,571
Argentina-----	191	2,065	33	2,360	4,372	1,848	2,677
Canada-----	863	1,388	890	1,468	2,964	897	715
Australia-----	3	331	51	147	1,677	1,210	397
Brazil-----	0	39	293	1,169	1,024	172	189
All other-----	283	1,103	1,098	1,986	1,416	357	607
Total-----	1,732	8,900	3,765	10,554	16,178	6,249	6,156
Unit value (cents per pound) <u>1/</u>							
Mexico-----	11.80	19.22	31.43	39.05	35.02	34.52	29.75
Argentina-----	20.98	26.85	47.41	41.13	35.14	37.44	30.90
Canada-----	13.91	27.33	39.56	47.16	40.80	42.21	39.24
Australia-----	28.85	26.09	33.38	39.99	33.18	33.12	24.92
Brazil-----	-	23.34	37.35	38.69	25.81	29.25	25.82
All other-----	28.44	25.98	37.27	54.88	34.05	40.11	28.70
Total-----	15.13	22.84	35.33	42.85	34.49	36.11	30.47

1/ Value and unit value are f.o.b., port of origin.

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

Imports for the first 4 months of 1976 totalled 20 million pounds, as compared with 17 million pounds for the first 4 months of 1975. Inasmuch as honey imports generally exhibit little seasonality, imports in 1976 may amount to around 60 million pounds.

Leading suppliers of U.S. imports

In 1975 the leading suppliers of U.S. imports of honey were Mexico, Argentina, Canada, Australia, and Brazil. Although 29 other countries exported honey to the United States in 1975, the principal suppliers shipped 42 million pounds of the 46 million pounds imported from all sources, or 91 percent.

Mexico.--Mexico produced a record 88 million pounds of honey in 1975, compared with 84 million pounds in 1974. The increased production, which was harvested from about 2 million colonies, was attributable to generally favorable weather conditions.

Mexican honey producers are given advance payments by the Mexican Government to stimulate honey production and encourage modernization of production methods. In 1975, producers in areas other than the Yucatan Peninsula received advance payments of 25.4 to 27.2 cents per pound, while producers on the Yucatan Peninsula (the source of darker wild-flower honey) received 21.8 cents per pound. Mexican production methods are reportedly not as technologically advanced as U.S. beekeeping.

Mexican honey exports in 1974 amounted to 49 million pounds, and those in 1975 were estimated at 55 million pounds. Principal export markets for Mexico have been West Germany and other Western European countries, the United States, and Japan. Mexico accounted for 13.5 million pounds, or 29 percent of U.S. imports in 1975; these imports included significant quantities of light, table-grade honey in addition to the usual shipments of darker grades.

The 1976 Mexican honey crop will probably not be as large as last year, but large inventories carried over from 1975 are expected to moderate any effect from the lower production. Most of the honey in inventory is probably not up to the standards of the West German honey market and will have to find other markets.

Argentina.--Argentina produced 52 million pounds of honey in 1975, compared with nearly 60 million pounds in 1974. In 1975, colony numbers were down 10 percent from what they were in 1974, and weather conditions were only fair, but the quality of the honey produced was considered very good, practically all in the light amber category.

Argentina's honey exports declined from 40 million pounds in 1973 to 32 million pounds in 1974, but are estimated to have increased to 42 million pounds in 1975. The increase was probably due to the reduction of the export tax from 45 to 10 percent. Argentina's principal export markets were West Germany, Japan, the United States, and the United Kingdom.

U.S. imports from Argentina have largely been light amber table-grade honey. The amount imported has varied widely: 0.9 million pounds in 1971, 7.7 million pounds in 1972, 0.1 million pounds in 1973, 5.7 million pounds in 1974, and 12.4 million pounds in 1975. The 1975 imports accounted for about 27 percent of U.S. honey imports in that year. Because of the quality of imports from Argentina, they usually have higher unit values than most U.S. honey imports.

Canada.--Canadian honey production in 1975 was estimated at 50 million pounds, up from 46 million pounds in 1974. Increased colony numbers and higher yields in 1975 were responsible for the increased production.

Canada is usually not a large exporter of honey, and most of its exports go to the United States. Canadian honey accounted for 7.3 million pounds, or 16 percent of U.S. imports in 1975. Canada exports honey to the United States in both large bulk containers and small retail containers. The Canadian honey industry is somewhat interconnected with the U.S. industry, inasmuch as Canadian beekeepers buy most of their bees from U.S. package bee producers, Canadian beekeeping methods are similar to U.S. methods, and prices and markets in both countries tend to move together to some extent. Canada and the United States also have similar honey tariffs.

Australia.--Australia's output of honey in 1975 (crop year beginning July 1 of the previous year) increased by nearly one-third, to approximately 60 million pounds, over the 1974 crop year output of 47 million pounds. This was due largely to favorable weather conditions.

Australian exports (on a crop-year basis) amounted to 19 million pounds in 1972, 18 million pounds in 1973, 10 million pounds in 1974, and 22 million pounds in 1975. Australia's principal markets have been shifting because of reduced consumption in Japan and the loss of highly favorable duty terms in the United Kingdom upon that country's entry into the European Community. Australia now sends a large part of its exports to the United States. In 1975, U.S. imports of Australian honey amounted to 5.1 million pounds, up from 0.4 million pounds in 1974, and they accounted for about 11 percent of U.S. imports. Indications are that the 1976 Australian honey crop will be smaller than in 1975 because of adverse weather conditions.

Brazil.--Brazil's annual production declined from 17.6 million pounds in 1971 to 9.9 million pounds in 1974. The decline was partially due to the introduction into Brazil of an aggressive strain of African honeybees, which have made beekeeping unpopular with some groups as the strain has spread through Brazil. 1/ The present Brazilian honey crop is expected to be only fair because of adverse weather conditions and fires, which have destroyed key nectar and pollen sources. Brazilian beekeeping methods are generally not technologically advanced, and some of Brazil's honey production is still gathered from wild bees.

Despite production declines, Brazilian honey exports, which were nonexistent in 1971, amounted to 4.9 million pounds in 1973, declined to 1.9 million in 1974, and rose strongly in 1975. Virtually all Brazil's increased exports went to the United States. U.S. imports of Brazilian honey increased from 0.2 million pounds in 1972 to 3.0 million pounds in 1974 and 4.0 million pounds in 1975. The discrepancy between Brazilian export and U.S. import statistics is believed to be due to the time lag between export and liquidation.

1/ A discussion of the problem of the African honeybee in Brazil can be found in app. B.

Ratio of imports to domestic production

The ratio of imports to domestic production increased irregularly from 5.8 percent in 1971 to 23.6 percent in 1975. Although annual domestic production fluctuated considerably during 1971-75, ranging from about 185 million to 238 million pounds, it was relatively stable compared with import levels, which ranged from 11 million to 46 million pounds in the same period; hence, the ratio is very closely correlated with import levels (table 8).

Ratio of imports to apparent consumption

The ratio of imports to apparent U.S. consumption, shown in table 8, also increased irregularly, from 4.9 percent in 1971 to 20.1 percent in 1975. The ratio of imports to apparent consumption is somewhat more stable than that of imports to production because of the mitigating effect of changes in stocks and exports on fluctuating annual U.S. production levels.

World honey production

Honey is an internationally marketed commodity, produced and consumed worldwide. Approximately 25 percent of world production enters world trade; the bulk of world honey production is consumed locally.

Leading honey-producing countries are the U.S.S.R., the United States, and the People's Republic of China. These countries consume most of their own production, although the People's Republic of China is also a significant honey exporter. The relevant data are unavailable, but the production of honey in the People's Republic of China is

known to be large. Statistics on reported world production are shown below in table 9.

Table 8.--Honey: U.S. production, imports, exports, ending stocks, and apparent consumption, 1971-75

Year	Production	Imports	Exports	Ending stocks	Apparent consumption	Ratio of imports to production	Ratio of imports to apparent consumption
	Million pounds	Million pounds	Million pounds	Million pounds	Million pounds	Percent	Percent
1971---	197.4	11.4	7.6	52.9	231.7	5.8	4.9
1972---	214.1	39.0	4.1	61.7	240.1	18.2	16.2
1973---	237.7	10.7	17.6	73.4	219.1	4.5	4.9
1974---	185.1	24.6	4.6	67.5	211.0	13.3	11.7
1975---	196.5	46.4	4.0	75.4	231.0	23.6	20.1

Source: Production compiled from official statistics of the U.S. Department of Agriculture; imports and exports compiled from official statistics of the U.S. Department of Commerce; ending stocks compiled by the U.S. International Trade Commission from data submitted by processors and importers and from official statistics of the U.S. Department of Agriculture.

Table 9.--Honey: Production in selected major producing countries, and total reported world production, 1971-75

(In millions of pounds)						
Country	1971	1972	1973	1974	1975	1/
U.S.S.R-----	237.0	240.0	275.0	260.0		260.0
United States-----	197.4	214.0	237.7	185.3		187.0
Mexico-----	55.1	84.0	72.8	84.0		88.0
Australia-----	42.2	44.6	39.9	46.7		62.0
Argentina-----	38.8	49.6	46.3	59.5		52.0
Canada-----	52.0	50.6	54.6	45.6		50.0
West Germany-----	33.1	26.4	22.1	33.1		24.0
France-----	26.5	22.0	23.0	21.4		20.0
Japan-----	17.0	13.2	16.6	16.8		16.0
Italy-----	14.6	13.4	14.3	13.2		14.0
United Kingdom-----	7.6	8.4	7.7	8.3		8.0
Other-----	309.1	311.9	306.5	306.2		317.0
World total-----	1,030.4	1,078.1	1,116.5	1,080.1		1,098.0

1/ Data are estimated.

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

Total world production has increased since 1971, but not in any consistent pattern. Because world production fluctuates significantly from year to year, inventories of honey carried over between years are very important to world honey markets; however, no data on such inventories are available.

World honey importers

Principal importers of honey besides the United States include West Germany, Japan, and the United Kingdom. Most Western European countries import honey, but West Germany accounts for over half of European imports. Statistics on imports by leading importing countries are shown below in table 10.

Table 10.--Honey: Imports by principal honey-importing countries from all sources, 1971-75

(In millions of pounds)						
Country	1971	1972	1973	1974	1975	
West Germany-----	103.1	98.8	101.8	93.1	111.9	
Japan-----	36.1	52.0	56.6	32.9	39.9	
United States-----	11.4	39.0	10.6	24.6	46.4	
United Kingdom-----	44.5	36.3	38.6	22.6	38.5	
Switzerland-----	7.7	8.3	10.8	11.3	<u>1/</u>	
Austria-----	6.1	8.2	6.8	7.8	<u>1/</u>	
France-----	11.4	9.8	12.8	7.2	<u>1/</u>	
Netherlands-----	6.5	6.9	6.0	7.1	<u>1/</u>	

1/ Not available.

Source: Compiled from statistics of the U.S. Department of Agriculture.

West Germany.--West Germany's honey imports declined in 1974, but increased in 1975 because of low inventories and decreased production in that country. Owing to the rapid increase in honey prices in recent

years, the West German market for honey has shown some sign of price shock, that is, sharp reduction in demand when prices increase and a gradual return to normal consumption as consumers adjust to the higher price. West Germany has high standards for honey imports, leading to rejection of many shipments. This makes the West German market a difficult one to supply, and countries with large production or inventories of honey not up to these standards may divert honey to other markets such as the United States, which has relatively easy standards to meet. U.S. table-grade honey is of high quality, however, and West Germany has traditionally been the major market for U.S. honey exports.

Japan.--Japan's honey imports declined in 1974, largely because of reduced consumption in response to inflation and economic recession. However, Japan's entry into the world honey market in the early 1970's is often cited as a cause for the sudden escalation of world honey prices.

United Kingdom.--The total amount of honey entering the United Kingdom declined in 1972 and 1974. To some extent this is attributable to tariff adjustments resulting from the United Kingdom's entry into the European Community. Tariffs in the United Kingdom, particularly those for formerly favored suppliers, are being adjusted sharply upward to the rate of duty (27 percent ad valorem) imposed on honey by the European Community's common external tariff.

World honey exporters

Leading world honey exporters are Mexico, Argentina, the People's Republic of China, and the U.S.S.R. Mexico and Argentina generally

export about 80 percent of their honey crops, but in 1974 both countries exported less than 60 percent. Statistics on world honey exports are shown in table 11.

Table 11.--Honey: World exports, by specified countries, 1971-74.

(In millions of pounds)				
Continent and country	1971	1972	1973	1974 ^{1/}
North America:				
Canada-----	24.2	10.8	21.7	7.0
Costa Rica-----	.3	.5	.8	.8
Cuba ^{2/} -----	7.3	7.6	5.7	4.6
El Salvador-----	3.0	3.3	3.5	3.3
Guatemala-----	6.6	5.8	5.7	6.2
Jamaica-----	.8	.1	.2	.1
Mexico-----	38.2	68.5	55.7	48.8
United States-----	7.6	4.1	17.6	4.6
Total-----	88.0	100.7	110.9	75.4
South America:				
Argentina-----	30.2	42.7	39.8	31.9
Brazil-----	-	.7	4.9	1.9
Chile-----	1.0	2.0	2.1	2.0
Total-----	31.2	45.4	46.8	35.8
U.S.S.R-----	10.8	7.9	11.7	16.3
Europe:				
Bulgaria ^{2/} -----	6.0	6.4	5.7	4.2
Czechoslovakia ^{2/} -----	7.6	5.2	4.2	4.5
France-----	4.5	4.2	.4	2.7
West Germany-----	2.0	2.6	4.8	2.8
Greece-----	.6	3.9	2.1	2.3
Hungary ^{2/} -----	14.6	15.1	14.5	10.4
Netherlands-----	.9	1.1	1.2	1.2
Poland ^{2/} -----	.9	1.0	.8	.4
Spain-----	7.7	24.1	16.7	13.9
Romania ^{2/} -----	11.2	10.2	8.3	6.9
Yugoslavia-----	1.0	.6	.3	.2
Total-----	57.0	74.4	59.0	49.5
Other countries:				
Australia ^{3/} -----	22.1	19.5	17.6	10.5
Mainland China ^{2/} -----	35.6	36.1	30.6	25.9
New Zealand ^{3/} -----	3.9	3.8	4.0	2.2
Total-----	61.6	59.4	52.2	38.6
Grand total-----	248.6	287.8	280.6	215.6

^{1/} Preliminary.^{2/} Data are based on imports into major importing countries.^{3/} Crop year ending June 30 of year shown.

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

The Question of Serious Injury or Threat Thereof
to the Domestic Industry

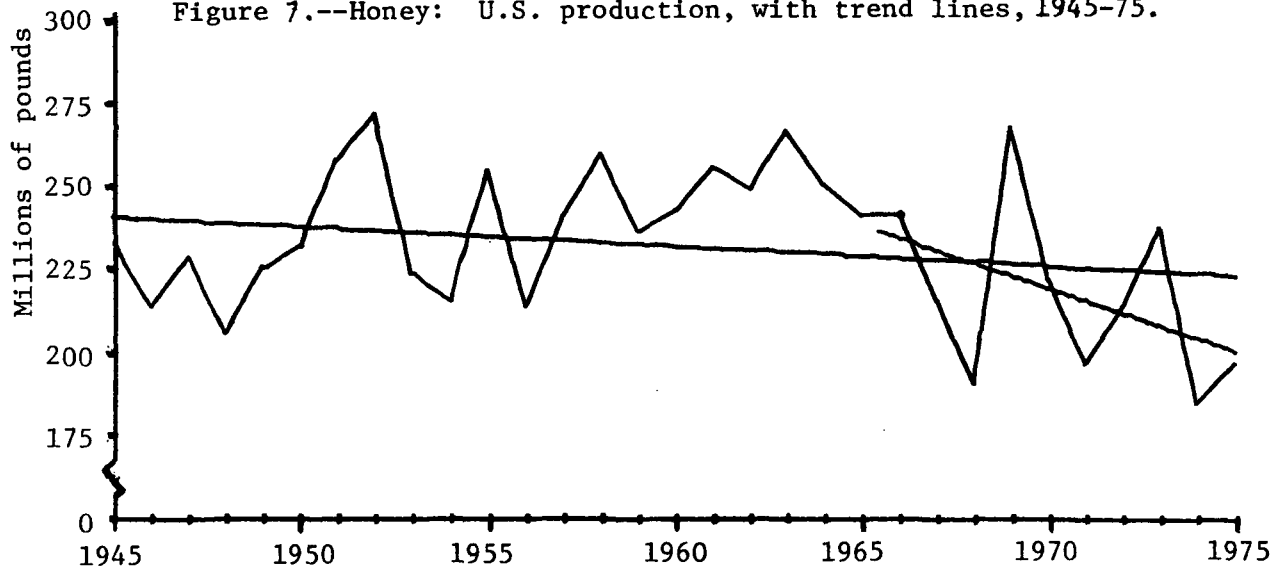
U.S. production

During 1971-75, annual U.S. production of honey ranged from a high of 238 million pounds in 1973 to a low of 185 million pounds in 1974 and averaged 206 million pounds for the period (fig. 7). Production data for recent years are shown in table 1 (p. A-5).

Annual U.S. yields of honey per colony vary significantly from year to year. During 1971-75, they ranged from a low of 33.1 pounds in 1974 to a high of 57.9 pounds in 1973, and averaged 49.9 pounds (fig. 8). The yields of honey obtained by commercial honey producers (300 or more colonies each) in the 20 major producing States ranged from a low of 60 pounds in 1971 to a high of 80 pounds in 1973 and averaged 67 pounds (table 5, p. A-16). The year-to-year variations in honey yields per colony are due to such factors as weather conditions, pesticide losses, availability of nectar sources, and changes in cropping practices. Yield per colony is the most significant factor influencing the size of the U.S. honey crop from 1 year to the next.

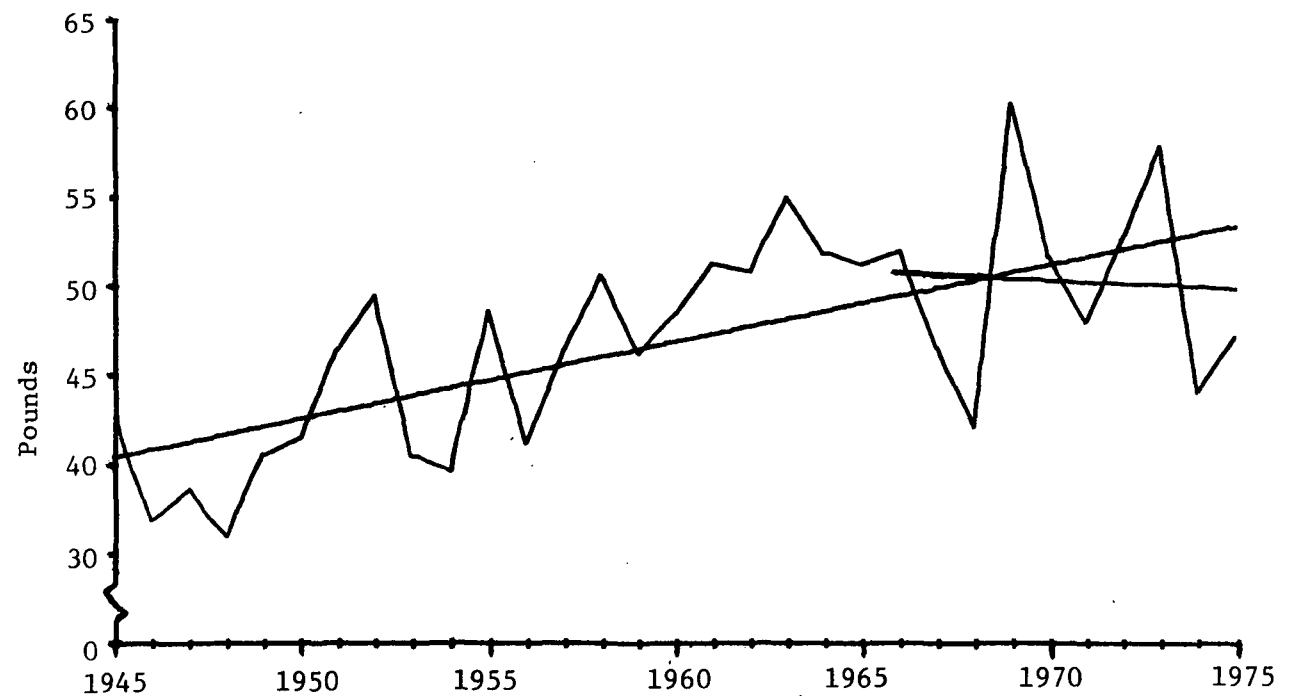
During the period 1971 through 1975, the number of colonies of bees increased from 4.1 million in 1971 to 4.2 million in 1975 (table 3, p. A-12). From information obtained in the Commission's investigation, it is estimated that colony numbers in 1976 will probably total about 5 percent more than in 1975. This is a reversal of the longrun declining trend in U.S. colony numbers, which has been evident since a peak of 5.9 million colonies was reached in 1947 (fig. 9).

Figure 7.--Honey: U.S. production, with trend lines, 1945-75.



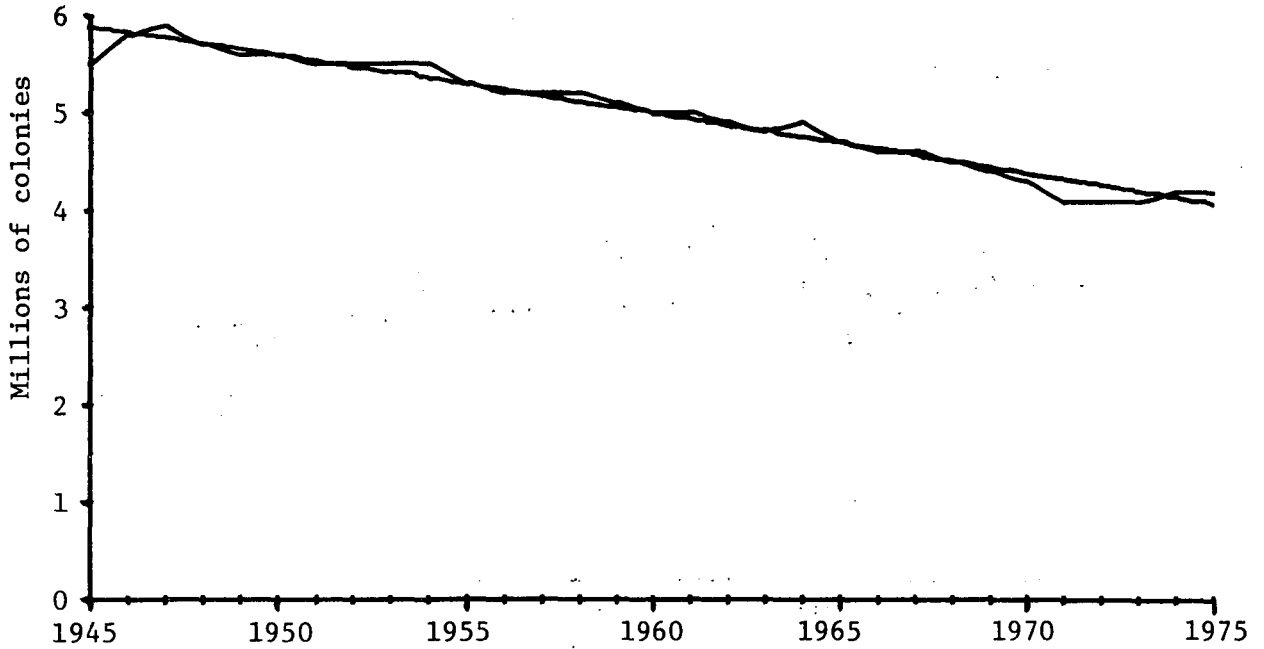
Source: Compiled from official statistics of the U.S. Department of Agriculture.

Figure 8.--Honey: U.S. yield per colony, with trend lines, 1945-75.



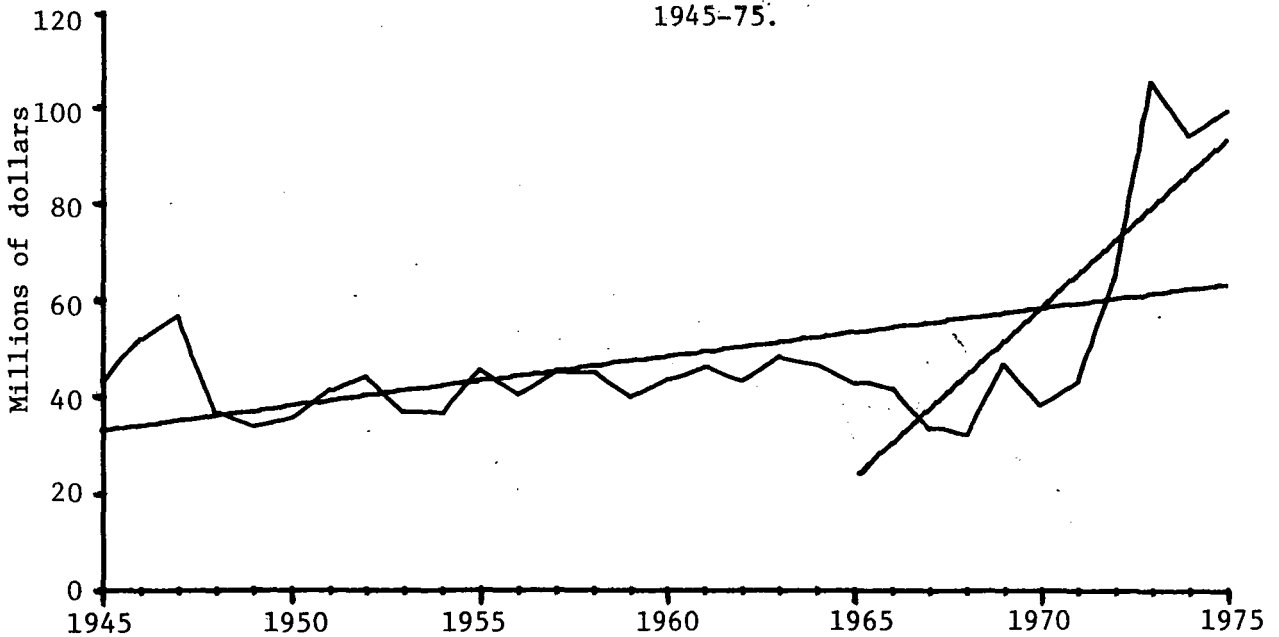
Source: Compiled from official statistics of the U.S. Department of Agriculture.

Figure 9.--Honey: Number of U.S. colonies, with trend line, 1945-75.



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

Figure 10.--Honey: Value of U.S. production, with trend lines, 1945-75.



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

The value of U.S. honey production showed a longrun trend of relative stability from 1945 to 1972 because prices were stable. Beginning in 1973, however, the advance in honey prices caused a sharp jump, which kept output values buoyant despite the short crops of 1974 and 1975 (fig. 10).

Inventories

Producers' stocks.--U.S. honey producers' December 15 stocks are reported annually by the U.S. Department of Agriculture (table 1, p. A-5). Only three times during the period 1950-70 did stocks dip below 50 million pounds--in 1954, 1956, and 1968; output was relatively low in each of these years. In 1970, producers' stocks amounted to 50.6 million pounds, but in the poor production year 1971, they fell to 30.9 million pounds. In 1972, producers' stocks were relatively unchanged at 29.8 million pounds, but they rose to 37.7 million pounds in 1973, when output also increased. In 1974, stocks fell to 33.7 million pounds; they decreased again in 1975 to 32.7 million pounds. The level of producers' stocks in the 1970's thus represents a sharp decrease from those in earlier years.

The strong and persistent rise in honey prices--from less than 20 cents per pound in the 1960's to as much as 50 cents in recent years--partially explains the decline in producers' inventories. Rising prices provide a strong incentive to clear inventories and realize the income possible from a buoyant market. The cost of holding stocks is measured by the higher income forgone in not selling them, and such costs are not likely to be incurred except for speculative purposes, which are not characteristic of this industry. Furthermore, the price-support loan

program for honey, which was often used by producers as a source of low-cost financing, became less useful when market prices went well above support prices in the 1970's. Another significant factor affecting producers' stocks in recent years has been the growing importance of producers' cooperative associations. The honey of members of such associations ceases to be counted in producers' stocks and becomes part of the cooperative processors' stocks upon extraction.

Processors' and/or importers' stocks.--Questionnaires received from processors and/or importers accounting for 85 to 90 percent of all commercial honey sold in the United States provided data on domestic and foreign honey inventories held on December 31 of 1970-75 (table 12). Stocks held by processors and importers amounted to 32.8 million pounds in 1970, fell to 22.0 million pounds in 1971, and then rose irregularly to 42.6 million pounds in 1975.

Table 12.--Honey: U.S. producers' stocks as of Dec. 15 and processors' and/or importers' ending stocks of foreign and domestic honey, 1970-75

(In millions of pounds)							
Ending stocks	1970	1971	1972	1973	1974	1975	
Processors' and/or importers' stocks:							
Foreign-----	0.5	0.6	2.6	1.0	3.1	3.3	
Domestic-----	32.3	21.4	29.3	34.8	30.7	39.3	
Subtotal-----	32.8	22.0	31.9	35.8	33.8	42.6	
Producers' stocks:	50.6	30.9	29.8	37.7	33.8	32.7	
Total stocks--	83.4	52.9	61.7	73.5	67.6	75.3	

Source: Stocks of processors and/or importers compiled by the U.S. International Trade Commission from data submitted by processors and importers; producers' stocks compiled from official statistics of the U.S. Department of Agriculture.

Total stocks of honey in the United States can be approximated by adding questionnaire data on processors' and/or importers' stocks on hand on December 31 to producers' stocks on hand December 15 (fig. 11). Total ending stocks amounted to approximately 83 million pounds in 1970 and fell to 53 million pounds in 1971. During 1972-75, aggregate stocks rose irregularly from 62 million to 75 million pounds.

Inventory data for foreign-produced honey reveal some correlation between imports and stocks, but, for the most part, stocks of such honey are relatively small. During 1970-75, U.S. stocks of foreign-produced honey accounted for less than 5 percent of the total stocks.

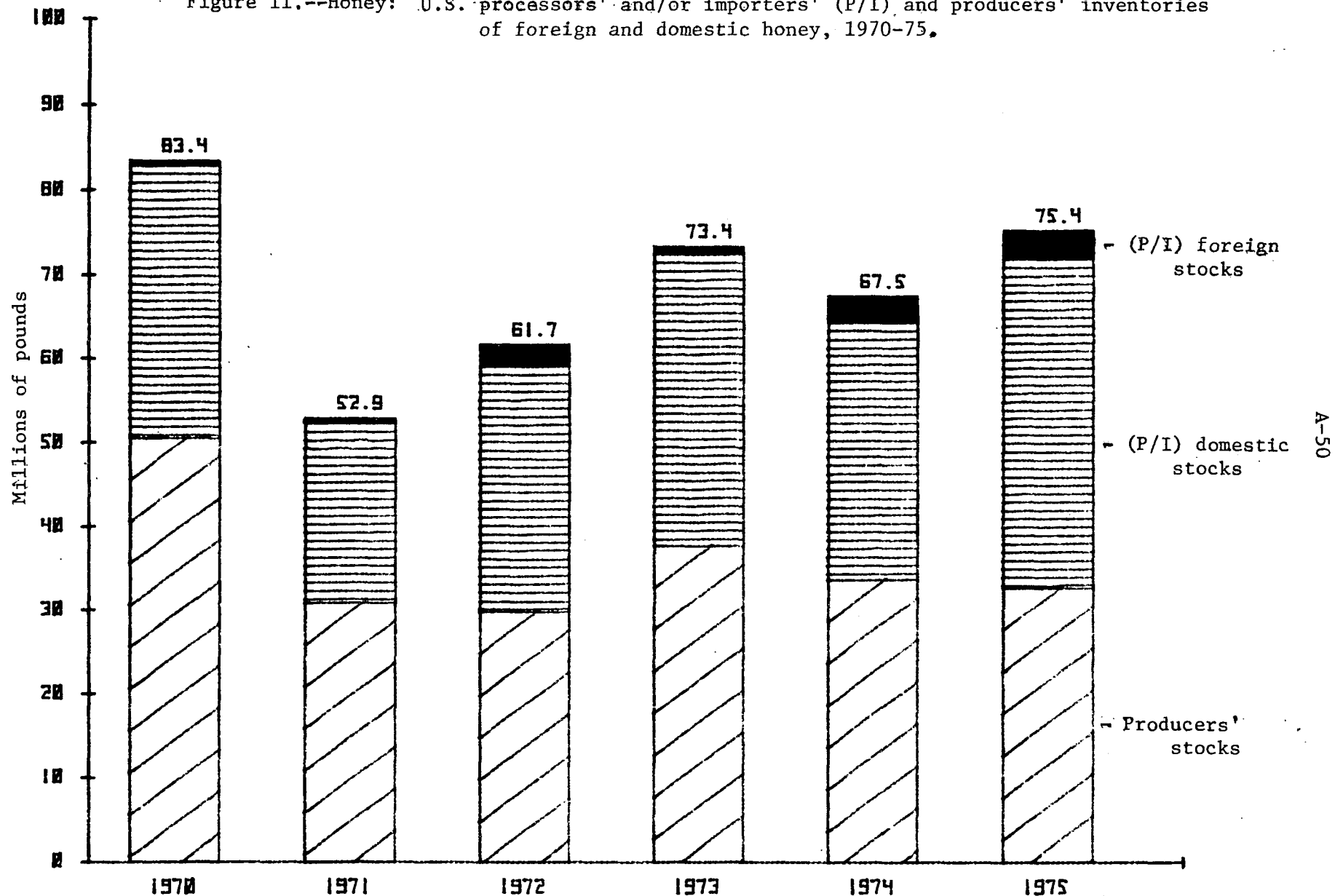
Only a very small portion of processors' and/or importers' stocks are held by firms which import but do not process honey. * * *. As mentioned earlier, as producers joined cooperative marketing associations over the period 1970-75 there was a general transfer of stocks from producers to the cooperative marketing associations. Inventories of honey held by three such associations, the Sioux Honey Association, the Valley Honey Association, and the Ohio Honey Association, are shown below in table 13.

Table 13.--Honey: Ending stocks held by U.S. producers' marketing cooperatives, 1970-75

* * * * *

Source: Compiled by the U.S. International Trade Commission from data submitted by producers' marketing cooperatives.

Figure 11.--Honey: U.S. processors' and/or importers' (P/I) and producers' inventories of foreign and domestic honey, 1970-75.



Source: Processors' and/or importers' stocks compiled by the U.S. International Trade Commission from data submitted by processors and importers; producers' stocks compiled from official statistics of the U.S. Department of Agriculture.

U.S. exports

Annual U.S. exports of honey declined from 8 million pounds in 1971 to 4 million pounds in 1972, increased to 18 million pounds in 1973, and then decreased to 4 million pounds in 1975 (table 14). The dramatic increase in exports in 1973 was the result of a bumper crop in the United States and a significant increase in world honey prices, which encouraged the liquidation of domestic inventories. Most of the exported honey is believed to be processed table-grade honey.

Although the United States exports honey to many countries, West Germany, Japan, the Netherlands, and Canada have been the principal markets. West Germany has traditionally been the major export market; in 1974, however, Japan edged into first place.

Table 14.--Honey: U.S. exports to specified countries, 1971-75

Country	1971	1972	1973	1974	1975
Quantity (1,000 pounds)					
West Germany-----	3,599	1,043	6,694	835	1,373
Japan-----	623	612	3,711	881	584
Netherlands-----	365	664	784	719	673
Canada-----	80	400	281	200	198
All other-----	2,896	1,382	6,107	1,936	1,161
Total-----	7,564	4,102	17,577	4,570	3,989
Value (1,000 dollars)					
West Germany-----	764	358	2,659	441	727
Japan-----	151	238	1,628	556	391
Netherlands-----	95	217	334	299	419
Canada-----	18	67	90	98	116
All other-----	806	549	2,664	1,092	760
Total-----	1,835	1,429	7,375	2,486	2,413
Unit value (cents per pound)					
West Germany-----	21.2	34.3	39.7	52.8	52.9
Japan-----	24.2	38.9	43.9	63.1	67.0
Netherlands-----	26.0	32.7	42.6	41.6	62.3
Canada-----	22.5	16.8	32.0	49.0	58.6
All other-----	27.8	39.7	43.6	56.4	65.5
Total-----	24.2	34.8	42.0	54.4	60.5

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

Employment by producers

Employment.--No reliable statistics are available on the total number of persons employed in the beekeeping industry, but it is estimated that about 230,000 are involved in beekeeping, at least part time. Table 15 gives an estimate of the number of beekeeping operations in the United States, by size of operation, and the discussion that follows relates manpower requirements to colony numbers.

Table 15.--Honey: Estimated employment in beekeeping operations in the United States, 1975

Number of colonies	Description	Number of firms	Estimated employment 1/
1,550 or more-----	Large commercial bee-keeping operations.	291	4,000
300-1,549-----	Commercial beekeeping operations.	1,300	6,000
25-299-----	Part-time beekeepers ("sideliners").	10,000	18,000
1-24-----	Hobbyists-----	200,000	200,000
1 or more, total---	-----	211,591	228,000

1/ Estimated by the staff of the U.S. International Trade Commission.

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

An owner with 1,000 colonies or more will probably need at least one person besides himself working full time, plus extra seasonal labor. A beekeeper with 300 to 1,000 colonies can handle the hives himself except during harvest season, when he will need help--usually several full- or part-time helpers for only a few months a year. A beekeeper with less than 300 colonies can probably handle the work himself, but many employ a few part-time helpers during the harvest season. Hobbyists are one-man operations, probably on a part-time basis.

Questionnaires were sent to a random sample of 464 of the nearly 1,600 commercial beekeepers which operated 300 or more colonies. Among other things, the questionnaire requested data on man-hours worked in beekeeping, number of colonies, and production. There were 124 responses, which provided the information shown in table 16. The responses covered 9.5 percent of total U.S. production and 6.8 percent of total U.S. colonies.

Man-hours.--The 124 questionnaires showed total man-hours to have increased 44 percent from 1971 to 1975. In all categories but one, (compensated immediate family members employed in processing, packaging, and marketing honey), the number of man-hours in 1975 was higher than in 1971. The percentage of nonfamily employee man-hours (mostly paid workers) engaged in production and extraction has been steadily rising, from 37 percent of total man-hours in 1971 to 46 percent in 1975.

Productivity.--From the 124 responses to the questionnaire it has been possible to construct some measures of productivity in the honey-producing industry, as shown in table 16. Yield per colony peaked in 1973, then declined sharply, as did the number of pounds of honey produced per man-hour. Man-hours spent per colony increased from 1971 through 1975.

Table 17 shows average profiles of commercial honey-producing operations in 1975 by size of operation (excluding those principally involved in pollination or in queen and package bee production). Production naturally increases overall with colony size. Yield per colony increases with the size of the firm except for the category involving 1,550-2,699 colonies, which may be a transition point wherein some producers hire full-time employees and others try to make do with part-time help. Efficiency of production is probably higher for larger firms. Firms may tend to be larger where good bee pasturage (affording high yields) is available, and greater size may contribute to more efficient use of trucks and large extracting machinery.

Table 16.--Honey: Colonies, production, man-hours, and productivity measures of 124 U.S. commercial beekeeping firms, by categories of employment, 1971-75

Item	1971	1972	1973	1974	1975
Total number of colonies-----1,000--:	229.2	241.0	275.1	278.6	281.3
Total production-----million pounds--:	15.2	18.4	23.8	18.6	18.7
Yield per colony-----pounds--:	66.5	76.4	86.4	66.8	66.6
Production and extraction of honey:	:	:	:	:	:
Immediate family members: <u>1/</u>	:	:	:	:	:
Not compensated-1,000 man-hours--:	246.9	279.6	305.2	294.4	297.9
Compensated <u>2/</u> -----do-----:	112.6	140.5	132.8	133.5	132.3
Other employees-----do-----:	258.0	286.0	411.8	431.2	460.0
Total honey production and extraction---1,000 man-hours--:	617.5	706.1	849.8	859.1	890.2
Processing, packaging, and marketing of honey:	:	:	:	:	:
Immediate family members: <u>1/</u>	:	:	:	:	:
Not compensated-1,000 man-hours--:	12.3	12.8	13.8	16.4	17.7
Compensated <u>2/</u> -----do-----:	6.9	7.0	7.0	3.7	3.7
Other employees-----do-----:	3.7	4.6	5.2	8.1	11.4
Other employment (e.g., package bee production)-----1,000 man-hours--:	48.7	49.7	65.7	71.5	69.8
Total-----do-----:	689.1	780.2	941.5	958.8	992.8
Productivity measures:	:	:	:	:	:
Total man-hours per colony-----:	3.0	3.2	3.4	3.4	3.5
Production and extraction man-hours per colony-----:	2.7	2.9	3.1	3.0	3.2
Honey production per total man-hour-----pounds--:	22.1	23.6	25.2	19.4	18.9
Honey production per production and extraction man-hour-----pounds--:	24.7	26.1	28.0	21.7	21.0

1/ Including all hours worked by the owner(s) and/or operator(s) in connection with the firm's operations.

2/ "Compensated" refers to family workers whose pay is reflected in the operating expenses of the firm.

Source: Compiled by the U.S. International Trade Commission from data submitted by 124 commercial beekeepers.

Table 17.--Honey: Average production, man-hours, colonies, and productivity measures for 92 U.S. commercial beekeeping firms primarily involved in honey production, by colony number ranges, 1975 1/

Item	Firms with--			
	2,700 : colonies or more	1,550-2,699 colonies	900-1,549 colonies	300-899 colonies
Number of firms reporting-----	27	22	19	24
Average number of colonies per firm-----	5,128	2,081	1,160	524
Average production per firm				
1,000 pounds--	349	132	77	34
Average yield per colony-----pounds--	68	64	66	65
Average man-hours per firm:				
Production and extraction of honey:				
Immediate family members: <u>2/</u>				
Not compensated-----	2,997	2,882	2,593	2,907
Compensated <u>3/</u> -----	957	1,076	794	192
Other employees-----	9,890	2,882	1,258	383
Total for honey production and extraction-----	13,844	6,840	4,645	3,482
Processing, packaging, and marketing of honey:				
Immediate family members: <u>2/</u>				
Not compensated-----	87	104	177	298
Compensated <u>3/</u> -----	90	19	1	12
Other employees-----	217	189	0	56
Other employment (e.g., package bee production)-----	294	125	448	129
Total average man-hours per firm-----	14,532	7,276	5,271	3,975
Productivity measures:				
Total man-hours per colony-----	2.8	3.5	4.5	7.6
Production and extraction man-hours per colony-----	2.7	3.3	4.3	6.7
Honey production per total man-hour				
pounds--	24.0	18.2	14.6	8.6
Honey production per production and extraction man-hour-----pounds--	25.2	19.3	16.6	9.8

1/ Calculated from unrounded figures.

2/ Including all hours worked by the owner(s) and/or operator(s) in connection with the firm's operations.

3/ "Compensated" refers to family workers whose pay is reflected in the operating expenses of the firm.

Source: Compiled by the U.S. International Trade Commission from data submitted by 92 commercial beekeepers.

Man-hours per colony decline as the number of colonies increases, whereas the number of pounds of honey produced per man-hour increases.

Employment by processors

Employment.--Processors of domestic honey, some of which also process imported honey, were asked to report their total employment and their employment of production and related workers for the years 1971 through 1975. Sixteen firms provided employment data and thirteen firms provided man-hour data. In 1975, the firms responding to the questionnaire accounted for about 45 percent of the domestic honey and about 30 percent of the imported honey processed in the United States. The results of the questionnaires were compiled and are shown in table 18.

The average number of all workers and of production and related workers varied only slightly during the period under review; the lowest number was in 1974 for both groups. Perhaps the stability of employment and man-hours among processors is to be expected since aggregate consumption of honey is also stable, although imports varied in different years. ^{1/}

Man-hours.--Processors were also asked to provide the man-hours worked in their establishments on their honey-processing operations. These results are also shown in table 18. The man-hours worked in the processing firms decreased erratically from 1971 to 1975.

^{1/} The average number of employees appears to include a small number of workers packing nonhoney products. This would not have increased the totals by more than 5 or 10 percent since most processors pack honey exclusively.

Table 18.--Honey: Employment and man-hours reported by U.S. processors of domestic or imported honey, 1971-75

Item	: 1971	: 1972	: 1973	: 1974	: 1975
Number of employees: <u>1/</u>	:	:	:	:	:
Average of all employees-----	443	442	444	417	44
Average of production and	:	:	:	:	:
related workers-----	297	284	286	269	29
Man-hours worked in processing,	:	:	:	:	:
packaging, or marketing domestic	:	:	:	:	:
or imported honey-1,000 man-hours--	554	495	502	488	50

1/ Excludes supervisory employees (above the working foreman level), clerical staff, salesmen, and general office workers, but may include small numbers of workers packing nonhoney products.

Source: Compiled by the U.S. International Trade Commission from data submitted by processors.

Profit-and-loss experience of U.S. processors of honey

Proprietary processors.--The data in this section represent the profit-and-loss experience of 11 proprietary processors of honey, on a total-company basis, for accounting years 1971-75. A few of the 11 processors processed other products in addition to honey. However, in the aggregate, sales of honey probably accounted for about 90 percent of the 11 processors' total net sales in 1975. The 11 processors accounted for more than 80 percent of the total quantity of processed honey shipped by commercial-type proprietary processors in 1975. The 11 processors also accounted for more than a third of the combined quantity of processed honey shipped by commercial-type proprietary processors and cooperative processors in 1975.

Ten of the eleven processors imported honey in 1 or more years during the period 1971-75, and three of the processors obtained a portion of their unprocessed honey from their own bee colonies during this period. Combined, the three processors' production of honey ranged from 220,000 pounds in each of the years 1971 and 1974 to 182,000 pounds in 1975.

Ten of the processors are privately held corporations--most are family held--and one processor operates as a partnership. In 1975 six of the processors had total company sales of \$2.5 million or more. Total company net sales for the other five processors ranged from \$300,000 to \$1.8 million in 1975.

The accounting year for four processors ended December 31, and the accounting year for each of the other seven processors ended May 31 or October 31, or between those dates. Profit-and-loss data for processors

with accounting years ending May 31 or June 30 are shown in all tables in this section under the year in which their accounting year ended in order to present profit-and-loss data for 5 years. For example, the 1975 accounting year includes processors with accounting years ending May 31 or June 30, 1975.

Total combined net sales for the 11 processors more than doubled during the period 1971-75, increasing steadily from \$14.0 million in 1971 to \$31.8 million in 1975 (table 19). Profit margins, on the other hand, followed a different trend. In the aggregate, the 11 processors operated profitably in each of the years 1971-74 and unprofitably in 1975. For the period 1971-74, net operating profit increased from \$303,000 in 1971 to \$931,000 in 1973 and then declined to \$393,000 in 1974. Net profit before income taxes ranged from a high of \$746,000 in 1973 to a low of \$201,000 in 1974. In 1975 the 11 processors sustained an aggregate operating loss of \$190,000 and an aggregate net loss of \$385,000.

As a share of net sales, the operating profit margin ranged from a high of 4.0 percent in 1972 to a low of 1.3 percent in 1974, and the net profit margin before income taxes ranged from a high of 3.8 percent in 1972 to a low of 0.7 percent in 1974. The 1975 operating loss was equal to 0.6 percent of net sales, and the 1975 net loss was equal to 1.2 percent of net sales.

One processor sustained operating and net losses in 1971, another processor sustained such losses in 1973, and another sustained them in

Table 19.--Honey: Profit-and-loss experience of 11 U.S. proprietary processors on their honey-processing operations, accounting years 1971-75 1/

Item <u>2/</u>	Accounting year				
	1971	1972	1973	1974 <u>3/</u>	1975 <u>3/</u>
Net sales-----1,000 dollars--	13,978	19,389	24,889	29,760	31,763
Cost of goods sold-----do-----	11,749	16,565	21,370	26,265	28,277
Gross profit-----do-----	2,229	2,824	3,519	3,495	3,486
Administrative, selling, and shipping expense-----1,000 dollars--	1,926	2,057	2,588	3,102	3,676
Net operating profit or (loss)-----1,000 dollars--	303	767	931	393	(190)
Other income or (expense), net-----1,000 dollars--	(45)	(25)	(185)	(192)	(195)
Net profit or (loss) before income taxes-----1,000 dollars--	258	742	746	201	(385)
Ratio of net operating profit or (loss) to net sales-----percent--	2.2	4.0	3.7	1.3	(0.6)
Ratio of net profit or (loss) before income taxes to net sales-----percent--	1.8	3.8	3.0	0.7	(1.2)

1/ The accounting year for 4 processors ended Dec. 31, and the accounting year for each of the other 7 processors ended on May 31 or Oct. 31, or between those dates.

2/ The profit-and-loss data are for the overall operations of the establishments processing honey; in the aggregate, sales of honey accounted for the major share of the 11 processors' total net sales in each of the accounting years 1971-75.

3/ 1 processor was responsible for most of the decline in profit in 1974 and for all the loss in 1975.

Source: Compiled by the U.S. International Trade Commission from data submitted by processors.

1975. One processor sustained operating and net losses in 1974 and 1975.

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Table 20.--Honey: Profit-and-loss experience of * * * on its honey-processing operations and that of 10 other proprietary U.S. processors, accounting years 1971-75 1/

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1/ * * *

Source: Compiled by the U.S. International Trade Commission from data submitted by U.S. processors.

Six of the eleven processors furnished balance-sheet data in addition to profit-and-loss data. During 1971-75, net sales for the six processors more than doubled, increasing yearly from \$8.3 million in 1971 to \$18.4 million in 1975 (table 21). Total assets also increased yearly during the period, from \$3.2 million to \$7.0 million; the increase amounted to \$3.8 million, or 119 percent. Stockholders' equity increased yearly from \$806,000 to \$1.7 million; the increase was about \$900,000, or 112 percent.

Net sales per dollar of total assets for the six processors remained fairly constant during the period 1971-75, ranging from \$2.57 in 1971 to \$2.67 in 1974. As a share of net sales, average net profit after income taxes ranged from a low of 0.9 percent in 1971 to a high of 2.1 percent in 1972. Net profit after income taxes expressed as a ratio of total assets ranged from a low of 2.2 percent in 1971 to a high of 5.7 percent in 1972, and the ratio of such profit to stockholders' equity ranged from 8.9 percent in 1971 to 23.6 percent in 1972.

Officers' salaries increased yearly during the period 1971-75, ranging from \$221,000 to \$402,000; the increase amounted to \$181,000, or 92 percent. All six of the processors are privately held corporations of the type and size that could, if they wished, take most of the profits out in compensation to officers. However, while aggregate officers' salaries exceeded total net profit after income taxes in each of the years 1971-75, they declined from 2.7 percent of net sales in 1971 to 2.2 percent in 1975.

Table 21.--Honey: Profit-and-loss experience and financial condition of 6 U.S. proprietary processors on their honey-processing operations, accounting years 1971-75 1/

Item <u>2/</u>	Accounting year				
	1971	1972	1973	1974	1975
Net sales-----1,000 dollars--	8,330	11,587	14,333	16,356	18,438
Total assets-----do-----	3,245	4,397	5,556	6,127	7,045
Stockholders' equity 1,000 dollars--	806	1,056	1,271	1,547	1,738
Net profit after income taxes: 1,000 dollars--	72	249	180	280	177
Net sales per dollar of total assets-----	\$2.57	\$2.64	\$2.58	\$2.67	\$2.62
Ratio of net profit after income taxes to--					
Net sales-----percent--	0.9	2.1	1.3	1.7	1.0
Total assets-----do----	2.2	5.7	3.2	4.6	2.5
Stockholders' equity-----do----	8.9	23.6	14.2	18.1	10.2
Officers' salaries 1,000 dollars--	221	279	339	344	402
Ratio of officers' salaries to net sales-----percent--	2.7	2.4	2.4	2.1	2.2

1/ The accounting year for 3 processors ended Dec. 31, and the accounting year for each of the other 3 processors ended on May 31 or June 30.

2/ The profit-and-loss and financial data are for the overall operations of the establishments processing honey. In the aggregate, sales of honey accounted for the major share of the 6 processors' total net sales in each of the accounting years 1971-75.

Source: Compiled by the U.S. International Trade Commission from data submitted by processors.

The cost of unprocessed honey constitutes by far the largest cost element in processing honey. The cost of containers, labels, and other packaging materials is the second largest cost element, but it amounts to less than 20 percent of the cost of unprocessed honey. Honey processing is not a labor-intensive operation. Hence, any sizable variation in a processor's purchase price of unprocessed honey would have a considerable effect on profit margins if the processor's selling price for honey was constant and the volume of sales was maintained.

Cooperative processors.--Three member-owned cooperatives which, combined, accounted for almost half the total quantity of processed honey shipped by U.S. commercial and cooperative processors in 1975 submitted profit-and-loss data on their honey-processing operations. However, these three cooperatives are nonprofit organizations and do not have accounting systems that reveal their operating results on processed honey fairly. Thus, no profit-and-loss data are presented in this section for the three cooperative processors. Sales data are, however, available for the 1971-74 crop years. 1/

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1/ A crop year is a period commencing July 1 and ending June 30; for example, crop year 1974 ended June 30, 1975.

* * *

Profit-and-loss experience of U.S. commercial producers of honey

The data in this section represent the profit-and-loss experience of 118 commercial producers of honey for the years 1971-75. ^{1/} The 118 commercial honey producers represent about 7 percent of the approximately 1,600 such producers operating in the United States in 1975. The 118 producers also accounted for about 17 percent of the estimated 119 million pounds of honey produced by U.S. commercial producers in 1975 and for about the same percent of the total bee colonies owned by such producers in 1975.

A few of the 118 producers process their own honey, and some of them purchase additional honey from other producers. The processed honey is usually sold at retail or wholesale to customers in the areas in which the honey is produced. Most of the producer-processors have small honey operations, but there are some large producers that process a portion of their honey crop.

The majority of the 118 producers operate as single-family enterprises. There are, however, a number that operate as partnerships, and a few are incorporated. In order to present comparable profit-and-loss data, all officers' salaries or owners' salaries, where known, have been removed as an operating expense in all presentations in this section. Thus, it must be realized that the net beekeeping profit before

^{1/} Almost all of the honey producers operate on a calendar-year basis.

income taxes reported in this section supports more than just 118 families. The beekeeping profit of some partnerships and corporations supports two or three families in most cases and more in others.

In the aggregate, the 118 commercial honey producers operated profitably in each of the years 1971-75 (table 22). Total beekeeping income increased yearly during the period 1971-75, ranging from \$4.9 million in 1971 to \$12.1 million in 1975. Net beekeeping profit before income taxes, following a different trend from total beekeeping income, increased from \$1.3 million in 1971 to \$4.4 million in 1973, declined to \$3.1 million in 1974, and then increased to \$3.4 million in 1975. Total beekeeping income increased from \$11.1 million to \$12.1 million during the period 1973-75--or by only 10 percent. On the other hand, total beekeeping expenses increased 29 percent during this period. The increase in beekeeping expenses, coupled with lower yields of honey, resulted in lower profit margins in 1974 and 1975 than in 1973.

As a share of total beekeeping income, net beekeeping profit before income taxes was 27.0 percent in 1971, 34.4 percent in 1972, 39.6 percent in 1973, 28.0 percent in 1974, and 28.1 percent in 1975.

The beekeeping operations of 14 honey producers were unprofitable in 1971; 12 were unprofitable in each of the years 1972 and 1975, 6 in 1973, and 13 in 1974.

For the 118 producers, net profit before income taxes per colony increased from \$5.84 in 1974 to \$16.15 in 1973, declined to \$10.80 in 1974, and then increased to \$11.52 in 1975. Honey yields per colony

increased each year from 71 pounds to 88 pounds during 1971-73 and then declined rather sharply to 66 pounds and 67 pounds, respectively, in 1974 and 1975.

Table 22.--Honey: Profit-and-loss experience of 118 U.S. commercial beekeeping firms on their
beekeeping operations, 1971-75

Item	1971	1972	1973	1974	1975
Beekeeping income:					
Honey and beeswax sold-----1,000 dollars--	3,841	5,406	9,358	9,024	9,868
Package bees sold, including queens-----do-----	142	177	285	340	444
Pollination fees-----do-----	808	752	773	1,014	1,171
Other beekeeping income-----do-----	156	669	723	665	643
Total beekeeping income-----do-----	4,947	7,004	11,139	11,043	12,126
Total beekeeping expense-----do-----	3,611	4,598	6,731	7,954	8,713
Net beekeeping profit before income taxes-----do-----	1,336	2,406	4,408	3,089	3,413
Ratio of net beekeeping profit before income taxes to total beekeeping income-----percent--	27.0	34.4	39.6	28.0	28.1
Honey produced-----1,000 pounds--	16,327	19,491	24,030	18,980	19,882
Number of colonies reported-----1,000 colonies--	228.5	250.6	272.9	286.1	296.4
Net profit before income taxes per colony-----	\$5.84	\$9.60	\$16.15	\$10.80	\$11.52
Pounds of honey produced per colony-----	71	78	88	66	67
Average price per pound for honey sold-----	\$0.24	\$0.28	\$0.39	\$0.48	\$0.50

Source: Compiled by the International Trade Commission from data submitted by commercial beekeepers.

The average unit price per pound of honey sold was 24 cents in 1971, 28 cents in 1972, 39 cents in 1973, 48 cents in 1974, and 50 cents in 1975 (table 22). Because of the inclusion in this presentation of beeswax with honey sold 1/ and because a small amount of the honey sold was processed honey, the average price per pound for honey is overstated for each of the years 1971-75. The trend, however, is not distorted except for 1975. In that year, the value of honey and beeswax sold includes honey purchased from other sources and then resold.

Honey and beeswax sales accounted for 77 percent or more of the 118 producers' total beekeeping income in each of the years 1971-75. Pollination fees were the second largest source of income--ranging from a high of 16 percent of their total income in 1971 down to a low of 7 percent in 1973. Sales of package bees and queens accounted for between 3 and 4 percent of the producers' income during 1971-75, and "Other beekeeping income" ranged from 3 percent of the producers' income in 1971 to 10 percent in 1972 (table 22). For the years 1972-75, bee indemnity payments accounted for an appreciable share of "Other beekeeping income."

Profit-and-loss experience of the 118 commercial producers by State or area are presented in table 23. The producers are listed under the State in which they resided or where the major share of their honey was produced. Some honey producers produced in two or more States. It should be noted that there was a better response

1/ Some producers could not separate the sales of honey and beeswax.

Table 23.--Honey: Profit-and-loss experience of 118 U.S. producers on their beekeeping operations, by State or area, 1971-75

Year and reporting State or area	Honey and beeswax sold	Package: bees and queens sold	Polli- nation fees	Other bee- keeping income	Total bee- keeping income	Total bee- keeping expense	Net bee- keeping profit: or (loss) before income taxes total income	Ratio of net profit: (loss) before income taxes to total income	Honey produced	Total number of reported colonies
	<u>1,000</u> <u>dollars</u>	<u>1,000</u> <u>dollars</u>	<u>1,000</u> <u>dollars</u>	<u>1,000</u> <u>dollars</u>	<u>1,000</u> <u>dollars</u>	<u>1,000</u> <u>dollars</u>	<u>1,000</u> <u>dollars</u>	<u>Percent</u>	<u>1,000</u> <u>pounds</u>	
1971										
Arizona-----	66	5	23	2	96	124	(28)	(29.2)	376	11,788
California-----	537	1	675	61	1,274	1,019	255	20.0	2,505	42,206
Colorado, New Mexico, Utah, and Wyoming----	192	-	-	-	192	127	65	33.9	835	10,814
Florida-----	415	-	7	-	422	365	57	13.5	1,046	8,370
Georgia-----	87	2	-	5	94	48	46	48.9	480	5,534
Idaho-----	134	-	8	27	169	97	72	42.6	664	15,145
Iowa, North Dakota, and South Dakota-----	1,096	-	7	19	1,122	678	444	39.6	4,268	48,418
Michigan-----	29	-	-	-	6	16	19	54.3	133	3,345
Minnesota-----	398	-	-	14	412	309	103	25.0	1,890	20,350
Montana-----	318	-	1	7	326	243	83	25.5	1,496	20,520
Nebraska-----	213	-	9	2	224	167	57	25.4	1,012	11,677
Oregon and Washington--	95	-	78	2	175	129	46	26.3	496	9,694
Texas-----	110	106	-	-	216	147	69	31.9	573	9,443
All other reporting States-----	151	28	-	11	190	142	48	25.3	553	11,188
Total-----	3,841	142	808	156	4,947	3,611	1,336	27.0	16,327	228,492

Table 23.--Honey: Profit-and-loss experience of 118 U.S. producers on their beekeeping operations, by State or area, 1971-75--Continued

Year and reporting State or area	money and beeswax sold	Package: bees and queens sold	Pollin- nation fees	Other bee- keeping income	Total bee- keeping income	Total bee- keeping expense	Net profit or (loss) before income taxes	Ratio of net profit or (loss) before income taxes to total income	Honey produced	Total number of reported colonies
	1,000 dollars	1,000 dollars	1,000 dollars	1,000 dollars	1,000 dollars	1,000 dollars	1,000 dollars	Percent	1,000 pounds	
1972										
Arizona-----	110	9	22	128	269	202	67	24.9	507	13,692
California-----	776	4	619	148	1,547	1,116	431	27.9	2,745	48,679
Colorado, New Mexico, Utah, and Wyoming----	240	-	1	-	241	147	94	39.0	671	10,985
Florida-----	522	-	1	1	524	456	68	13.0	1,039	8,565
Georgia-----	119	2	-	15	136	49	87	64.0	365	6,500
Idaho-----	227	2	11	17	257	147	110	42.8	869	18,521
Iowa, North Dakota, and South Dakota-----	1,426	4	11	110	1,551	896	655	42.2	4,572	48,901
Michigan-----	95	-	-	2	97	103	(6)	(6.2)	275	7,893
Minnesota-----	536	-	-	18	554	341	213	38.4	2,076	19,956
Montana-----	528	-	-	7	535	310	225	42.1	2,928	23,007
Nebraska-----	250	-	2	31	283	218	65	23.0	1,415	12,018
Oregon and Washington----	108	-	79	174	361	200	161	44.6	486	10,109
Texas-----	272	121	6	1	400	237	163	40.8	1,071	10,052
All other reporting States-----	197	35	-	17	249	176	73	29.3	472	11,722
Total-----	5,406	177	752	669	7,004	4,598	2,406	34.4	19,491	250,600

Table 23.--Honey: Profit-and-loss experience of 118 U.S. producers on their beekeeping operations, by State or area, 1971-75--Continued

Year and reporting State or area	Honey and beeswax sold	Package bees and queens sold	Polli- nation fees	Other bee- keeping income	Total bee- keeping income	Total bee- keeping expense	Net profit or (loss) before taxes	Ratio of net profit or (loss) before taxes to total income	Honey produced	Total number of reported colonies
	1,000 dollars	1,000 dollars	1,000 dollars	1,000 dollars	1,000 dollars	1,000 dollars	1,000 dollars	Percent	1,000 pounds	
1973										
Arizona-----	244	42	32	371	689	316	373	54.1	883	15,581
California-----	1,892	6	559	119	2,576	1,530	1,046	40.6	5,267	51,389
Colorado, New Mexico, Utah, and Wyoming----	325	-	-	-	325	151	174	53.5	864	12,210
Florida-----	721	-	1	-	722	628	94	13.0	1,000	9,197
Georgia-----	186	5	-	4	195	73	122	62.6	582	6,950
Idaho-----	402	-	12	21	435	214	221	50.8	1,131	21,602
Iowa, North Dakota, and South Dakota-----	2,117	9	17	63	2,206	1,292	914	41.4	5,625	51,458
Michigan-----	258	-	6	4	268	186	82	30.6	602	9,448
Minnesota-----	794	-	-	31	825	436	389	47.2	2,578	21,788
Montana-----	978	2	-	9	989	514	475	48.0	2,403	24,024
Nebraska-----	500	-	18	24	542	454	88	16.2	1,251	15,122
Oregon and Washington---	417	-	114	61	592	432	160	27.0	720	11,452
Texas-----	304	157	14	3	478	277	201	42.1	604	10,515
All other reporting States-----	220	64	-	13	297	228	69	23.2	520	12,159
Total-----	9,358	285	773	723	11,139	6,731	4,408	39.6	24,030	272,895

Table 23.--Honey: Profit-and-loss experience of 118 U.S. producers on their beekeeping operations, by State or area, 1971-75--Continued

Year and reporting State or area	Honey and beeswax sold	Package: bees and queens sold	Polli- nation fees	Other bee- keeping income	Total bee- keeping income	Total bee- keeping expense	Net profit: or (loss) before income taxes	Ratio of net: profit: (loss) before income taxes to total income	Honey produced	Total number of reported colonies
	<u>1,000</u> :dollars	<u>1,000</u> :dollars	<u>1,000</u> :dollars	<u>1,000</u> :dollars	<u>1,000</u> :dollars	<u>1,000</u> :dollars	<u>1,000</u> :dollars	Percent	<u>1,000</u> pounds	
1974										
Arizona-----	310	-	44	194	548	392	156	28.5	532	13,068
California-----	1,474	15	707	238	2,434	1,761	673	27.7	3,673	55,905
Colorado, New Mexico, Utah, and Wyoming----	393	2	1	-	396	267	129	32.6	959	12,695
Florida-----	513	-	1	-	514	439	75	14.6	813	8,641
Georgia-----	192	11	-	8	211	89	122	57.8	394	7,168
Idaho-----	582	-	19	21	622	350	272	43.7	1,387	21,896
Iowa, North Dakota, and South Dakota-----	1,775	16	22	45	1,858	1,461	397	21.4	3,771	54,388
Michigan-----	286	-	9	8	303	212	91	30.0	388	9,955
Minnesota-----	802	-	-	36	838	532	306	36.5	1,620	21,910
Montana-----	919	-	-	22	941	629	312	33.2	2,058	23,230
Nebraska-----	606	-	8	5	619	477	142	22.9	1,561	16,702
Oregon and Washington----	535	-	198	65	798	658	140	17.5	688	15,707
Texas-----	316	206	5	5	532	374	158	29.7	708	11,742
All other reporting States-----	321	90	-	18	429	313	116	27.0	428	13,116
Total-----	9,024	340	1,014	665	11,043	7,954	3,089	28.0	18,980	283,123

Table 23.--Honey: Profit-and-loss experience of 118 U.S. producers on their beekeeping operations, by State or area, 1971-75--Continued

Year and reporting State or area	Honey and beeswax sold	Package: bees and queens sold	Polli- nation fees	Other bee- keeping income	Total bee- keeping income	Total bee- keeping expense	Net bee- keeping profit: or (loss) before income taxes	Ratio of net profit: or (loss) before income taxes to total income	Honey produced	Total number of reported colonies
	<u>1,000</u> dollars	<u>1,000</u> dollars	<u>1,000</u> dollars	<u>1,000</u> dollars	<u>1,000</u> dollars	<u>1,000</u> dollars	<u>1,000</u> dollars	Percent	<u>1,000</u> pounds	
1975										
Arizona-----	221	1	48	51	321	316	5	1.6	541	13,556
California-----	1,927	38	837	173	2,975	2,082	893	30.0	3,925	57,279
Colorado, New Mexico, Utah, and Wyoming----	421	-	-	-	421	310	111	26.4	911	13,268
Florida-----	595	-	2	-	597	523	74	12.4	741	8,605
Georgia-----	203	11	-	10	224	126	98	43.8	554	7,655
Idaho-----	531	-	20	19	570	383	187	32.8	927	22,444
Iowa, North Dakota, and South Dakota-----	2,242	26	34	100	2,402	1,522	880	36.6	4,854	58,880
Michigan-----	233	-	18	12	263	217	46	17.5	413	9,203
Minnesota-----	771	1	-	75	847	623	224	26.4	1,931	22,186
Montana-----	1,057	-	-	27	1,084	790	294	27.1	2,390	24,620
Nebraska-----	651	-	14	8	673	534	139	20.7	833	17,215
Oregon and Washington---	418	1	193	130	742	506	236	31.8	681	15,520
Texas-----	341	262	5	4	612	456	156	25.5	783	12,882
All other reporting States-----	257	104	-	34	395	325	70	17.7	398	13,070
Total-----	9,868	444	1,171	643	12,126	8,713	3,413	28.1	19,882	296,383

Source: Compiled by the U.S. International Trade Commission from data submitted by U.S. honey producers.

to the Commission's questionnaire in some States than in others. California, the largest honey-producing State, had 25 respondents. Florida, the second largest producing State, had only 7 respondents. Montana, the seventh largest producing State, had 10 respondents--the highest response outside California.

Table 23 shows that profit margins on beekeeping operations varied from State to State and from year to year. It also shows that pollination fees are a significant income factor for California, Oregon, and Washington honey producers and an insignificant income factor for honey producers in some other States.

Profit-and-loss experience of the 118 commercial producers by colony size is presented in table 24. Net beekeeping profit before income taxes, as a ratio of total beekeeping income, ranged from 46.5 percent in 1973 down to 27.5 percent in 1975 for those producers in the 300-to-899-colony size. The profit margins for those producers in the 900-to-1,549-colony size ranged from 33.7 percent in 1971 to 47.6 percent in 1972, while the profit margins for those producers in the 1,550-to-2,699-colony size ranged from 34.8 percent in 1973 down to 26.5 percent in 1975. The profit margins for the large producers, those with 2,700 colonies or more, ranged from 24.0 percent in 1971 to 40.3 percent in 1973.

Beekeepers in the 900-to-1,549-colony category reported higher profit margins on their total beekeeping income than producers with 1,550 colonies and over. A producer in the former size group can usually operate with only part-time labor.

Table 24.--Honey: Profit-and loss experience of 118 U.S. producers in their beekeeping operations, by colony size, 1971-75

Year and colony size	Honey and beeswax sold	Package: bees and queens sold	Polli- nation fees	Other bee- keeping income	Total bee- keeping income	Total bee- keeping expense	Ratio :			Honey produced	Total number of reported colonies
							keeping: or (loss): before income: taxes: total: income:	Net of net: bee- profit: (loss): before taxes: to: total: income:	or : before taxes: total: income:		
	<u>1,000</u> <u>dollars</u>	<u>1,000</u> <u>dollars</u>	<u>1,000</u> <u>dollars</u>	<u>1,000</u> <u>dollars</u>	<u>1,000</u> <u>dollars</u>	<u>1,000</u> <u>dollars</u>	<u>1,000</u> <u>dollars</u>	Percent	<u>1,000</u> <u>pounds</u>		
1971:											
300 to 899-----	122	-	19	17	158	111	47	29.7	559	10,658	
900 to 1,549-----	424	-	87	15	526	349	177	33.7	1,820	23,887	
1,550 to 2,699-----	1,025	106	79	21	1,231	847	384	31.2	4,022	48,438	
2,700 and over-----	2,270	36	623	103	3,032	2,304	728	24.0	9,926	145,509	
Total-----	3,841	142	808	156	4,947	3,611	1,336	27.0	16,327	228,492	
1972:											
300 to 899-----	171	-	31	22	224	151	73	32.6	615	11,410	
900 to 1,549-----	603	4	75	85	767	402	365	47.6	2,240	25,831	
1,550 to 2,699-----	1,319	122	79	113	1,633	1,110	523	32.0	4,601	51,047	
2,700 and over-----	3,313	51	567	449	4,380	2,935	1,445	33.0	12,035	162,312	
Total-----	5,406	177	752	669	7,004	4,598	2,406	34.4	19,491	250,600	
1973:											
300 to 899-----	364	-	27	28	419	224	195	46.5	976	12,076	
900 to 1,549-----	881	4	110	38	1,033	586	447	43.3	2,169	30,122	
1,550 to 2,699-----	2,209	162	123	55	2,549	1,661	888	34.8	5,084	57,740	
2,700 and over-----	5,904	119	513	602	7,138	4,260	2,878	40.3	15,801	172,957	
Total-----	9,358	285	773	723	11,139	6,731	4,408	39.6	24,030	272,895	

Table 24.--Honey: Profit-and-loss experience of 118 U.S. producers on their beekeeping operations, by colony size, 1971-75--Continued

Year and colony size	Honey and beeswax sold	Package: bees and queens sold	Polli- nation fees	Other bee- keeping income	Total bee- keeping income	Total bee- keeping expense	keeping profit or (loss) before taxes	Ratio: Net of net bee- profit: (loss) income to taxes total income	Honey produced	Total number of reported colonies
	<u>1,000</u>	<u>1,000</u>	<u>1,000</u>	<u>1,000</u>	<u>1,000</u>	<u>1,000</u>	<u>1,000</u>	<u>Percent</u>	<u>1,000</u>	
	<u>dollars</u>	<u>dollars</u>	<u>dollars</u>	<u>dollars</u>	<u>dollars</u>	<u>dollars</u>	<u>dollars</u>		<u>pounds</u>	
1974:										
300 to 899-----	391	-	44	24	459	288	171	37.3	805	13,030
900 to 1,549-----	903	2	156	81	1,142	728	414	36.3	1,827	31,754
1,550 to 2,699-----	2,072	217	183	51	2,523	1,813	710	28.1	4,360	58,796
2,700 and over-----	5,658	121	631	509	6,919	5,125	1,794	25.9	11,988	182,543
Total-----	9,024	340	1,014	665	11,043	7,954	3,089	28.0	18,980	283,123
1975:										
300 to 899-----	376	-	68	33	477	346	131	27.5	865	13,410
900 to 1,549-----	954	10	156	86	1,206	776	430	35.7	1,993	31,595
1,550 to 2,699-----	2,118	276	196	172	2,762	2,031	731	26.5	3,700	60,409
2,700 and over-----	6,420	158	751	352	7,681	5,560	2,121	27.6	13,324	190,969
Total-----	9,868	444	1,171	643	12,126	8,713	3,413	28.1	19,882	296,383

Source: Compiled by the U.S. International Trade Commission from data submitted by U.S. honey producers.

Individual beekeeping expenses, as a percentage of total beekeeping expense, are presented in table 25 for 10 commercial producers for the year 1975. The number of colonies for each of the 10 producers ranges from 900 to over 14,000.

Hired labor expense is the largest expense item for most of the larger (1,650 colonies and up) honey producers, and it normally increases as the number of colonies increases. Package bee and queen expense is the second largest beekeeping expense for those honey producers in the northern United States that kill their bees at the end of the honey-producing season. However, depreciation expense is the second largest beekeeping expense item for the majority of the honey producers. This has been especially true for the last 3 years, when increasing profits motivated many producers to make capital expenditures for trucks, warehouses, machinery, equipment, and additional bee colonies.

It should be noted that some honey producers sustained apiary-site rental expense, and other producers did not. Beekeepers are normally dependent on private landowners for bee pasture. 1/ Some pay cash for apiary-site rental, and others make payment in honey. Some producers use both methods to acquire bee pasture.

Most of the other individual expense items shown in table 25 are generally smaller than those previously discussed. The item "Other beekeeping expense" is a composite of several expense items,

1/ Public lands, State or Federal, are also used as bee pasture in some areas.

Table 25.--Percentage distribution of beekeeping expenses for 10 U.S. commercial honey producers, 1975

Item	Producer and number of colonies									
	No. 1, 900 colonies	No. 2, 1,250 colonies	No. 3, 1,650 colonies	No. 4, 2,125 colonies	No. 5, 3,100 colonies	No. 6, 3,200 colonies	No. 7, 4,350 colonies	No. 8, 6,000 colonies	No. 9, over 12,000 colonies	No. 10, over 14,000 colonies
Hired labor-----	-	-	36.5	15.0	19.1	18.8	8.7	29.6	34.9	42.2
Package bees and queens--	5.3	5.0	11.5	2.5	4.3	25.7	26.4	9.9	7.8	.3
Rental of bee colonies---	-	-	-	-	21.2	-	-	-	1.2	.3
Sugar and other feed expense-----	10.5	-	15.3	5.0	12.7	-	-	-	-	8.0
Hive, super, and frame expense, and beekeep- ing supplies-----	10.5	5.0	3.8	2.5	2.1	5.0	17.8	2.8	9.5	8.3
Repairs and maintenance of buildings, machi- nery, and equipment----	5.3	10.0	1.9	5.0	6.4	5.0	1.4	5.6	4.0	5.2
Depreciation expense----	21.1	45.0	5.8	27.5	8.5	11.8	5.2	30.9	12.0	9.6
Apiary-site rental expense-----	-	5.0	1.9	-	6.4	-	-	1.4	1.5	-
Truck and auto expense---	5.3	-	1.9	2.5	2.1	5.0	3.8	4.2	3.6	.8
Containers purchased----	-	-	-	-	-	2.0	-	-	-	1.8
Gasoline, oil, and fuel--	15.8	10.0	5.8	7.5	4.3	3.0	3.3	5.6	5.4	5.4
Travel expense-----	5.3	-	1.9	2.5	2.1	1.0	1.4	-	1.7	2.8
Shipping and handling expense-----	-	-	1.9	10.0	-	4.0	-	-	1.1	7.3
Interest expense-----	5.3	5.0	-	7.5	-	3.0	1.4	2.8	1.5	3.6
Other beekeeping expense 1/-----	15.6	15.0	11.8	12.5	10.8	15.7	30.6	7.2	15.8	4.4
Total beekeeping expense-----	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

1/ Property taxes, utilities, insurance, office expense, and so forth.

Source: Compiled by the U.S. International Trade Commission from data submitted by U.S. honey producers.

such as property taxes, payroll taxes, insurance, utilities, office expense, professional services, et cetera.

Individual beekeeping expenses vary from one honey producer to another. This is true even for producers with the same number of bee colonies. Local climatic and economic conditions play a part in the variation in expenses, as does individual beekeeping management know-how. Labor costs vary according to the number of unpaid family workers available. For example, producer No. 7 in table 25 had a hired-labor expense equal to 8.7 percent of its total beekeeping expense in 1975--much lower than that of most of the other beekeepers of this size. This particular honey producer is a multifamily corporation.

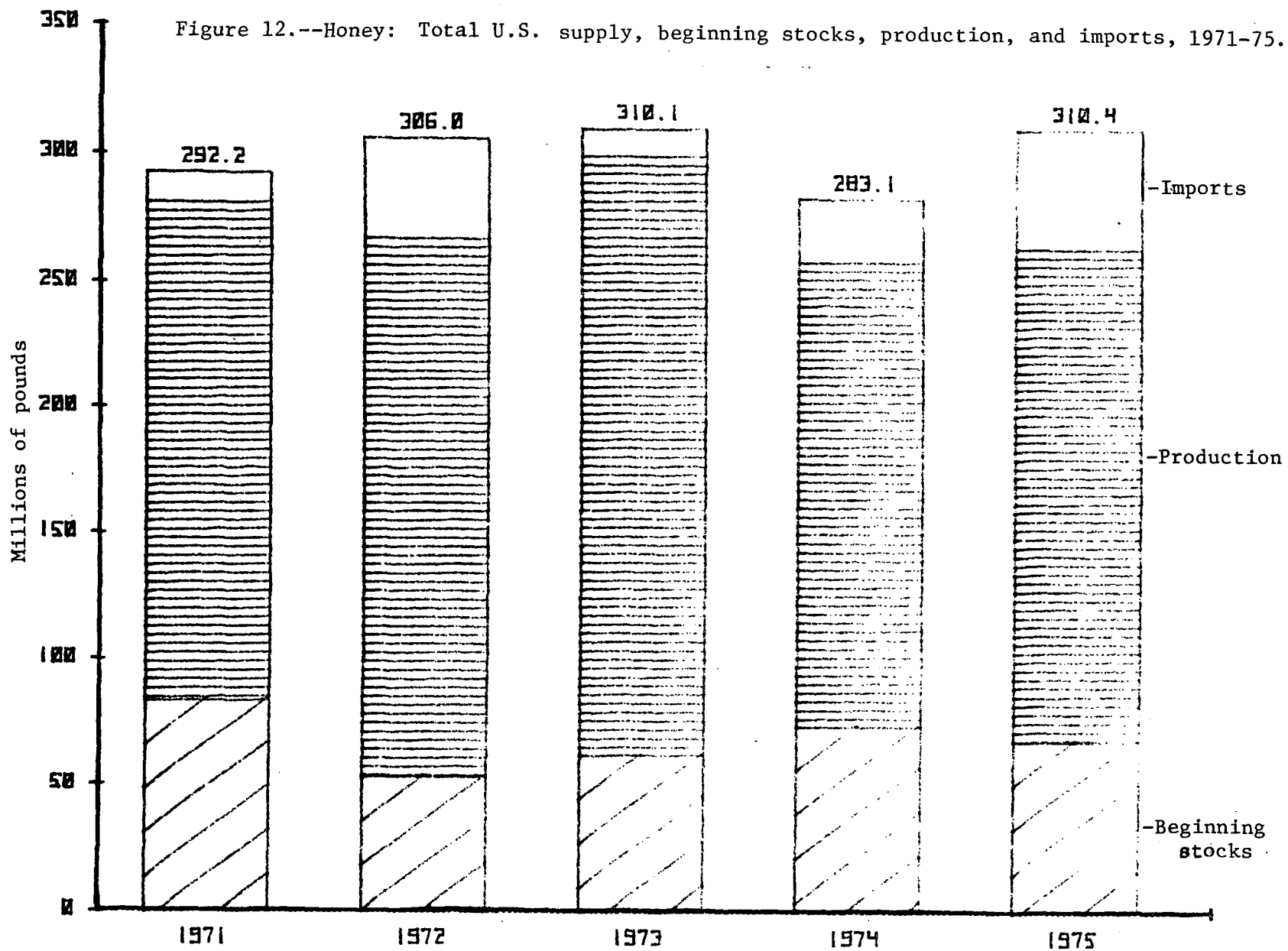
Total U.S. supply and disappearance 1/

The interrelationship of U.S. honey production, imports, exports, stocks, and consumption can be shown by an analysis of supply and disappearance. Figure 12 shows the sources of U.S. honey supplies for the years 1971-75. Total supply available in each of those years was quite stable, ranging only from 283 million to 310 million pounds, despite considerable variation in beginning stocks, production, and imports. The figure indicates that imports tend to stabilize the total supply of honey available in the United States when domestic production and stocks are reduced.

Figure 13 shows disappearance of honey supplies. A decline in consumption appears in 1973 and 1974, when honey prices began to

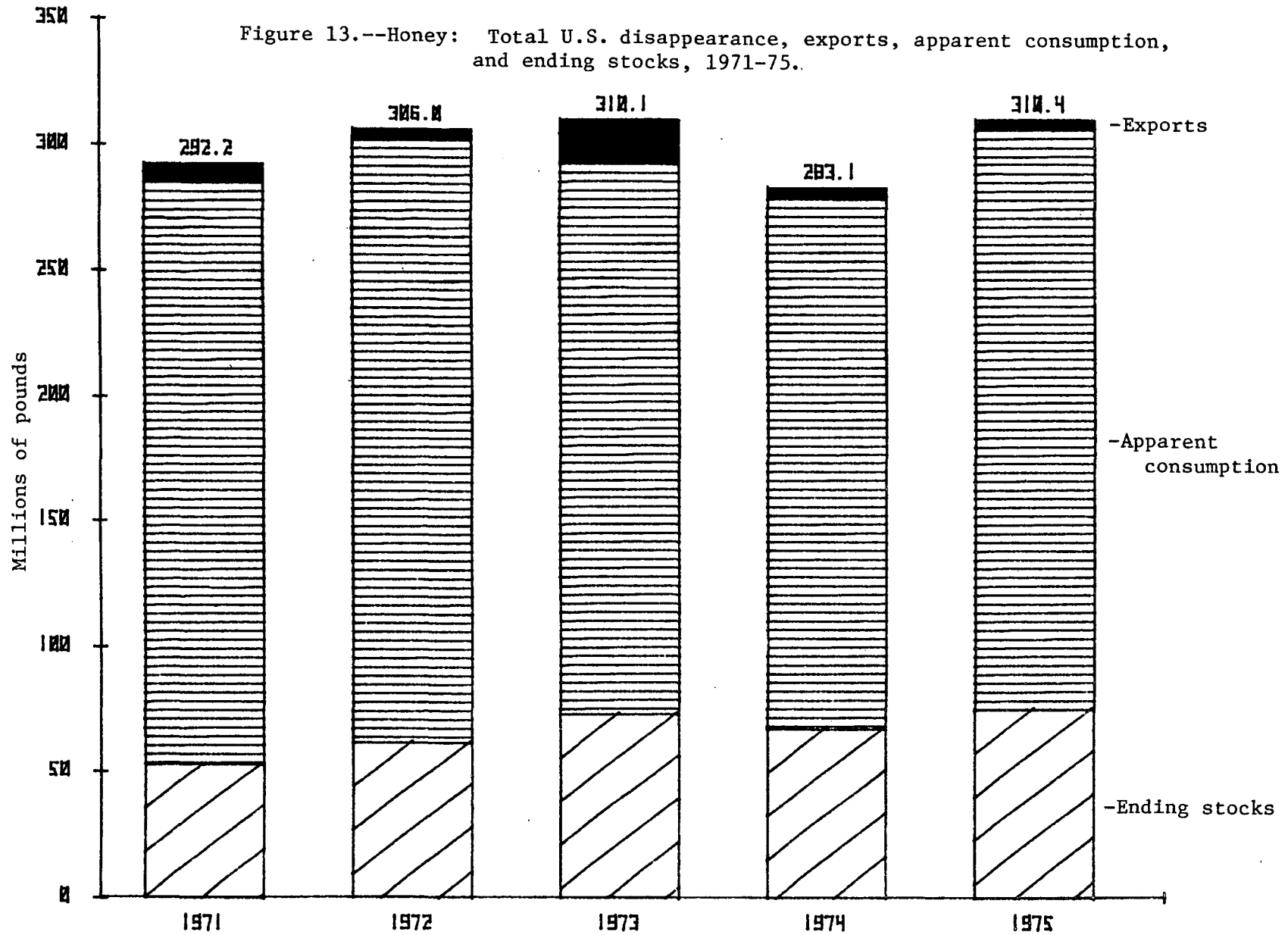
1/ Disappearance, as used herein, includes domestic consumption, exports, and honey going into stocks.

increase toward record levels. As prices stabilized in 1975, consumption again increased. However, increased inventories (and increased exports in 1973) were apparently necessary to remove part of U.S. total supply from the market in the peak supply years of 1973 and 1975.



Source: Compiled by the U.S. International Trade Commission.

Figure 13.--Honey: Total U.S. disappearance, exports, apparent consumption, and ending stocks, 1971-75.



Source: Compiled by the U.S. International Trade Commission.

U.S. producers' efforts to compete

U.S. honey producers have a long history of efforts to make their operations more efficient and profitable. The recent influx of imports has served to stimulate these efforts further. Various means of mechanizing honey production and handling, chemical controls for bee diseases, improved hybrid bees, and more refined colony management practices are probably the most important advances that have been widely adopted by the U.S. industry since World War II. Without these efforts, U.S. honey production and yields would probably be significantly lower than they are.

Mechanization of honey production and handling.--Prior to World War II, beekeeping involved a number of highly labor-intensive operations; however, since that time, producers have adopted many labor-saving devices and techniques. In earlier years a full-time beekeeper might have been fully employed in operating a few hundred colonies of bees, but today a full-time beekeeper often operates a thousand colonies with only a limited amount of supplemental help.

The development and widespread adoption of mechanical hive loaders, usually mounted on large, flatbed trucks, has removed a considerable amount of the hard labor involved in producing honey. Beekeepers have in recent years also adopted laborsaving equipment and techniques in their honey extracting and processing plants. Among the more important of these developments have been the development and perfection of semi-automatic honeycomb uncapping and extracting machines and the recent

widespread adoption and use by commercial beekeepers of 55-gallon barrels and large tanks for the bulk storage and marketing of honey.

Bee diseases.--Bee diseases have always posed a serious economic threat to beekeepers. Such diseases, depending on the type, result in the death of the colony or in a substantial reduction in the colony's population. In earlier years, the only practical way of controlling certain bee diseases was by burning all infected colonies--a highly costly treatment. However, following World War II, sulfathiazole was found to be effective in controlling several of the most devastating diseases, and it came into extensive use. More recently, terramycin has been found to be even more useful in controlling bee diseases and is now widely used. The chemical control of the major bee diseases has resulted in increased per colony yields of honey in operations that were formerly plagued with disease problems, and it has largely eliminated the catastrophic disease-induced financial losses that some beekeepers had experienced in earlier years.

Hybrid bees.--During the last 20 years, highly productive commercial lines of hybrid bees have been made available to U.S. beekeepers, largely through the efforts of one domestic firm. Reportedly, when using these hybrid bees, beekeepers can increase their per colony output of honey by 30 to 100 percent. In recent years, the increased yield potential of the hybrid bees has been somewhat obscured by factors such as unfavorable weather conditions, pesticide injuries to colonies, and reduced sources of nectar, all of which have had a deleterious effect on average yields per colony.

Colony management practices.--Colony management practices, which encourage the development of maximum bee populations and largely discourage the colonies' natural instinct to swarm, have been substantially refined in recent years. Such management practices have had a very positive effect on average yields of honey per colony.

Other recent and anticipated advances.--Other recent advances designed to lower costs, such as the use of plastics for comb foundation, have not yet been widely accepted and have had only a nominal effect on yields. While industry spokesmen and research personnel do not presently anticipate any major breakthroughs that would substantially lower production costs, they do indicate that further improvements in hybrid bees, mechanization, and disease control can be expected. They also believe that the shape of hives and hive equipment may change in the future and that such equipment may be made of plastic. It is also anticipated that improved methods of feeding pollen substitutes will be perfected to hasten the spring buildup of colonies. Research into the roles played by certain chemical substances emitted by queen bees is underway. Such research may lead to further improvements in colony management--especially swarm control.

The Question of Imports as a Substantial Cause of Serious Injury

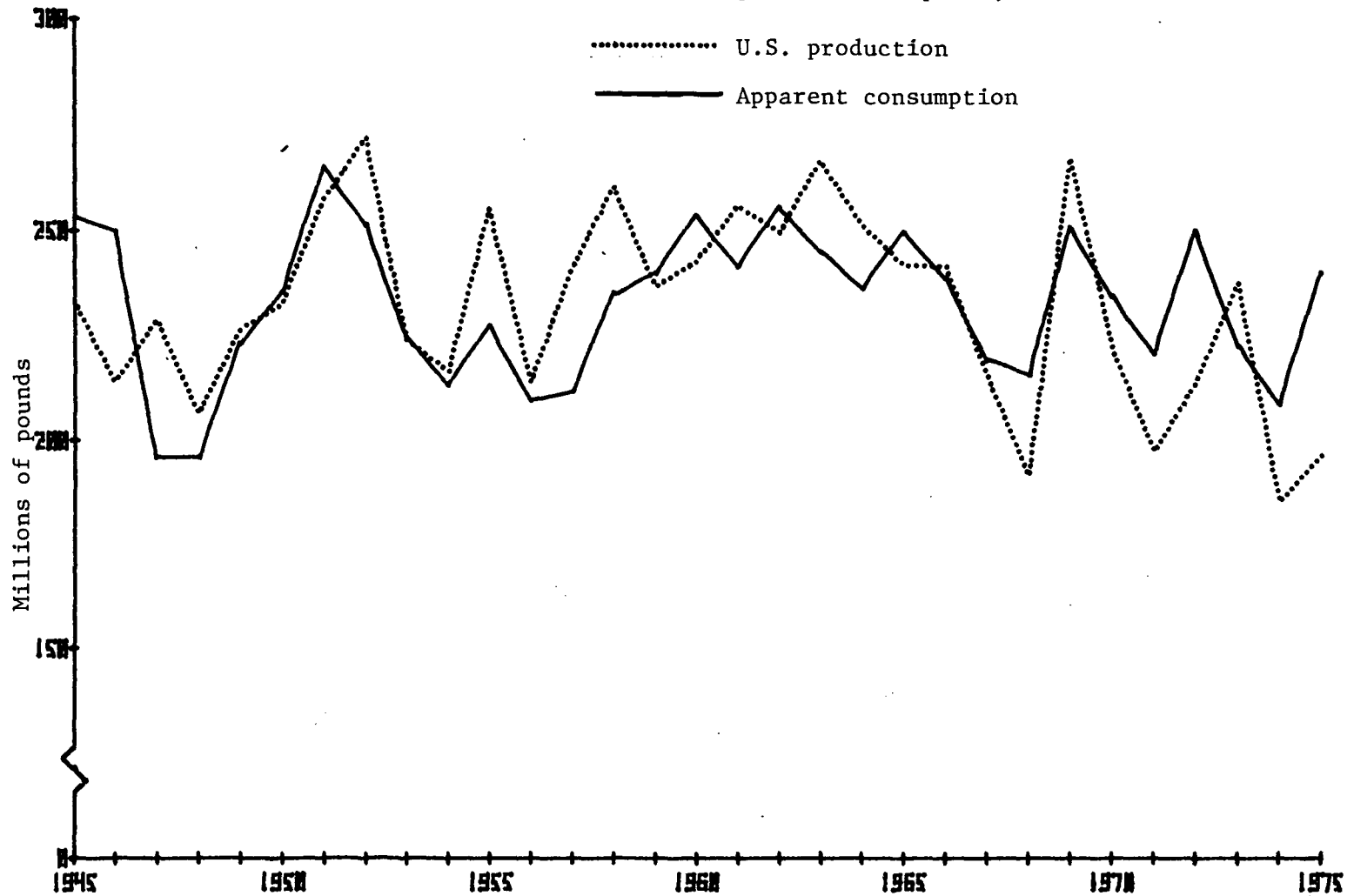
U.S. consumption of honey and other sweeteners

As table 1 shows, annual U.S. consumption of honey has amounted to 200 million to 250 million pounds per year in almost every year since 1943. Figure 14 shows annual consumption compared with U.S. production of honey. Inasmuch as population has been increasing (from an average of 147.2 million in 1946-50 to an average of 210.3 million in 1971-75), the per capita consumption of honey has declined (figure 15). Whereas annual U.S. per capita consumption of honey averaged 1.5 pounds from 1946 to 1950, it averaged only 1.1 pounds in the 1971-75 period.

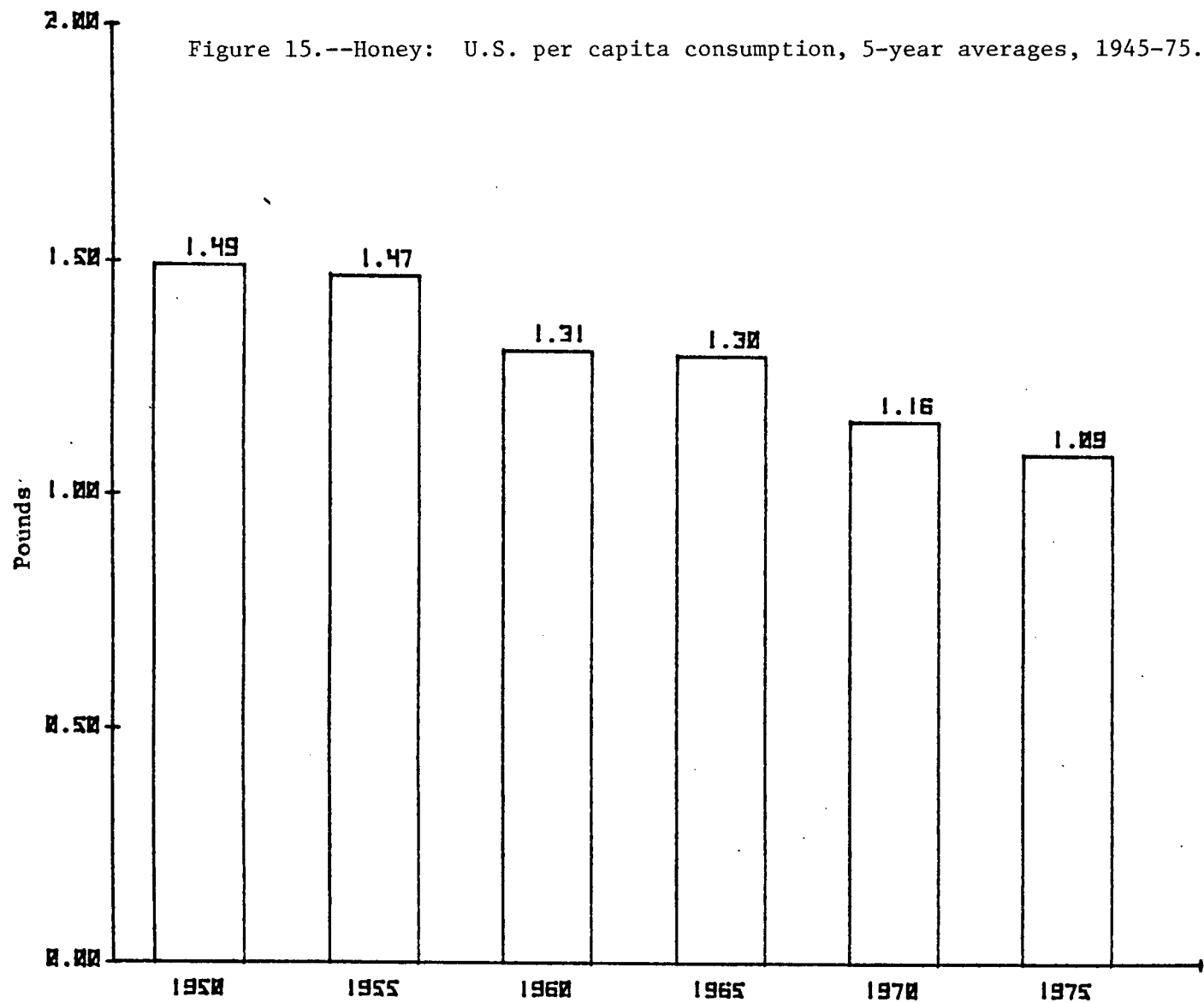
There has been a decline in the proportion of the domestic market supplied by domestic honey producers. From 1971 to 1975, the ratio of imports to apparent consumption increased irregularly from 4.9 percent to 20.1 percent (see table 8, p. A-40). This implies a decline in the share of the domestic market supplied by domestic producers from about 95 percent in 1971 to 80 percent in 1975.

Inasmuch as honey is only one of many sweeteners available for direct consumption or for use in prepared foods, it is necessary to evaluate the competitive effects that other sweeteners have on honey. Table 26 shows production, imports, exports, and indicated domestic consumption of honey and a variety of sirups from 1959 to 1974. Honey production and consumption remained fairly constant, as did production and consumption of most of the competing sweeteners; the significant exception was corn sirup, whose total production and consumption more than doubled over the period.

Figure 14.--Honey: U.S. production and apparent consumption, 1945-75.



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



End date of 5-year period.

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

Table 26.--Honey, edible sirups, and molasses: U.S. production, imports, exports, and indicated domestic consumption, 1959-74

(In thousands of gallons)

Year	Production <u>1/</u>							Imports				
	Sirups						Honey	Total	Maple sirup	Edible molas- ses and cane sirup <u>3/</u>	Honey	Total
	Corn	Cane	Sor- ghum	Ma- ple <u>2/</u>	Re- finers	Edible molas- ses						
1959-----	162,197	3,617	2,286	1,137	3,999	3,084	20,083	196,403	691	2,138	383	3,212
1960-----	169,776	3,676	1,943	1,143	4,134	2,714	20,611	203,997	910	1,884	1,049	3,843
1961-----	180,397	3,519	-	1,524	3,846	3,379	21,721	214,386	904	911	768	2,583
1962-----	201,259	3,303	-	1,460	2,691	3,075	21,189	232,977	929	3,827	604	5,360
1963-----	215,573	2,702	-	1,143	2,769	2,772	22,647	247,606	1,068	1,706	221	2,995
1964-----	238,832	2,814	-	1,546	2,862	2,685	21,323	270,062	666	2,119	417	3,202
1965-----	243,682	2,989	-	1,266	2,994	2,648	20,427	274,006	879	3,349	1,127	5,355
1966-----	252,337	2,923	-	1,476	2,493	2,563	20,403	282,195	938	3,061	806	4,805
1967-----	255,860	2,121	-	979	2,402	2,477	18,225	282,064	1,147	1,065	1,416	3,628
1968-----:4/	274,000	2,346	-	983	2,561	2,466	16,165	298,521	988	3,732	1,427	6,147
1969-----:4/	282,000	2,661	-	1,032	2,235	2,532	22,591	313,051	1,185	2,266	1,244	4,695
1970-----:4/	292,000	-	-	1,110	1,695	2,121	18,736	315,662	956	2,165	749	3,870
1971-----:4/	304,000	-	-	962	1,883	2,517	16,674	326,036	577	2,470	967	4,014
1972-----:4/	352,000	-	-	1,099	2,077	2,290	18,081	375,547	710	1,694	3,291	5,695
1973-----:4/	410,000	-	-	857	2,309	1,926	20,072	435,164	803	2,935	900	4,638
1974 <u>5/</u> --:4/	468,000	-	-	1,087	2,564	1,559	15,653	488,863	801	2,512	2,196	5,509

See footnotes at end of table.

(In thousands of gallons)

Year	Exports				Indicated domestic consumption						
	Corn sirup	Edible	Honey	Total	Sirups					Honey	Total
		molasses			Cane and refiners' sirup and edible molasses	Corn	Maple	Sor- ghum 1/			
		and									
		includ- ing maple 6/									
1959-----	2,245	155	1,062	3,462	159,952	1,828	2,286	12,683	19,404	196,153	
1960-----	1,836	182	797	2,815	167,940	2,051	1,943	12,226	20,863	205,023	
1961-----	1,370	173	607	2,150	179,027	2,428	-	11,482	21,882	214,819	
1962-----	1,514	140	1,158	2,812	199,745	2,389	-	12,756	20,635	235,525	
1963-----	2,055	192	2,125	4,372	213,518	2,211	-	9,757	20,743	246,229	
1964-----	1,632	205	760	2,597	237,200	2,212	-	10,275	20,980	270,667	
1965-----	1,003	-	1,166	2,169	242,679	2,145	-	11,980	20,388	277,192	
1966-----	1,038	-	1,219	2,257	251,299	2,414	-	11,040	19,990	284,743	
1967-----	1,113	-	986	2,209	254,747	2,126	-	8,065	18,655	283,593	
1968-----	1,541	-	684	2,225	272,459	1,971	-	11,105	16,908	302,443	
1969-----	2,169	-	833	3,002	279,831	2,217	-	9,694	23,002	314,744	
1970-----	1,324	-	688	2,012	290,676	2,066	-	5,981	18,797	317,520	
1971-----	1,324	-	640	1,964	302,676	1,539	-	6,870	17,001	328,086	
1972-----	1,205	-	346	1,551	350,795	1,809	-	6,061	21,026	379,691	
1973-----	1,377	-	1,485	2,861	408,623	1,680	-	7,170	19,488	436,941	
1974 5/	1,742	-	386	2,128	466,258	1,888	-	6,635	17,463	492,244	

1/ Production of cane sirup, sorghum sirup, and edible molasses is of the fall of the preceding year. Estimates of sorghum discontinued beginning 1961; cane sirup discontinued, beginning 1969.

2/ Does not include varying quantities produced on nonfarm lands in Somerset County, Maine.

3/ U.S. Department of Commerce molasses and sugar sirups series, less liquid sugar imports reported to Sugar Division, Agricultural Stabilization and Conservation Service.

4/ Unofficial estimates.

5/ Preliminary.

6/ Assumed to be largely refiners' sirup. Beginning 1965, data not available because of change in export classification.

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

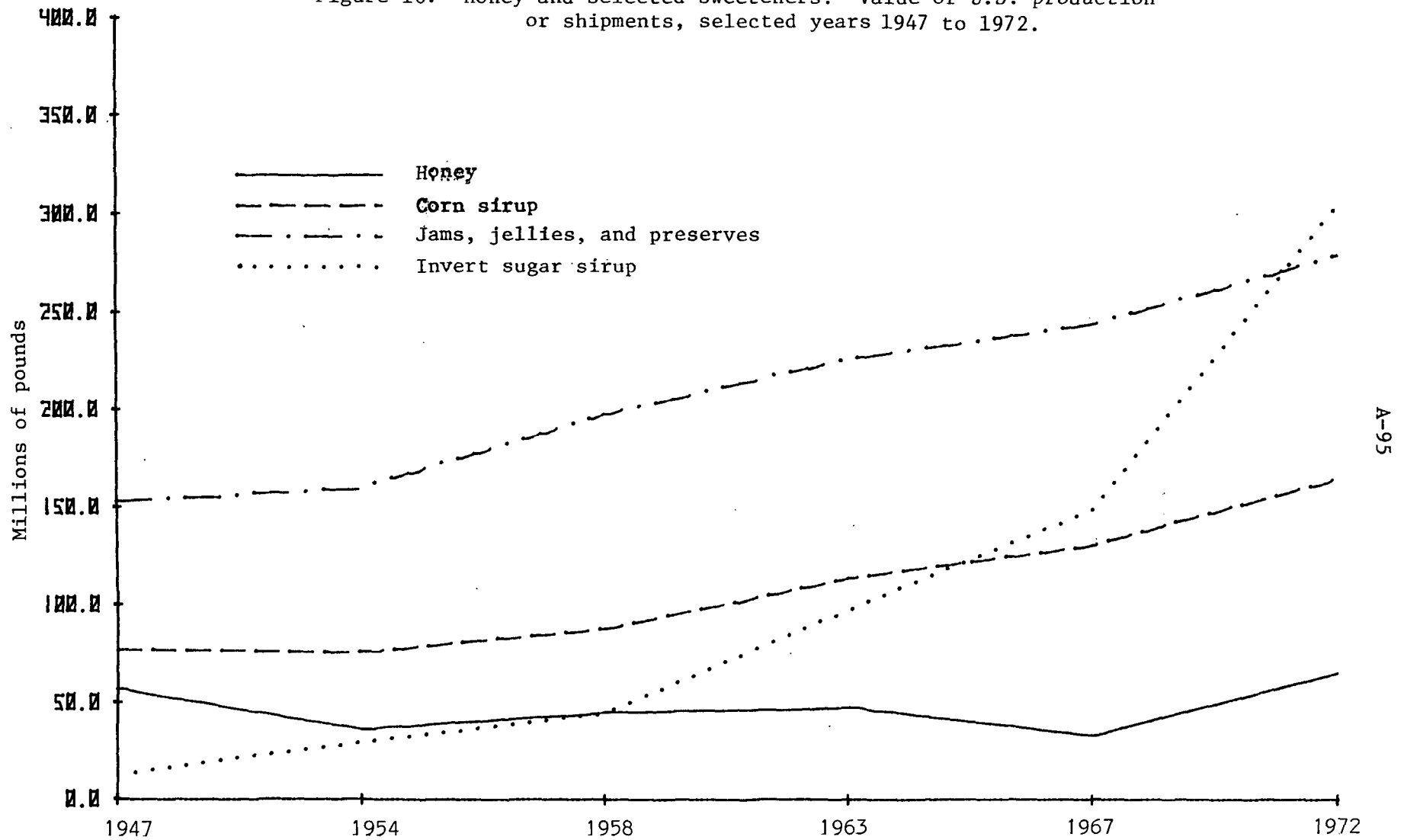
Table 27 shows the value of production or shipments of honey and four other sweeteners for selected years. It can be seen that honey and sirups other than corn sirup and invert sugar sirups are losing their share of the market. Figure 16 shows the growth in production (by value) of honey; corn sirup; jams, jellies, and preserves; and invert sugar sirups. Clearly, invert sugar sirup and corn sirup have outpaced the other sweeteners in terms of relative growth.

Table 27.--Honey and selected sweeteners: Value of U.S. production or shipments, selected years 1947 to 1972

Sweetener	1947	1954	1958	1963	1967	1972
	Value (million dollars)					
Honey-----	56.9	36.7	45.2	48.1	33.7	64.6
Corn sirup-----	77.1	75.7	87.9	113.5	131.4	165.1
Jams, jellies, and preserves-----	152.6	160.0	197.7	227.3	245.2	280.3
Invert sugar sirup---	12.9	29.5	44.6	96.7	149.4	306.1
Maple sirup, sugar sirup, and molasses-----	17.2	11.4	12.3	8.2	9.1	13.5
	Unit value (cents per pound)					
Honey-----	24.9	17.0	17.4	18.0	15.6	30.2
Corn sirup-----	4.8	5.5	5.1	5.0	4.8	4.0
Jams, jellies, and preserves-----	30.0	38.5	33.3	31.5	34.0	36.6
Invert sugar sirup---	2.4	7.9	8.4	10.2	9.4	11.6

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

Figure 16.--Honey and selected sweeteners: Value of U.S. production or shipments, selected years 1947 to 1972.



Source: Compiled by the U.S. International Trade Commission.

Table 27 also shows the average unit values of honey, corn sirup, invert sugars, and jams, jellies, and preserves for selected years. Jams, jellies, and preserves, which compete directly with honey for table use, had an average unit value higher than honey during the period 1947-72. Corn sirup and invert sugar sirup competed with honey for baking uses and in prepared foods, but honey enjoys a prestige value in these products that helps compensate somewhat for the much lower average unit value of the sugar sirup and corn sirup. For many years the price of invert sugar sirup was the floor price for industrial-grade honey, but currently invert sugar sirup is being supplanted by high-fructose corn sirup. Honey for industrial use has always commanded a slight premium over its competitors because of the advantage of "honey" appearing on the label of the product. In recent years this premium has increased.

The high prices for honey in the 1970's caused many bakers to drop their "made with honey" bread and other product lines. Tobacco manufacturers' use of honey has declined substantially. The market for industrial honey is rapidly narrowing to a very small proportion of total honey consumption--probably less than 5 percent.

Honey prices

Prices received by U.S. producers.--Many factors affect the price producers receive for honey. The following are the major factors and the effects:

1. Color: Lighter table grades command premium prices, whereas most darker grades are sold at a discount for industrial use.

2. Floral source: While the floral source affects color, certain floral sources command a premium price because of their popularity and high levulose content. (Orange blossom honey is apparently achieving this level of popularity. Buckwheat honey is a darker honey that commands a premium price.)

3. Container size: Honey is sold in several standard-size containers, with bulk sizes leading to lower honey prices. The most popular bulk containers are 55-gallon drums and 60-pound cans. These are used for imports and for producer sales to wholesalers and processors. Five-pound and smaller containers are popular at retail.

4. Stage of processing: Processing and packaging add to the base price of wholesale, bulk, unprocessed, extracted honey.

5. Markets: Sales through wholesale channels, sales by brand or private label, direct retail sales, and sales through the backdoor by honey producers are all made at difference prices.

6. Location: Prices seem to be generally lower in high-producing regions and higher in low-producing regions. Further, certain honey types command a premium in certain areas (e.g., gaulberry is popular in Georgia and other parts of the south, but of little importance elsewhere).

Voluminous price data from the U.S. Department of Agriculture and various honey publications often reveal the workings of one or more of the factors above. The most commonly cited price statistics are the average unit values of honey (the prices received by producers at whatever stage of processing and marketing, and regardless of floral source and color). These are shown in table 28. The average annual honey price ranged from 15 to 19 cents per pound from 1950 to 1970, then rose sharply to a record high of 51 cents in 1974 and remained near that price in 1975. Prices received by commercial producers are best represented by the wholesale price for extracted honey in containers holding 60 pounds or more.

Table 28.--Prices received by U.S. producers for honey, by types, average unit values, 1950-75

(In cents per pound)									
Year	Prices of extracted honey			Prices of chunk honey		Prices of comb honey			
	Wholesale							Prices of	
	60 pounds	All	Retail	Wholesale	Retail	Wholesale	Retail	all honey	
	or larger	containers							
1950-----	10.2	11.6	20.7	22.5	29.0	29.2	33.0	15.3	
1951-----	10.3	11.9	21.2	25.1	31.6	29.6	33.8	16.0	
1952-----	11.4	12.6	21.3	24.8	31.1	30.0	33.6	16.2	
1953-----	11.5	12.9	21.9	24.7	31.5	30.2	34.5	16.5	
1954-----	11.8	13.2	22.5	25.1	31.9	30.2	35.0	17.0	
1955-----	12.9	14.3	23.4	26.6	33.0	30.9	35.5	17.8	
1956-----	13.6	15.2	24.8	27.0	33.4	31.7	36.3	19.0	
1957-----	13.4	15.0	24.7	26.9	33.8	32.6	37.2	18.7	
1958-----	12.0	13.6	24.6	26.8	33.6	33.0	37.5	17.4	
1959-----	12.2	13.7	25.1	26.8	33.6	32.9	36.6	17.0	
1960-----	12.9	14.4	26.4	28.0	35.2	33.7	38.6	17.9	
1961-----	13.2	14.6	26.2	28.4	34.9	34.3	38.8	18.0	
1962-----	12.8	14.0	26.9	28.6	35.6	34.0	38.3	17.4	
1963-----	14.2	15.3	27.2	28.8	35.8	35.1	39.9	18.0	
1964-----	13.8	15.0	28.2	30.1	38.2	35.0	40.3	18.6	
1965-----	13.2	14.3	28.0	29.2	38.3	34.9	38.7	17.8	
1966-----	13.1	13.5	27.9	27.9	37.5	36.1	40.8	17.4	
1967-----	<u>1/</u> 12.4	13.5	29.7	27.9 <u>2/</u>	30.7 37.9	35.0 <u>2/</u>	38.4 42.5	15.6	
1968-----	12.9	14.7	30.6		29.8		40.0	16.9	
1969-----	13.6	15.2	31.6		32.3		41.1	17.5	
1970-----	14.2	15.4	32.1		36.2		41.7	17.4	
1971-----	18.0	19.6	36.6		40.6		46.3	21.8	
1972-----	27.0	28.6	43.1		51.4		52.6	30.2	
1973-----	42.1	43.0	56.4		68.1		65.1	44.4	
1974-----	47.7	49.1	68.1		72.1		83.9	51.0	
1975-----	45.7	47.8	71.0		86.8		88.7	50.6	

1/ New classification of wholesale, extracted, bulk, unprocessed honey.

2/ Wholesale and retail classifications discontinued.

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

Table 29 shows honey prices by stages of marketing, from wholesale unprocessed bulk honey to retail-packed honey. This price series is also shown graphically in figure 17. While the average honey price received by producers declined slightly in 1975, the wholesale price of packed honey and the retail price of honey continued to increase. The price spread between what the honey producer received and what the retail consumer paid narrowed in 1973, but widened in 1974 and 1975.

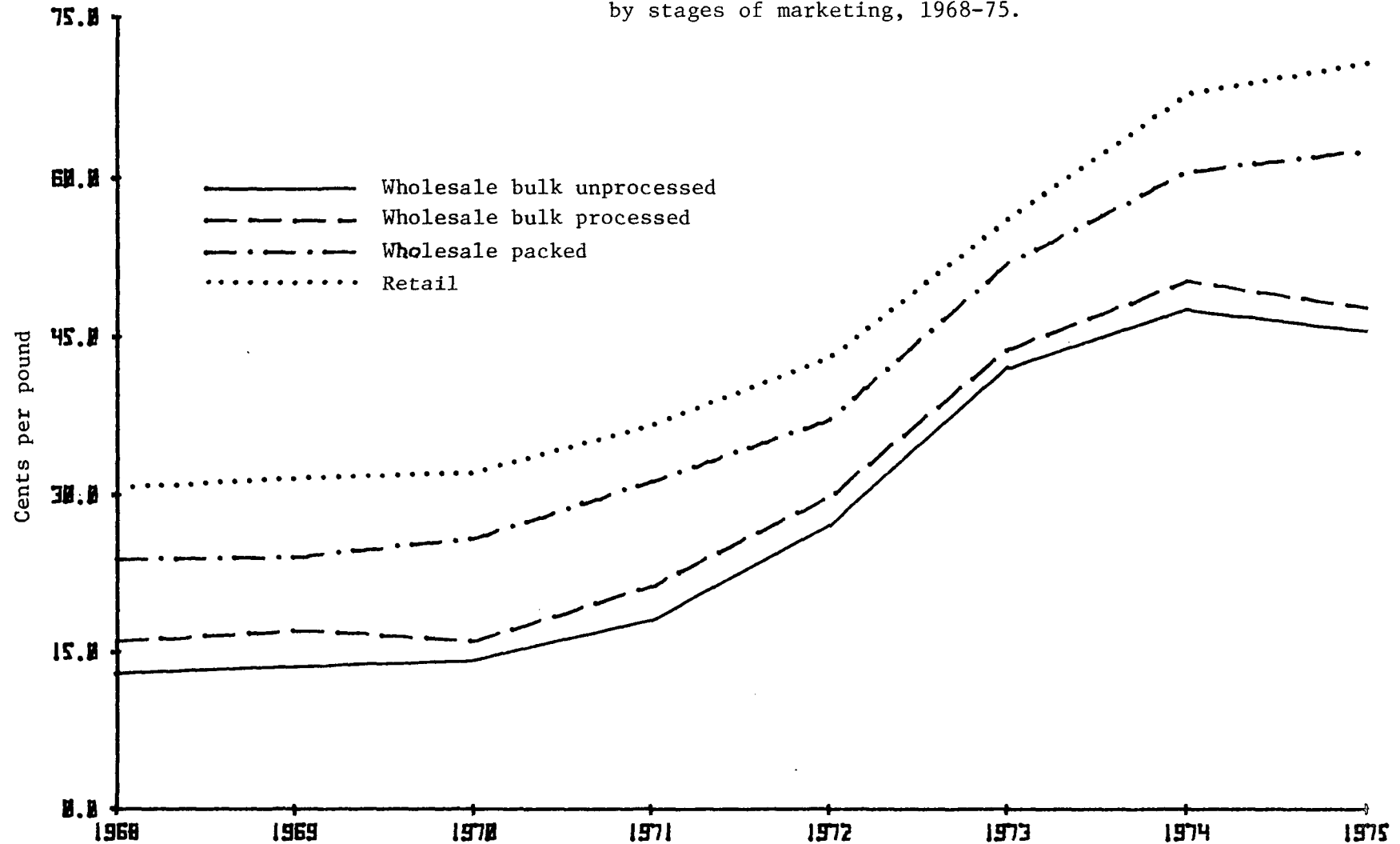
In 1974 the retail price increased at a greater rate than did the producer price, and in 1975 the retail price continued to rise but the producer price declined. The processing and packing costs and retail markups implied by the price series are also shown in table 29.

Table 29.--Average price per pound of extracted honey in the United States and implied value added, by stages of marketing, 1968-75

(In cents per pound)								
Stages of marketing	1968	1969	1970	1971	1972	1973	1974	1975
Price								
Wholesale bulk:	:	:	:	:	:	:	:	:
Unprocessed---	12.9	13.6	14.2	18.0	27.0	42.1	47.7	45.7
Processed-----	16.0	17.0	16.0	21.3	29.8	43.9	50.4	47.9
Wholesale	:	:	:	:	:	:	:	:
packed-----	23.8	24.0	25.8	31.3	37.2	52.1	60.8	62.8
Retail-----	30.6	31.6	32.1	36.6	43.1	56.4	68.1	71.0
Implied value added								
Processing-----	3.1	3.4	1.8	3.3	2.8	1.8	2.7	2.2
Packing-----	7.8	7.0	9.8	10.0	7.4	8.2	10.4	14.9
Retailing-----	6.8	7.6	6.3	5.3	5.9	4.3	7.3	8.2
Total-----	17.7	18.0	17.9	18.6	16.1	14.3	20.4	25.3

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

Figure 17.--Average price per pound of extracted honey in the United States,
by stages of marketing, 1968-75.



A-100

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

Statistics on prices by floral source, color, and market are shown in table 30.

Price relationships between domestic and imported honey.--Table 2 (p. A-7) shows the average unit value of imported honey to have been between 8.1 cents per pound and 15.1 cents per pound from 1951 to 1971. The average unit value then rose sharply through at least 1974. Overall, from 1951 through 1970, imported honey was valued at an average of 10.9 cents per pound. These data should be noted only for the long-run trends shown, since the average unit values of the imports are foreign values, whereas the domestic honey price is the price received by producers in the United States. Further, the average unit values include the values of different kinds of honey at different stages of processing and marketing.

Questionnaires were sent to domestic processors and/or importers of honey to obtain the prices (delivered) they paid for domestic and imported honey of the same type, in the same size containers, and in the same market, in order to appraise "head to head" price competition between domestic and imported honey. The types of honey selected were table and industrial honey. Industrial honey was defined as "honey of grade 86 and over on the Pfund color number scale, and all other honey that the respondent knew was going into baking or nontable uses." Table honey was quite simply defined as "honey other than industrial honey." The size of containers was specified as either 60-pound cans or larger, or smaller than 60-pound cans. Nearly all the transactions reported were for bulk honey (containers of 60 pounds or more); discussion will be confined to bulk honey.

Table 30.--Average wholesale prices of extracted honey in the United States, by specified types and locations, 1964-74 1/

(In cents per pound)											
Type of honey and location	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974
Florida white to extra light	:	:	:	:	:	:	:	:	:	:	:
amber orange: Florida	:	:	:	:	:	:	:	:	:	:	:
points <u>2/</u> -----	14.7	13.2	12.5	-	15.5	17.8	14.2	20.0	31.2	36.0	40.0
California white to water	:	:	:	:	:	:	:	:	:	:	:
white orange: Southern	:	:	:	:	:	:	:	:	:	:	:
California points <u>2/</u> -----	13.6	11.6	11.3	11.7	12.1	13.1	14.7	19.8	30.7	36.5	42.1
California light amber to	:	:	:	:	:	:	:	:	:	:	:
extra light amber alfalfa:	:	:	:	:	:	:	:	:	:	:	:
Southern California	:	:	:	:	:	:	:	:	:	:	:
points <u>2/</u> -----	13.0	10.5	10.0	10.5	11.3	12.3	14.5	20.0	28.9	43.0	41.4
White to water white sweet-	:	:	:	:	:	:	:	:	:	:	:
clover or alfalfa: <u>3/</u>	:	:	:	:	:	:	:	:	:	:	:
western States <u>4/</u> -----	14.0	13.2	13.3	13.2	13.6	15.0	14.4	18.5	29.9	45.3	48.3
White clover: New York and	:	:	:	:	:	:	:	:	:	:	:
North Central States <u>2/</u> -----	14.0	13.7	14.0	14.0	14.2	14.8	14.6	19.0	31.2	40.8	47.1

1/ Simple average of average monthly prices; except where otherwise stated, price to beekeepers, f.o.b. shipping point or delivered nearby market.

2/ Prices are those paid to beekeepers for honey in large lots, mostly truck lots.

3/ Prices are those paid to beekeepers or other shippers for honey, mostly in truck lots or car lots.

4/ Intermountain States through 1970; does not include California.

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

Responses covered about 14 million pounds of foreign honey reported by processors and 32 million pounds reported by importers. However, these figures cannot be added to obtain total imports, since some of the processors' honey was purchased from the importers. Data from the questionnaires accounted for 46 percent of U.S. production of honey in 1975 and for about 90 percent of the domestic honey processed by processors in that year.

Among the processors and importers included are several that reported only total domestic purchases or imports, without separating the totals into table and industrial honey. For this reason, averages, percentages, and other measures for table and industrial honey in the tables, graphs, and discussion to follow may not add to the comparable measures for total honey. In fact, the trend for prices of all honey reported declined more than the trends for either table or industrial honey reported by those processors that reported table and industrial honey separately.

The responses to the questionnaires by processors are compiled in table 31 and are shown graphically in figures 18, 19, and 20. Weighted average prices paid by processors for domestic honey for the 20-month period July 1974 through February 1976 averaged 44.9, 40.5, and 44.6 cents per pound for table, industrial, and total honey, respectively, compared with 43.6, 40.4, and 41.4 cents per pound, respectively, that processors paid for comparable imported honey. 1/

1/ Responses show only a small number of purchases of foreign industrial honey * * * , which may account for the unexpected result that the import price for industrial honey appears to be above the domestic price for industrial honey for half the observations reported.

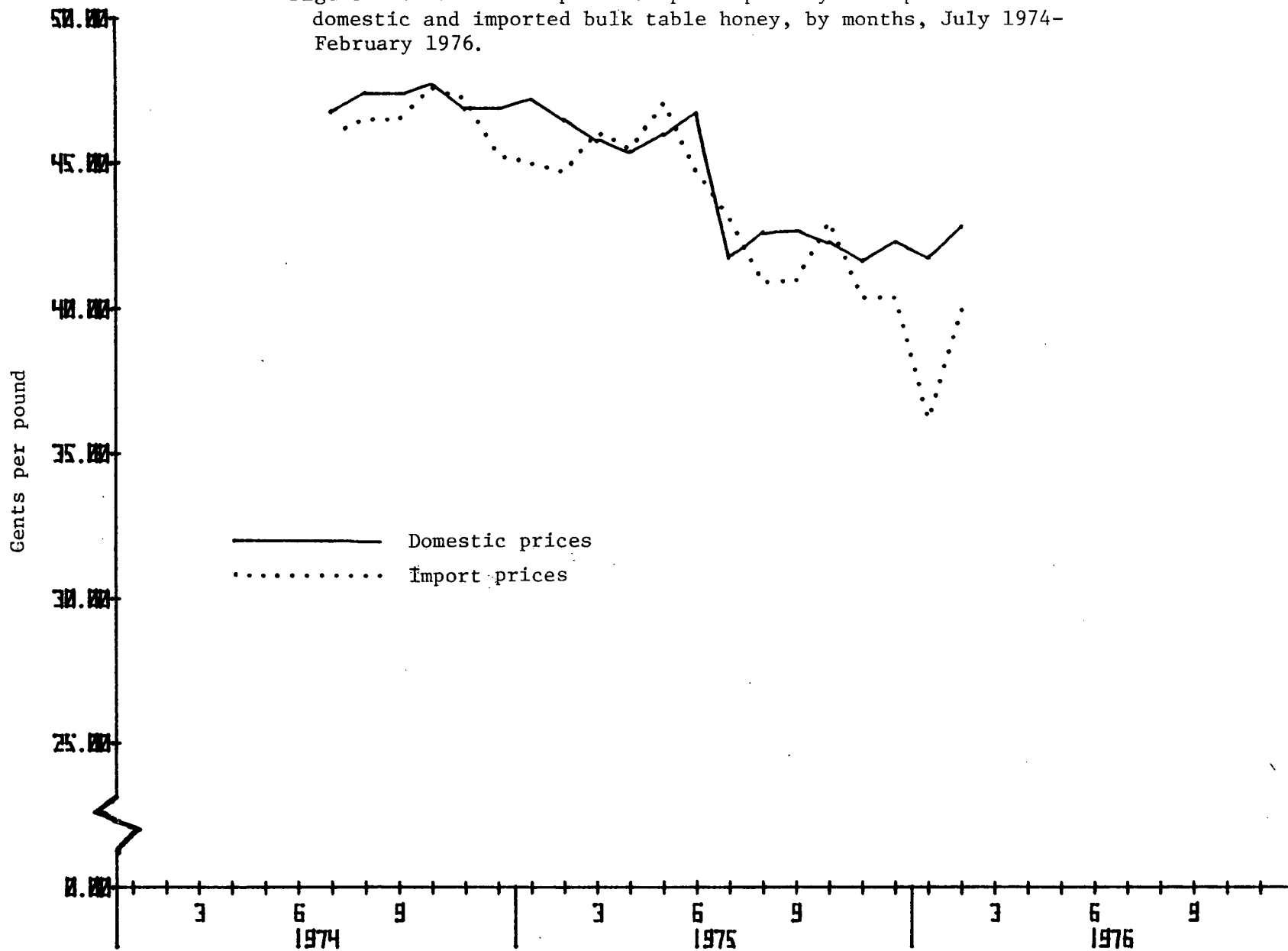
Table 31.--Weighted average (delivered) prices paid by U.S. processors for domestic and imported table, industrial, and total bulk honey purchased, together with ranges of prices for total bulk honey, by months, July 1974-February 1976

(In cents per pound)									
Year and month	Weighted average prices of table honey purchased		Weighted average prices of industrial honey purchased		Weighted average prices of total honey purchased <u>1/</u>				
	Domestic	Imported	Domestic	Imported	Domestic		Imported		
					Weighted average	Range	Weighted average	Range	
1974:									
July----	46.8	46.0	39.9	47.0	46.9	38-52	46.4	46-47	
Aug----	47.4	-	42.0	42.0	47.2	37-50	42.7	42-45	
Sept----	47.4	-	44.6	40.0	47.3	37-50	40.0	40	
Oct----	47.7	47.6	43.4	45.0	47.3	40-50	47.2	43-48	
Nov----	46.9	47.2	44.8	45.0	46.1	38-50	47.0	32-48	
Dec----	46.9	45.3	41.8	45.0	46.7	37-55	45.3	44-48	
1975:									
Jan----	47.2	45.0	42.1	45.0	47.0	39-50	42.0	38-48	
Feb----	46.5	44.7	43.9	40.0	46.2	39-49	40.4	34-48	
Mar----	45.8	46.1	40.3	48.2	45.5	37-49	43.8	39-49	
Apr----	45.4	45.5	42.2	43.0	44.6	38-50	42.5	38-48	
May----	46.0	47.1	39.5	37.0	45.8	38-50	42.6	36-48	
June----	46.7	44.7	41.6	45.0	46.5	38-50	41.9	34-48	
July----	41.8	43.1	37.5	34.0	41.6	35-46	40.1	34-44	
Aug----	42.6	40.9	38.6	37.5	42.4	33-48	38.2	30-43	
Sept----	42.7	41.0	37.9	39.0	42.6	32-48	38.9	31-43	
Oct----	42.3	43.0	38.0	32.0	42.3	33-48	38.6	31-43	
Nov----	41.7	40.4	38.5	39.0	41.5	31-48	39.2	33-43	
Dec----	42.3	40.4	37.4	34.0	41.7	32-48	37.0	33-44	
1976:									
Jan----	41.8	36.2	38.5	35.0	41.4	36-47	35.6	32-43	
Feb----	42.8	40.0	37.5	35.7	42.2	39-48	37.7	36-43	

1/ Includes processors who reported total honey only, and did not break out their purchases by type, so weighted average prices for total honey purchased may exceed the average prices of both table and industrial honey.

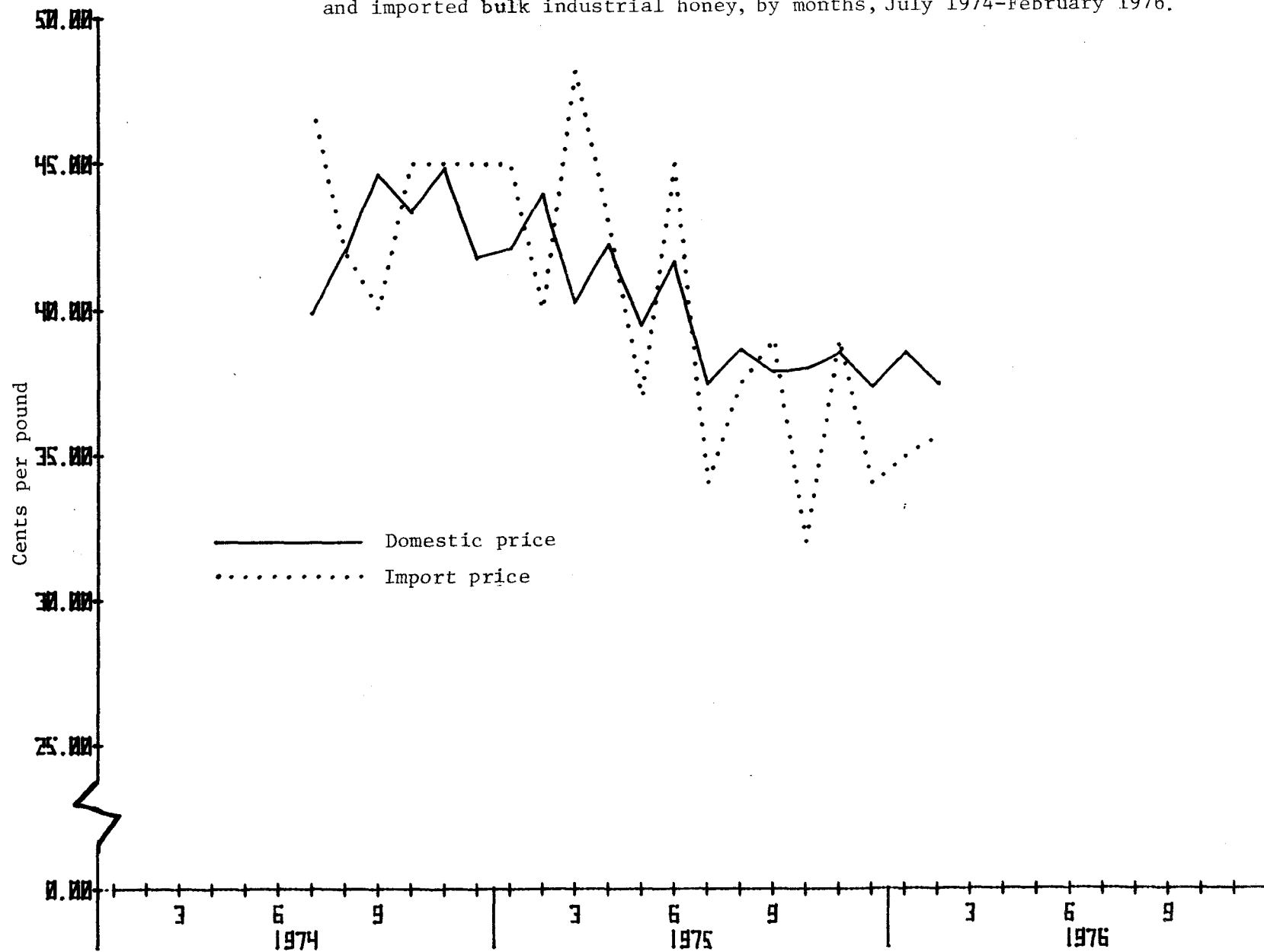
Source: Compiled by the U.S. International Trade Commission from data submitted by processors.

Figure 18.--Delivered purchase price paid by U.S. processors for domestic and imported bulk table honey, by months, July 1974-February 1976.



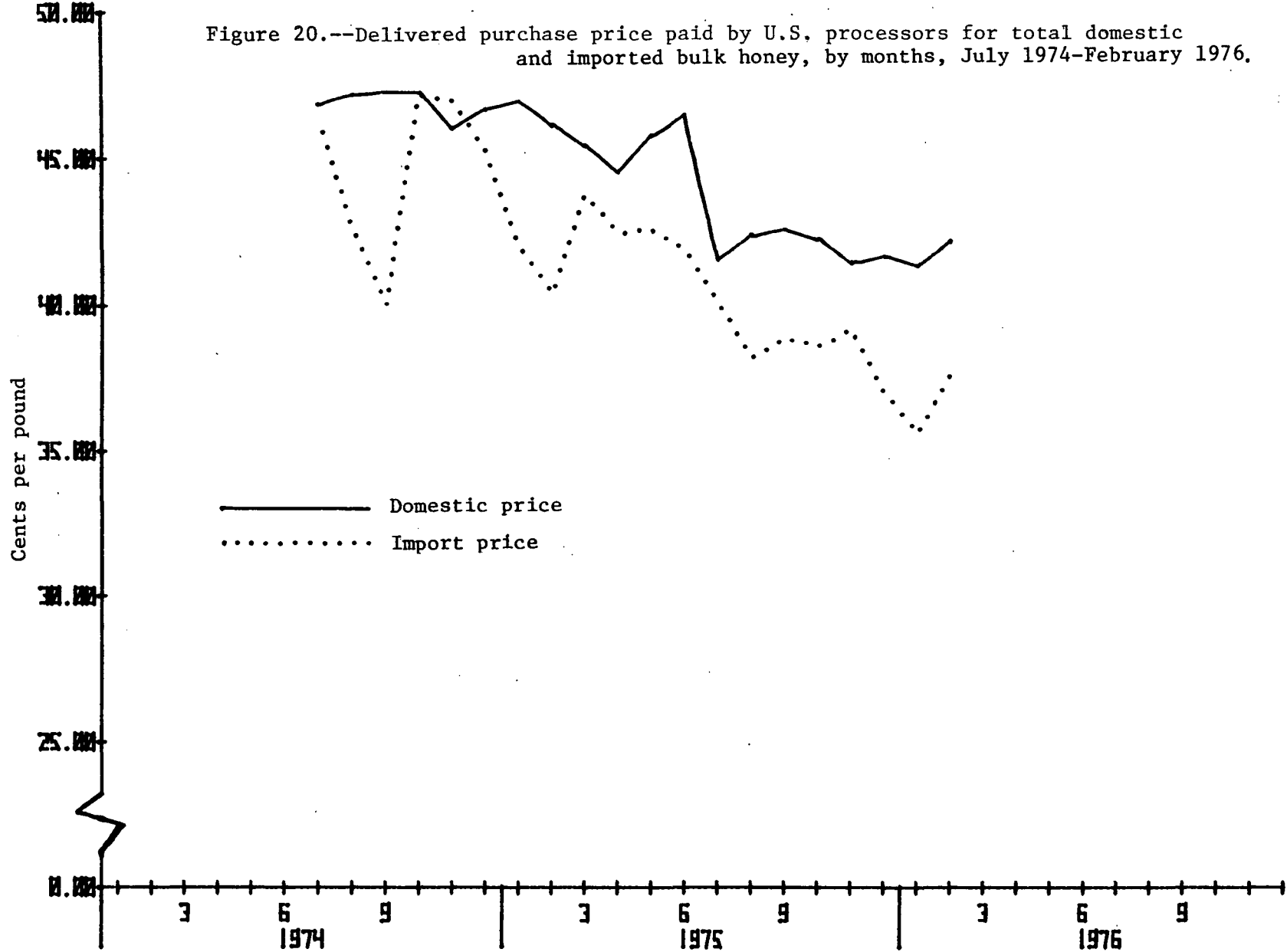
Source: Compiled by the U.S. International Trade Commission from data submitted by processors.

Figure 19.--Delivered purchase price paid by U.S. processors for domestic and imported bulk industrial honey, by months, July 1974-February 1976.



Source: Compiled by the U.S. International Trade Commission from data submitted by processors.

Figure 20.--Delivered purchase price paid by U.S. processors for total domestic and imported bulk honey, by months, July 1974-February 1976.



Source: Compiled by the U.S. International Trade Commission from data submitted by processors.

Weighted average prices (delivered) paid by importers for honey are shown in table 32 and figure 21. Importers' prices averaged 40.0, 35.2, and 38.6 cents per pound, respectively, for table, industrial, and total bulk honey for the 20-month period.

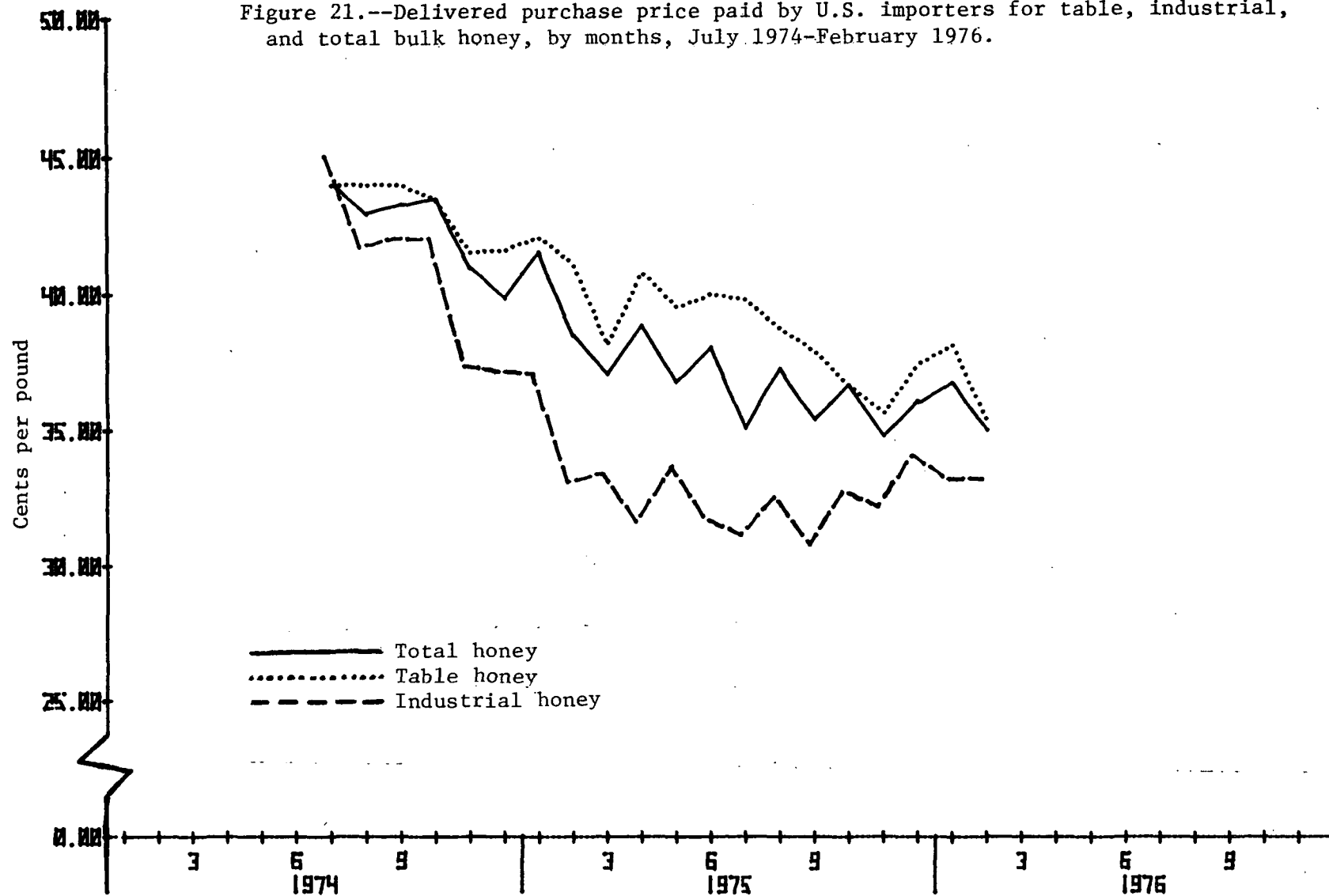
Table 32.--Weighted average delivered prices paid by U.S. importers for table, industrial, and total bulk honey, by months, July 1974-February 1976

(In cents per pound)				
Year and month	Weighted average prices			
	Table honey	Industrial honey	Total honey	<u>1/</u>
1974:	:	:	:	:
July-----	44.0 :	45.0 :	44.0	
August-----	44.0 :	41.7 :	43.0	
September-----	44.0 :	42.0 :	43.3	
October-----	43.5 :	42.0 :	43.5	
November-----	41.5 :	37.3 :	41.0	
December-----	41.6 :	37.1 :	39.9	
1975:	:	:	:	:
January-----	42.1 :	37.0 :	41.5	
February-----	41.1 :	33.0 :	38.5	
March-----	38.1 :	33.3 :	37.1	
April-----	40.8 :	31.5 :	38.8	
May-----	39.5 :	33.5 :	36.8	
June-----	40.0 :	31.6 :	38.0	
July-----	39.8 :	31.0 :	35.1	
August-----	38.7 :	32.4 :	37.2	
September-----	37.9 :	30.6 :	35.4	
October-----	36.6 :	32.6 :	36.6	
November-----	35.6 :	32.0 :	34.8	
December-----	37.4 :	33.9 :	36.0	
1976:	:	:	:	:
January-----	38.1 :	33.0 :	36.7	
February-----	35.3 :	33.0 :	35.0	

1/ Includes honey entered by importers that reported total honey only, and did not break out their purchases by type, so weighted averages for table and industrial honey may be inconsistent with those for total honey.

Source: Compiled by the U.S. International Trade Commission from data submitted by importers.

Figure 21.--Delivered purchase price paid by U.S. importers for table, industrial, and total bulk honey, by months, July 1974-February 1976.



Source: Compiled by the U.S. International Trade Commission from data submitted by importers.

When the weighted average prices for processed domestic and imported honey are represented by index numbers (as in table 33), it can be seen that the prices of domestic honey fell 8.5 percent, 6.0 percent, and 10.0 percent for table, industrial, and total honey, respectively, from July 1974 through February 1976. During the same period, the prices of imported honey purchased by processors fell by 13.0 percent, 24.0 percent, and 18.7 percent for table, industrial, and total honey, respectively. (The prices paid by importers fell 19.8, 26.7, and 20.5 percent for imported table, industrial, and total honey, respectively). Since the prices of imported honey were lower than those of domestic honey in July 1974, the price differences are seen to have increased even further by February 1976. This is seen in figure 22, which shows the price differences and the trend for total domestic and imported honey.

Tables 34 and 35 show quantities of honey purchased by processors and quantities imported, respectively. When the monthly average purchases reported by processors and importers for table and industrial honey are compared, it is clear that processors' purchases of domestic honey averaged 5.3 percent industrial honey and 94.7 percent table honey. Processors' purchases of imported honey averaged 14.6 percent industrial honey and 85.4 percent table honey. Importers reported that their imports averaged 23.5 percent industrial honey and 76.5 percent table honey.

Table 33.--Indexes of weighted average delivered prices paid by U.S. processors for domestic and imported table, industrial, and total bulk honey, by months, July 1974-February 1976

(July 1974=100)							
Year and month	Table honey		Industrial honey		Total honey ^{1/}		
	Domestic	Imported	Domestic	Imported	Domestic	Imported	
1974:	:	:	:	:	:	:	:
July-----	100.0	100.0	100.0	100.0	100.0		100.0
August-----	101.2	-	105.3	89.4	100.6		92.0
September-----	101.2	-	111.8	85.1	100.9		86.2
October-----	101.9	103.5	108.8	95.7	100.9		101.7
November-----	100.2	102.6	112.3	95.7	98.3		101.3
December-----	100.2	98.5	104.8	95.7	99.6		97.6
1975:	:	:	:	:	:	:	:
January-----	100.9	97.8	105.5	95.7	100.2		90.5
February-----	99.4	97.2	110.0	85.1	98.5		87.1
March-----	97.9	100.2	101.0	102.6	96.8		94.4
April-----	97.0	98.9	105.8	91.5	95.1		91.6
May-----	98.3	102.4	99.0	78.7	97.7		91.8
June-----	99.8	97.2	104.3	95.7	99.1		90.3
July-----	89.3	93.7	94.0	72.3	88.7		86.4
August-----	91.0	88.9	96.7	79.8	90.4		82.3
September-----	91.2	89.1	95.0	83.0	90.8		83.8
October-----	90.4	93.5	95.2	68.1	90.2		83.2
November-----	89.1	87.8	96.5	83.0	88.5		84.5
December-----	90.4	87.8	93.7	72.3	88.9		79.7
1976:	:	:	:	:	:	:	:
January-----	89.3	78.7	96.5	74.5	88.3		76.7
February-----	91.5	87.0	94.0	76.0	90.0		81.3

^{1/} Includes processors that reported total honey only and did not break out the purchases by type, so price indexes for total honey may be inconsistent with those for table and industrial honey.

Source: Compiled by the U.S. International Trade Commission from data submitted by processors.

Figure 22.—Amount by which U.S. processors' purchase price for all domestic bulk honey exceeded processors' purchase price for all imported bulk honey, with trend line, by months, July 1974-February 1976.

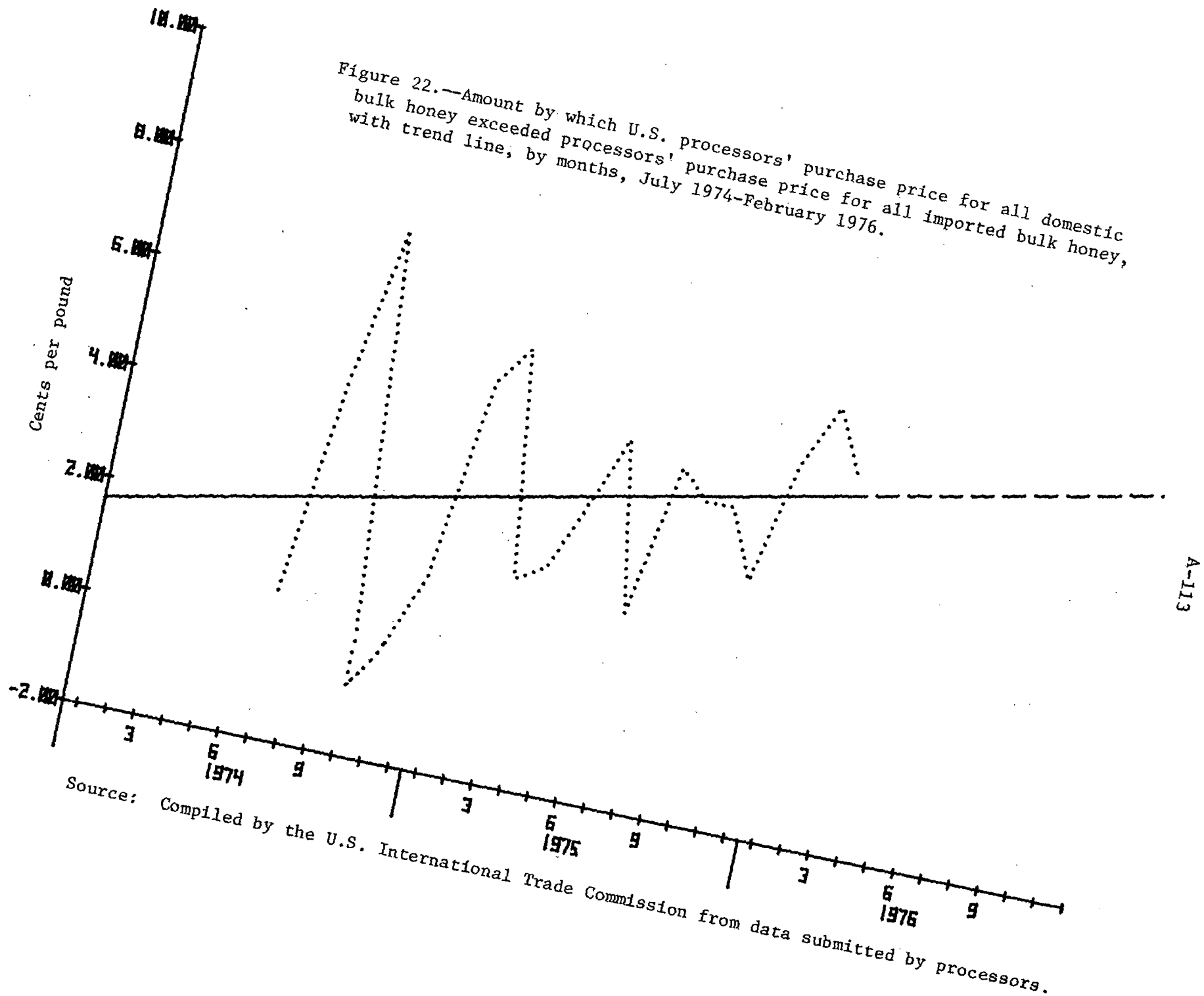


Table 34.--Domestic and imported table, industrial, and total bulk honey purchased by U.S. processors, by months, July 1974-February 1976

(In millions of pounds)							
Year and month	Bulk table		Bulk industrial		Total bulk ^{1/}		
	Domestic	Imported	Domestic	Imported	Domestic	Imported	
1974:	:	:	:	:	:	:	:
July-----	4.36	***	0.09	***	4.62		0.20
August-----	8.76	***	.37	***	9.14		.05
September-----	9.92	***	.15	***	10.11		.18
October-----	8.80	***	.72	***	9.51		.88
November-----	5.20	***	.82	***	6.06		.62
December-----	6.32	***	.29	***	6.63		.60
1975:	:	:	:	:	:	:	:
January-----	5.24	***	.10	***	5.39		1.02
February-----	4.60	***	.15	***	4.92		1.11
March-----	4.95	***	.15	***	5.25		1.27
April-----	4.29	***	.17	***	4.89		1.61
May-----	6.67	***	.33	***	7.01		1.85
June-----	8.00	***	.24	***	8.39		2.28
July-----	6.25	***	.29	***	6.71		1.67
August-----	11.19	***	.48	***	11.87		.85
September-----	11.79	***	.38	***	12.32		.77
October-----	9.21	***	.81	***	10.16		.21
November-----	6.73	***	.88	***	7.77		.69
December-----	4.45	***	.41	***	5.15		.95
1976:	:	:	:	:	:	:	:
January-----	5.62	***	.39	***	6.08		.32
February-----	3.86	***	.37	***	4.38		.48

^{1/} Includes processors that reported total honey only and did not break out the purchases by type, so total quantity of table and industrial honey may be inconsistent with total honey.

Source: Compiled by the U.S. International Trade Commission from data submitted by processors.

Table 35.--Domestic and imported industrial, table, and total bulk honey purchased by U.S. importers, by months, July 1974-February 1976

(In millions of pounds)

Year and month	Industrial	Table	Total <u>1/</u>
1974:			
July-----	***	1.16	1.49
August-----	***	2.29	3.36
September-----	***	.47	.52
October-----	***	1.07	1.11
November-----	***	2.96	3.19
December-----	***	1.87	3.10
1975:			
January-----	***	1.93	2.09
February-----	***	.81	1.20
March-----	***	1.51	2.11
April-----	***	1.01	1.22
May-----	***	1.02	1.73
June-----	***	2.14	3.12
July-----	***	.59	1.41
August-----	***	4.47	5.64
September-----	***	1.56	2.32
October-----	***	5.30	5.55
November-----	***	.73	3.10
December-----	***	1.07	2.16
1976:			
January-----	***	2.32	3.20
February-----	***	2.19	3.14

1/ Includes importers that reported total honey only and did not break out their purchases by type, so total quantity of table and industrial honey may be inconsistent with total honey.

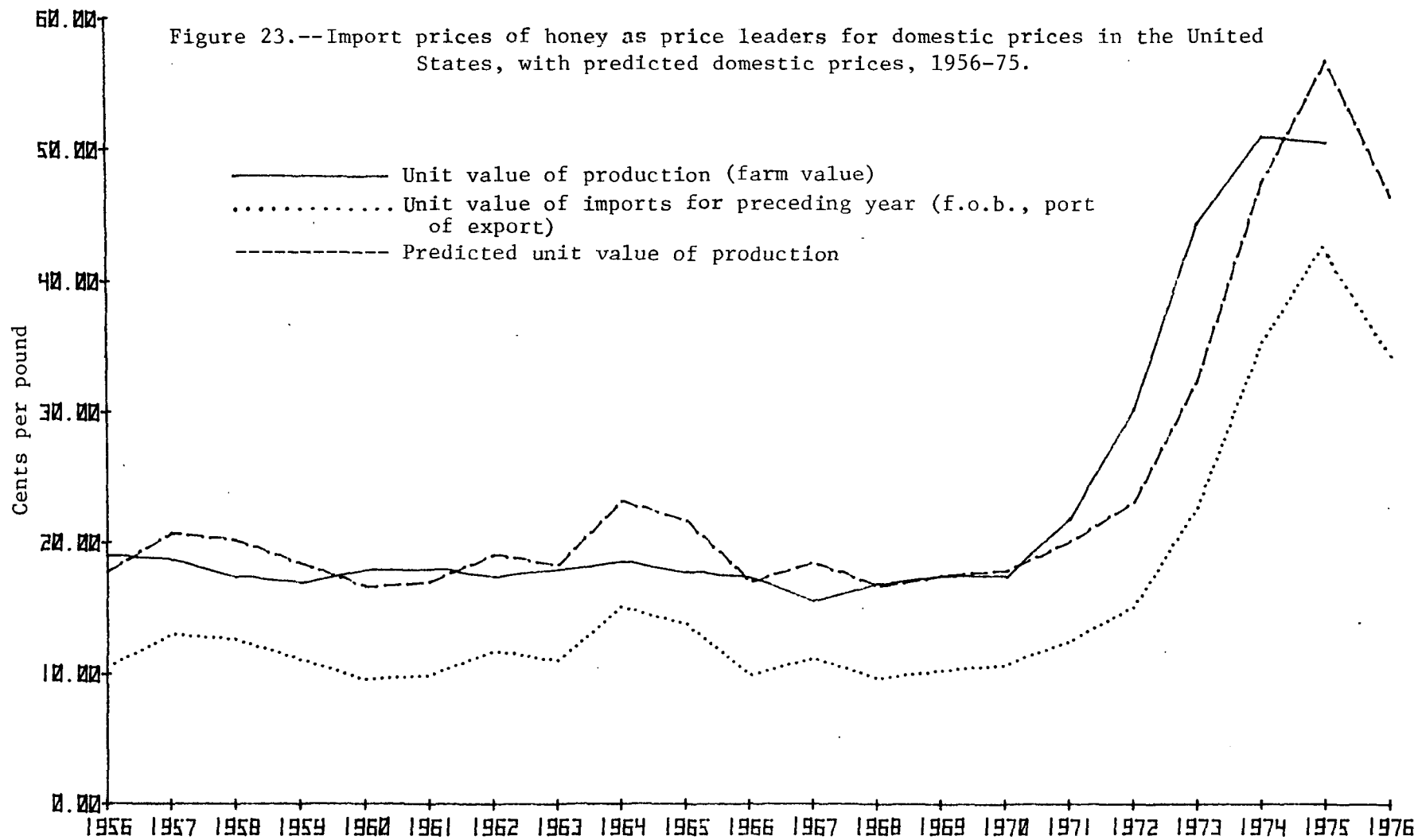
Source: Compiled by the U.S. International Trade Commission from data submitted by U.S. importers.

The influence of import prices on domestic prices

U.S. honey producers made the claim in testimony at the Commission's public hearings that domestic honey prices are vulnerable to changes in the prices of imported honey. That is, they asserted that a change in import prices leads to a change in domestic prices, in the same direction.

Their contention was tested by use of a simple linear correlation model which sought to measure the degree of association between unit values of domestic production and unit values of imports, lagged 1 year--i.e., the domestic unit value for each year was measured as a function of the import unit value for the year before, with data covering a 20-year period. A high correlation was obtained, indicating that movements of import unit values can statistically "explain" 89 percent of the variation in unit values of domestic honey over the 20-year period, and that this relationship can serve as an efficient predictor of such unit values. "Causality" is not necessarily proved, however, because both import prices and domestic prices may depend fundamentally on other determinants not embraced in this simple model. Nonetheless, a low correlation would have represented evidence tending to disprove any causal relationship between lagged import unit values and production unit values, and the disproof is not in evidence.

Figure 23 displays both the data and the results of the analysis. It traces movements in both the unit value of domestic honey production and the lagged unit values of imported honey, and presents as well the predicted unit values of domestic production derived from the regression coefficients in the model.



Source: Compiled by the U.S. International Trade Commission.

Elasticities

In order to assess the impact of long-term, unit value movements on honey imports, elasticities were calculated as shown in appendixes C and D. Results based on annual data from 1951 to 1974, suggest that a 1-percent increase in the unit value of production (a surrogate domestic price) would be likely to have the result of increasing honey imports by 4.5 percent, all other factors remaining unchanged. As well, the analysis indicates that a 1-percent increase in the unit value of imports would reduce the amount of imports to the United States by about 3.7 percent, other economic variables remaining constant.

Changes in the price of corn sirup, a major substitute for industrial honey, do not seem to bring out corresponding changes in import levels on honey or in domestic honey production. Thus a price increase in corn sirup does not appear to be followed by an increase in either honey imports or sales to processors of domestic honey. The likely explanation for this is that the price level of corn sirup is so much lower than the price level of either domestic or imported honey that the only barriers to corn sirup's completely taking over the honey market are consumer preference for honey and certain technical characteristics that make honey preferable for some bakery products.

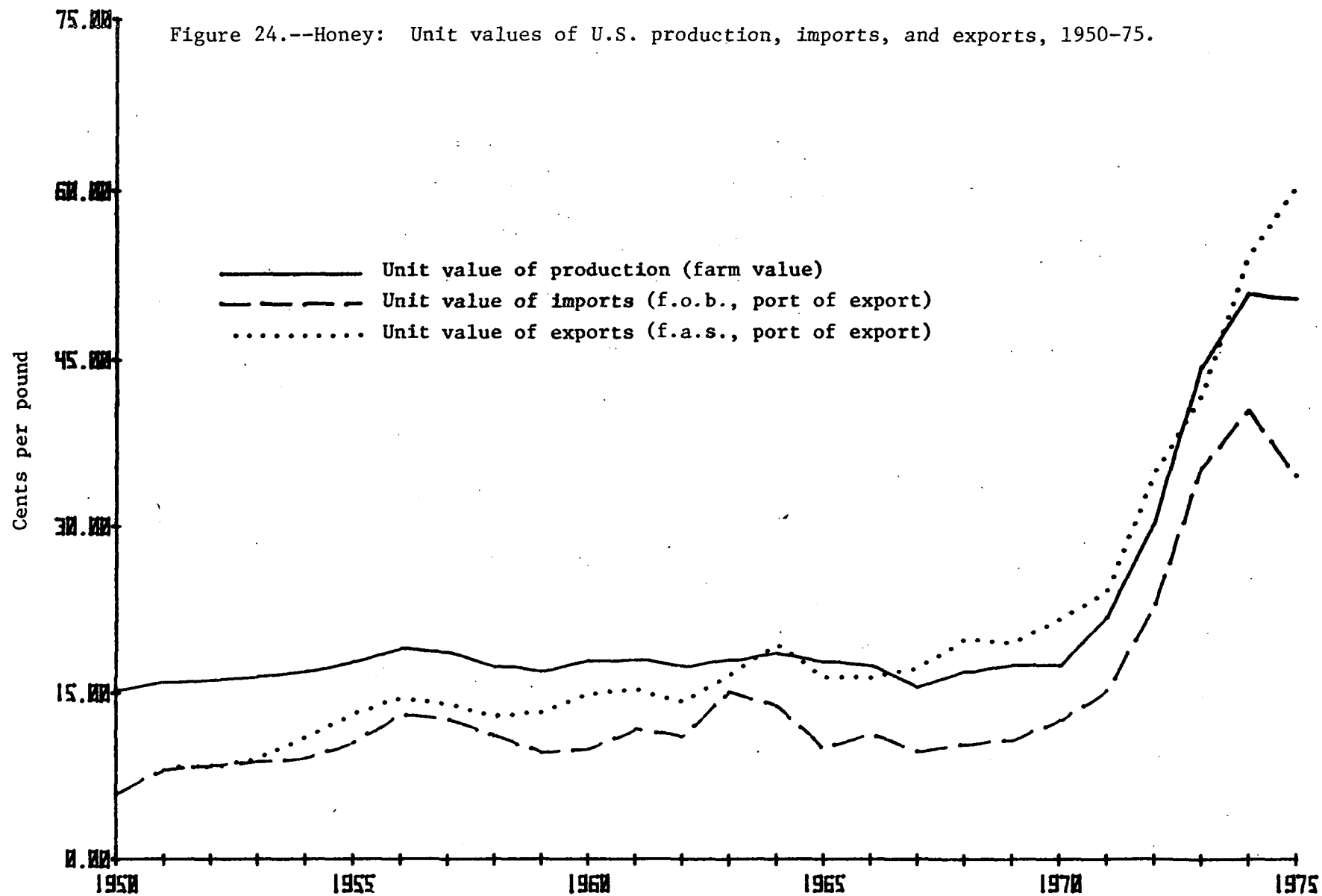
Prices of exported honey and their relation to domestic and import prices

Table 2 shows that the average unit values of exports rose almost steadily from the early 1950's through at least 1975. In the earlier

years of the period, honey for export had a much lower average unit value than U.S. honey sold domestically. It appears that the honey for export was probably the dark (industrial) grade honey. This is confirmed by the similarity in average unit value of exported and imported honey in most years until about 1964. In these years, it was predominantly dark honey that was being imported. The data shown are not strictly comparable because of different bases of valuation, and should be noted only for long-term trends.

In more recent years, the average unit values of exported honey have exceeded the average unit values of domestic honey sold domestically. It is apparent that the overseas market for U.S. honey has changed from one demanding industrial honey to one demanding premium table-grade honey. The average unit values are graphed in figure 24.

The worlds largest importer of honey is West Germany. The U.S. Department of Agriculture reports honey price quotations in the Hamburg, West Germany, market. Although U.S. prices are occasionally reported in the quotations, they are too infrequent to be of much use. A more useful comparison is that of the prices of U.S. light amber honey sold domestically and the offering prices of light amber honey (from whatever source) in the Hamburg market. These prices and midranges are shown in table 36. These figures indicate that the disparity between offered prices (delivered) at Hamburg and the domestic prices for U.S. honey (hence not including freight, insurance, and other charges to reach the German market) greatly favors competing foreign sources, such as Argentina, Brazil, and Mexico.



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

Table 36.--Domestic price for U.S. light amber honey and offering price for light amber honey in Hamburg, West Germany, market, 1/ regardless of source, ranges and midranges, by months, 1974 and 1975

(In cents per pound)					
Year and month	Range of prices		Midrange		
	Domestic price, U.S. honey	Offered price, Hamburg, Germany	Domestic price, U.S. honey	Offered price, Hamburg, Germany	
1974:					
January-----	40-50	38-41	45		40
February-----	41-55	38-39	49		39
March-----	42-55	37-43	49		40
April-----	41-55	39	48		39
May-----	38-50	36-39	44		38
June-----	35-50	39	43		39
July-----	35-50	35-40	43		38
August-----	34-54	34-36	44		35
September-----	30-53	32-34	42		33
October-----	33-50	31-35	42		33
November-----	35-50	31-35	43		33
December-----	38-50	31-36	44		34
1975:					
January-----	33-50	33-38	43		35
February-----	36-50	32-36	43		34
March-----	30-49	28-33	40		31
April-----	30-47	32	39		32
May-----	36-46	28-32	41		30
June-----	36-45	29	41		29
July-----	35-48	35-42	42		39
August-----	35-46	35-42	40		39
September-----	35-48	37-40	42		39
October-----	37-46	35-40	42		38
November-----	35-44	39	40		39
December-----	33-48	36-43	41		40

1/ Offered price in Hamburg, Germany, includes U.S. offerings.

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

In West Germany and the rest of the European market, sugar prices are kept at a low level by administrative actions, but they are not controlled in the United States. Thus, when honey prices rose worldwide in the 1970's, European customers switched to sugar or other sweeteners. In the United States, the price of sugar rose to record levels, making a switch from honey of little or no price advantage. Since the U.S. honey price remained relatively firm, while that in Europe declined, there was a great incentive for honey-exporting nations to switch their exports from Europe to the United States.

Other possible causes of serious injury to the domestic industry

Testimony at the public hearings and submissions for the record of the investigation made claims that increased imports were a response to low levels of production in recent years and not a cause of serious injury. Since colony numbers have been stable in the 1970's, variations in production are attributable primarily to variations in the yield per colony. In the public hearings and in questionnaire responses by honey producers, three factors were most often mentioned as the cause of changes in yields per colony--weather conditions, pesticide damage, and changes in bee pasturage.

Bee activity is directly affected by conditions of extreme heat, cold, rain, or wind. Too many days of such adverse conditions in the producing season will reduce bee foraging and adversely affect honey production. In addition, bad weather can adversely affect blossom set and nectar production of floral sources for honey, thus reducing honey production.

Since weather conditions are generally recorded by the way they affect agricultural crops and not by the way they affect honey production, it is difficult to measure the effect of adverse weather conditions on honey production.

The use of pesticides often results in damage or destruction of colonies of bees. Obviously, pesticide damage adversely affects yield per colony, since many bees are killed, and those that are weakened will not produce honey. Even when beekeepers receive advance warning of the use of pesticides, there are adverse effects on yield per colony, since the movement of colonies usually results in some loss of bees, and there is also an adjustment period before full honey production is resumed by a colony after relocation, because the bees must locate new floral sources. Losses due to use of pesticides have been on the increase in recent years.

Reduced bee pasturage was asserted by several honey producers to be the most important cause of reduced honey production. Bee pasturage is the general determinant of honey production capacity. Once a given bee pasturage is fully utilized, additional bee visits will reduce rather than increase yield per colony from that pasturage. (For pollination purposes, such "overgrazing" by bees is encouraged, to the detriment of honey production.) In recent years, there has been a decline in diverted acreage (often a prime source of bee pasturage) resulting from changes in USDA crop-support programs. Also, changes in farming methods, particularly full land utilization, including cropping of roadsides and turnrows and elimination of woodlots and livestock pasturage, have

resulted in reduced pasturage for bees. Finally, increasing urbanization and suburban sprawl have resulted in loss of pasturage for bees.

An attempt was made to quantify the impact of the various possible causes of injury, such as price suppression by imports and yield declines due to weather, pesticides, and changing land-use patterns, and to show the interrelationships between variables inside and outside the honey industry. One result of this exercise was to confirm that the large changes in yield per colony since 1971 were due to a great extent to changes in the weather. For further information, see appendix E.

APPENDIX A
UNITED STATES STANDARDS FOR
GRADES OF EXTRACTED HONEY

UNITED STATES STANDARDS FOR GRADES OF EXTRACTED HONEY ¹

Effective April 16, 1951

PRODUCT DESCRIPTION, TYPES, TYPES OF PROCESS, AND COLOR

Sec.

- 52.1391 Product description.
52.1392 Types of extracted honey.
52.1393 Color of honey.
52.1394 Application of U. S. D. A. permanent glass color standards in classifying the color of honey.
52.1395 Tolerance for certification of color of officially drawn samples.

FILL OF CONTAINER

- 52.1396 Recommended fill of container.

GRADES

- 52.1397 Grades of honey.

FACTORS OF QUALITY

- 52.1398 Ascertaining the grade.
52.1399 Ascertaining the rating for each factor.
52.1400 Flavor.
52.1401 Absence of defects.
52.1402 Clarity.

LOT INSPECTION AND CERTIFICATION

- 52.1403 Ascertaining the grade of a lot.

SCORE SHEET

- 52.1404 Score sheet for extracted honey.

PRODUCT DESCRIPTION, TYPES, TYPES OF PROCESS, AND COLOR

§ 52.1391 *Product description.* "Extracted honey" or "honey" is honey that has been separated from the comb by centrifugal force, gravity, straining, or by other means, and is prepared and packed under sanitary conditions in accordance with good commercial practice.

¹ The requirements of these standards shall not excuse failure to comply with the provisions of the Federal Food, Drug, and Cosmetic Act.

§ 52.1392 *Types of extracted honey.*

The type of extracted honey is not incorporated in the grades of the finished product since the type of extracted honey, as such, is dependent upon the method of preparation and processing, and therefore is not a factor of quality for the purpose of these grades. Extracted honey may be prepared and processed as one of the following types:

(a) *Liquid honey.* "Liquid honey" is honey that is free from visible crystals.

(b) *Crystallized honey.* "Crystallized honey" is honey that is solidly granulated or crystallized, irrespective of whether "Candied," "Fondant," "Creamed," or "Spread" types of crystallized honey.

(c) *Partially crystallized honey.* "Partially crystallized honey" is honey that is a mixture of liquid honey and crystallized honey.

§ 52.1393 *Color of honey.* The color of honey is not a factor of quality for the purpose of these grades.

(a) The color classification of honey is determined by means of the U. S. D. A. permanent glass color standards for honey.²

(b) The respective color designation, applicable range of each color, and color range on the Pfund scale are shown in Table No. I, together with spectrophotometric specifications for freshly prepared caramel-glycerine solutions which in thickness of 3.15 centimeters (1.24 inch)

² An approximate color classification may be made by means of the Pfund color grader and the color designated in terms of the aforesaid U. S. D. A. color standards.

closely match the colors of the U. S. D. A. permanent glass color standards.

(c) Crystallized honey and partially crystallized honey are liquefied by heating to approximately 54.4° C. (130° F.) and cooled to approximately 20° C. (68° F.) before ascertaining the color of the honey by means of the U. S. D. A. permanent glass color standards for honey.

§ 52.1394 *Application of U. S. D. A. permanent glass color standards in classifying the color of honey*—(a) *Sample containers.* The sample containers for use in making the visual color determination as set forth in § 52.1395 are square bottles of colorless transparent glass, having an internal width at the center of 3.15 centimeters (1.24 inch), with outside base dimensions of approximately 1⁷/₁₆ inches by 1⁷/₁₆ inches, and having a capacity of approximately 2 ounces.

(b) *Comparator; viewing box.* Two comparators or viewing boxes are required for the entire color range in the visual comparison test. Each comparator is divided into five compartments approximately 1¹/₂ inches square, with each compartment provided with openings approximately 1³/₁₆ inches square in the two parallel sides. The U. S. D. A. permanent glass color standards are mounted in a fixed position in the front openings of compartments 1, 3, and 5 of the two comparators, compartments 2 and 4 being adapted to receive the sample containers.

(c) *Clear blanks.* Six clear blanks of distilled water in capped sample containers are required. The clear blanks are placed in the compartments provided behind each permanent glass color standard.

(d) *Cloudy suspensions.* Three cloudy suspensions of bentonite in distilled water, each in a capped sample container, are required. These are referred to as "Cloudy No. 1," "Cloudy No. 2," and "Cloudy No. 3," corresponding to varying degrees of cloudiness within the range of the different grades of honey. The cloudy suspensions replace the clear blanks when cloudy honey is to be classified for color.

(e) *Visual comparison test.* The color of a sample of honey is compared with the U. S. D. A. permanent glass color standards in the following manner to determine its color classification:

(1) Place the sample of honey in a clean dry sample container.

(2) Place the clear blanks behind each permanent glass color standard.

(3) Place the container filled with the sample of honey successively in compartments 2 and 4 of the comparator, and visually compare the color of the sample with that of each of the glass color standards by looking through them at a diffuse source of natural or artificial daylight. The color is classified in accordance with the color range as given in Table No. I.

TABLE NO. I—COLOR DESIGNATION OF HONEY AND RANGE FOR EACH COLOR

U. S. D. A. color standards	Color range U. S. D. A. color standards	Color range Pfund scales	Optical density ¹
		<i>Millimeters</i>	
Water White.....	Honey that is Water White or lighter in color than Water White Color Standard.	8 or less.....	0.0945
Extra White.....	Honey that is darker than Water White but not darker than Extra White Color Standard.	Over 8 to and including 17.	.189
White.....	Honey that is darker than Extra White but not darker than White Color Standard.	Over 17 to and including 34.	.378
Extra Light Amber.....	Honey that is darker than White but not darker than Extra Light Amber or Golden Color Standard.	Over 34 to and including 50.	.595
Light Amber.....	Honey that is darker than Extra Light Amber but not darker than Light Amber Color Standard.	Over 50 to and including 85.	1.389
Amber.....	Honey that is darker than Light Amber but not darker than Amber Color Standard.	Over 85 to and including 114.	3.008
Dark Amber.....	Honey that is darker than Amber Color Standard...	Over 114.....	-----

¹ Optical density (absorbance) = log₁₀ (100/percent transmittance), at 560 mμ for 3.15 centimeter thickness for caramel-glycerin solutions measured versus an equal cell containing glycerin.

(4) If the sample is appreciably cloudy in appearance, the clear blanks are replaced by the cloudy suspensions, "Cloudy No. 1," "Cloudy No. 2," or "Cloudy No. 3," respectively, to facilitate color classification.

§ 52.1395 *Tolerance for certification of color of officially drawn samples.* When certifying the color of samples that have been officially drawn and which represent a specific lot of honey, the lot shall be considered as of one color if not more than one-sixth of the containers comprising the sample contains honey of a different color: *Provided, however,* that the honey in none of the containers falls below the next darker color designation.

FILL OF CONTAINER

§ 52.1396 *Recommended fill of container.* The recommended fill of container is not incorporated in the grades of the finished product since fill of container, as such, is not a factor of quality for the purpose of these grades. It is recommended that each container be filled with honey as full as practicable, and with respect to containers of one gallon or less the honey shall occupy not less than 95 percent of the total capacity of the container.

GRADES

§ 52.1397 *Grades of honey.* (a) "U. S. Grade A" or "U. S. Fancy" is the quality of honey that contains not less than 81.4 percent soluble solids,³ possesses a good flavor for the predominant floral source or, when blended, a good flavor for the blend of floral sources, is free from defects, and is of such quality with respect to clarity as to score not less than 90 points when scored in accordance with the scoring system outlined in this subpart.

(b) "U. S. Grade B" or "U. S. Choice" is the quality of honey that contains not less than 81.4 percent soluble solids,³ possesses a reasonably good flavor for

the predominant floral source or, when blended, a reasonably good flavor for the blend of floral sources, is reasonably free from defects, is reasonably clear, and scores not less than 80 points when scored in accordance with the scoring system outlined in this subpart.

(c) "U. S. Grade C" or "U. S. Standard" is honey for reprocessing that contains not less than 80 percent soluble solids,³ possesses a fairly good flavor for the predominant floral source or, when blended, a fairly good flavor for the blend of floral sources, is fairly free from defects, and is of such quality with respect to clarity as to score not less than 70 points when scored in accordance with the scoring system outlined in this subpart.

(d) "U. S. Grade D" or "Substandard" is the quality of honey that fails to meet the requirements of "U. S. Grade C" or "U. S. Standard."

FACTORS OF QUALITY

§ 52.1398 *Ascertaining the grade.* (a) The grade of honey may be ascertained by considering in conjunction with the requirements of the various grades the respective ratings for the factors of flavor, absence of defects, and clarity.

(b) The soluble solids content of honey may be determined by means of the refractometer at 20° C. (68° F.). The refractive indices and corresponding percent soluble solids and equivalent specific gravity and percent of moisture may be ascertained from Table No. II of this section. The soluble solids content of honey and equivalent values may be determined by any other method which gives equivalent results.

(c) The relative importance of each factor is expressed numerically on the scale of 100. The maximum number of points that may be given each factor is:

Factors:	Points
Flavor-----	50
Absence of defects-----	40
Clarity-----	10
Total score-----	100

(d) Crystallized honey and partially crystallized honey shall be liquefied by

³ Percent moisture and other equivalents may be ascertained from Table No. II of this section.

heating to approximately 54.4° C. (130° F.) and cooled to approximately 20° C. (68° F.) before ascertaining the grade of the product.

§ 52.1399 *Ascertaining the rating for each factor.* The essential variations within each factor are so described that the value may be ascertained for each factor and expressed numerically. The numerical range for the rating of each factor is inclusive (for example, "27 to 30 points" means 27, 28, 29, or 30 points).

§ 52.1400 *Flavor*—(a) *General.* The factor of flavor refers to the prominence of the honey flavor and aroma and to its conformity to the flavor and aroma of the predominant floral source or blend of floral sources.

(b) (A) *classification.* Honey that possesses a good flavor for the predominant floral source may be given a score of 45 to 50 points. "Good flavor for the predominant floral source" means that the product has a good, normal flavor and aroma for the predominant floral source or, when blended, a good flavor for the blend of floral sources and that the honey is free from caramelized flavor or objectionable flavor caused by fermentation, smoke, chemicals or other causes with the exception of the predominant floral source.

(c) (B) *classification.* If the honey possesses a reasonably good flavor for the predominant floral source, a score of 40 to 44 points may be given. Honey that falls into this classification shall not be graded above "U. S. Grade B" or "U. S. Choice" regardless of the total score for the product (this is a limiting rule). "Reasonably good flavor for the predominant floral source" means that the product has a reasonably good, normal flavor and aroma for the predominant floral source or, when blended, a reasonably good flavor for the blend of floral sources and that the honey is practically free from caramelized flavor and is free from objectionable flavor caused by fermentation, smoke chemicals or other causes with the exception of the predominant floral source.

(d) (C) *classification.* Honey that possesses a fairly good flavor for the predominant floral source may be given a score of 35 to 39 points. Honey that falls into this classification shall not be graded above "U. S. Grade C" or "U. S. Standard" regardless of the total score for the product (this is a limiting rule). "Fairly good flavor for the predominant floral source" means that the product has a fairly good, normal flavor and aroma for the predominant floral source or, when blended, a fairly good flavor for the blend of floral sources and that the honey may possess a slightly caramelized flavor, is free from objectionable flavor caused by fermentation, smoke, chemicals or other causes with the exception of the predominant floral source.

(e) (SStd) *classification.* Honey that fails to meet the requirements of paragraph (d) of this section or is off flavor for any reason may be given a score of 0 to 34 points and shall not be graded above "U. S. Grade D" or "Substandard" regardless of the total score for the product (this is a limiting rule).

§ 52.1401 *Absence of defects*—(a) *General.* The factor of absence of defects refers to the degree of cleanliness and to the degree of freedom from particles of comb, propolis, or other defects which may be in suspension or deposited as sediment in the container.

(b) (A) *classification.* Honey that is free from defects may be given a score of 37 to 40 points. "Free from defects" means that the honey contains no defects that affect the appearance or edibility of the product, and shall be at least as free from defects as honey that has been strained through a standard No. 80 sieve, at a temperature of not more than 130° F.

(c) (B) *classification.* If the honey is reasonably free from defects a score of 34 to 36 points may be given. Honey that falls into this classification shall not be graded above "U. S. Grade B" or "U. S. Choice" regardless of the total score for the product (this is a limiting rule). "Reasonably free from defects" means that the honey may contain defects which do not materially affect the appearance or edibility of the product,

and shall be at least as free from defects as honey that has been strained through a standard No. 50 sieve, at a temperature of not more than 130° F.

(d) (C) *classification*. Honey that is fairly free from defects may be given a score of 31 to 33 points. Honey that falls into this classification shall not be graded above "U. S. Grade C" or "U. S. Standard" regardless of the total score for the product (this is a limiting rule). "Fairly free from defects" means that the honey may contain defects which may be noticeable but shall be at least as free from defects as honey that has been strained through a standard No. 18 sieve, at a temperature of not more than 130° F.

(e) (SStd) *classification*. Honey that fails to meet the requirements of paragraph (d) of this section may be given a score of 0 to 30 points and shall not be graded above "U. S. Grade D" or "Sub-standard" regardless of the total score for the product (this is a limiting rule).

§ 52.1402 *Clarity*—(a) *General*. The factor of clarity has reference to the degree of freedom from air bubbles, pollen grains, or fine particles of any material which might be suspended in the product.

(b) (A) *classification*. Honey that is clear may be given a score of 8 to 10 points. "Clear" means that the honey

may contain air bubbles which do not materially affect the appearance of the product and may contain a trace of pollen grains or other finely divided particles of suspended material which does not affect the appearance of the product.

(c) (B) *classification*. If the honey is reasonably clear a score of 6 or 7 points may be given. "Reasonably clear" means that the honey may contain air bubbles, pollen grains, or other finely divided particles of suspended material which do not materially affect the appearance of the product.

(d) (C) *classification*. Honey that is fairly clear may be given a score of 4 or 5 points. Honey that falls into this classification shall not be graded above "U. S. Grade C" or "U. S. Standard" regardless of the total score for the product (this is a limiting rule). "Fairly clear" means that the appearance of the honey may be materially but not seriously affected by the presence of air bubbles, pollen grains, or other finely divided particles of suspended material.

(e) (SStd) *classification*. Honey that fails to meet the requirements of paragraph (d) of this section may be given a score of 0 to 3 points and shall not be graded above "U. S. Grade C" or "U. S. Standard" regardless of the total score for the product (this is a limiting rule)

TABLE NO. II—REFRACTIVE INDICES AND CORRESPONDING PERCENT SOLUBLE SOLIDS, EQUIVALENT SPECIFIC GRAVITY AND PERCENT MOISTURE IN EXTRACTED HONEY¹

Refractive index at 20° C.	Soluble solids (percent)	Specific gravity (20°/20° C.) at 20° C.	Moisture (percent)
1.4844	79.0	1.3966	21.0
1.4849	79.2	1.3979	20.8
1.4853	79.4	1.3992	20.6
1.4858	79.6	1.4006	20.4
1.4862	79.8	1.4020	20.2
1.4866	80.0	1.4033	20.0
1.4871	80.2	1.4046	19.8
1.4876	80.4	1.4060	19.6
1.4880	80.6	1.4074	19.4
1.4885	80.8	1.4087	19.2
1.4890	81.0	1.4101	19.0
1.4895	81.2	1.4115	18.8
1.4900	81.4	1.4129	18.6
1.4905	81.6	1.4143	18.4
1.4910	81.8	1.4156	18.2
1.4915	82.0	1.4171	18.0
1.4920	82.2	1.4184	17.8
1.4925	82.4	1.4197	17.6
1.4930	82.6	1.4212	17.4
1.4935	82.8	1.4225	17.2
1.4940	83.0	1.4239	17.0
1.4945	83.2	1.4254	16.8
1.4950	83.4	1.4267	16.6
1.4955	83.6	1.4282	16.4
1.4960	83.8	1.4295	16.2
1.4965	84.0	1.4310	16.0
1.4970	84.2	1.4324	15.8
1.4975	84.4	1.4338	15.6
1.4980	84.6	1.4352	15.4
1.4985	84.8	1.4367	15.2
1.4990	85.0	1.4381	15.0
1.4995	85.2	1.4395	14.8
1.5000	85.4	1.4409	14.6
1.5005	85.6	1.4424	14.4
1.5010	85.8	1.4438	14.2
1.5015	86.0	1.4453	14.0
1.5020	86.2	1.4466	13.8
1.5025	86.4	1.4481	13.6
1.5030	86.6	1.4495	13.4
1.5035	86.8	1.4510	13.2
1.5041	87.0	1.4525	13.0

¹ Temperature corrections: If refractometer reading is made at temperatures above 20° C. (68° F.), add 0.00023 to the refractive index for each degree C., or 0.00013 for each degree F. If made below 20° C. (68° F.), subtract correction. The moisture content of honey and equivalent values may be determined by any other method which gives equivalent results.

LOT INSPECTION AND CERTIFICATION

§ 52.1403 *Ascertaining the grade of a lot.* The grade of a lot of extracted honey covered by these standards is determined by the procedures set forth in the Regulations Governing Inspection and Certification of Processed Fruits and Vegetables, Processed Products Thereof, and Certain Other Processed Food Products (§§ 52.1 through 52.87; 22 F. R. 3535).

SCORE SHEET

§ 52.1404 *Score sheet for extracted honey.*

Size and kind of container.....	
Container mark or identification.....	
Label.....	
Net weight (ounces).....	
Type (liquid, crystallized or partially crystallized).....	
Soluble solids (percent).....	
Moisture (percent).....	
Specific gravity.....	

Factors		Score points
Flavor.....	50	(A) 45-50 (B) 40-44 (C) 35-39 (D) 30-34
Absence of defects.....	40	(A) 37-40 (B) 34-36 (C) 31-33 (D) 28-30
Clarity.....	10	(A) 8-10 (B) 6-7 (C) 4-5 (D) 3
Total score.....	100	

Grade.....	
Color.....	
Floral source or sources.....	

¹ Indicates limiting rule.

Recodified in the Federal Register of December 9, 1953 (18 F. R. 8005)

Section 52.1403 amended May 22, 1957 (22 F. R. 3535)

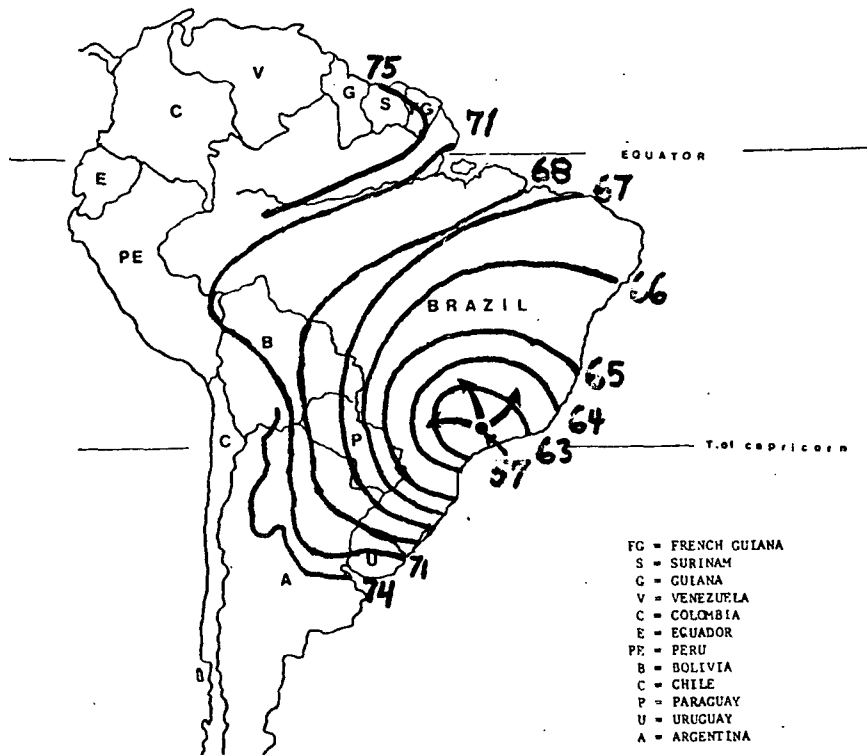
APPENDIX B
THE AFRICAN BEE
(APIS MELLIFERA ADANSONII)

There are at least five distinct races of honeybees in Africa. The most widespread of these races is the African bee (Apis mellifera adansonii) of central Africa. African bees are noted for their aggressiveness and tendency to sting and swarm. They are also known for their ability as honey producers. It was for this latter reason that 46 African queen bees were introduced into Brazil in 1956 by bee researchers.

It was the intention of the researchers to do selective breeding of the African bees with Italian bees to develop a new breed that would have the gentle disposition of the Italian bees and the aggressive honey-gathering trait of the African bees. 1/ However, in 1957, before this could be done, 26 of the African queens escaped. The escaped African queens crossed with the European bees found in nature. These crosses have become known as the "Africanized bees." As a result of this crossing, certain characteristics of the African bees spread throughout much of the Brazilian honeybee population. The Africanized bees have a greater tendency to swarm and they migrate greater distances. They tend to begin foraging for nectar earlier in the morning and extend these activities later into the evening. They also forage at lower and higher temperatures and will even forage in light rain. It is this foraging ability and the resulting increases in production of honey by one-third to as much as two times usual normal yields that have made the Africanized bees popular with the commercial beekeepers in Brazil. This popularity of the Africanized bees has most likely contributed to their rapid spread through much of South America. See figure 25.

1/ Only honeybees of the European type are utilized for honey production in the United States. The Italian race is by far the most common of the European bees in the United States.

Figure 25.--Spread of the Africanized bees in South America, 1957-75



Source: American Bee Journal, November 1974.

The adaptability of Africanized bees to warmer climates has also opened up the tropical regions of Brazil to beekeepers and has increased production significantly. Before their advent, bees were not able to survive in these regions. However, Africanized bees do not adapt to cool, temperate climates, and it is this inability to adapt that may stop their spread to major areas of the United States. In research conducted in Poland in the late 1960's, it was found that Africanized queen bees that were introduced from Brazil were unable to form winter clusters. The winter cluster is the bees' means of keeping warm and surviving the cold winter temperatures. In forming the winter cluster, the bees huddle together in a large, continually moving sphere. The bees on the inside of the sphere are warmed, they then move to the outside, exchanging places with the outside bees to allow them to get warm. Thus, these Africanized bees would require special assistance in the temperate regions of the United States to survive.

It was also discovered that the worker bees which had been Africanized under the temperate conditions of Poland were not as aggressive as bees Africanized under tropical Brazilian conditions.

It is possible that attempts to introduce African bees into the United States may have been made as early as the 1800's. It is known that in attempting to find the best race of bees, American and the European beekeepers imported bees from many parts of the world. The U.S. Government financed the importation of queens as early as the 1860's. Also, there were listings of African bees for sale in many bee journals during the late 1800's and early 1900's. Moreover,

it has been reported that semen of African bees from Brazil was used to inseminate queens in the United States in 1961. However, vicious colonies are seldom maintained for any length of time in the United States and are generally requeened with a gentle queen so that the temperament of the bees is soon changed.

APPENDIX C

RESPONSES OF IMPORTS TO CHANGES IN THE PRICES OF IMPORTED HONEY AND
DOMESTIC HONEY AND TO CHANGES IN THE GROSS NATIONAL PRODUCT

The demand for an imported product, such as honey, would be expected to vary according to changes in the import price, the price of the domestic product, and to changes in the level of national income. All other factors being equal, the changes should be predictable in direction: If the import price increases, the level of imports should decline; if the price of the domestic product increases, the level of imports should also increase as imports become a "better buy" than the domestic product; finally, if national income increases, the level of imports should increase, since more purchasing power is available for both the domestic and the foreign product. These changes can be measured statistically.

The specific meaning of price elasticity of demand is the percentage change in the quantity demanded corresponding to a given percentage change in price, all other things being equal.

Several elasticity measures were run to determine the effects on the level of imports of honey. Annual imports of honey were statistically related to average unit values of imports, to average unit values of all honey sold by producers, and to gross national product (GNP), measured in current dollars.

Elasticities were measured for the years 1951 through 1970, then for 1951 through 1974 in order to analyze the effect of recent years' price activity on the elasticities. (It is not possible to measure annual elasticities for 1971 through 1974 alone, since there would be too few observations.)

The first elasticity measurement represents the influence of prices of imported honey upon the quantity of imported honey demanded. Over the period 1951-70, this elasticity was -3.62, suggesting that (after control for the influence of the other relevant factors) a rise in honey import prices of 1 percent would on the average cut demand for imported honey by 3.62 percent. A similar figure, -3.70, was obtained for the years 1951-74.

The second elasticity computed reflects the influence of domestic honey prices on the quantity of imports demanded. During the 1951-70 period, this domestic price elasticity was approximately 3.9, indicating that a 1-percent increase in the domestic price of honey should, on the average, produce a 3.9 percent increase in imports of honey, other factors remaining constant. The same elasticity measure over the years 1951-74 was 4.46 percent, suggesting a higher sensitivity to domestic prices in the 1970's (i.e., for the period 1971-74, imports reacted more strongly to increases in U.S. honey prices).

The final elasticity is based on income; it estimates the reaction of honey imports to increased income in the United States. The resulting measure for the years 1951-70 was 1.18 percent, indicating that a 1-percent increase in national income led to a 1.18 percent increase in the purchase of imported honey during that period. The income elasticity was 1.25 for the years 1951-74.

The long run import elasticity equations are shown in table 37, along with their statistical tests of significance:

Table 37.--Honey: Three measures of import elasticity and their statistical tests of significance for 1951-70 and 1951-74

Equations and years included	Variables, elasticities, and t-statistics			Statistical tests of equations			
	Price of imported honey	Price of domestic honey	GNP	R ²	SEE	DW	
	:	:	:	:	:	:	:
Equation I, 1951-70-----	-3.62 (5.00)	3.89 (1.82)	1.18 (5.34)	.75	2.8		1.43
Equation II, 1951-74-----	-3.70 (4.95)	4.46 (4.83)	1.25 (4.94)	.70	.36		2.35

A log-linear equation was used for elasticity analysis, that is $Q_m = A P_m^\alpha P_d^\beta GNP^\gamma$. ^{1/} In log form, the equation is $\log Q = a + \alpha \log P_m + \beta \log P_d + \gamma \log GNP$. Figures in parentheses are the appropriate t-statistics. All elasticities are significant at 80 percent to 95 percent levels.

^{1/}Key to variables and tests. Q_m = quantity of imported honey;
 P_m = price of imported honey; P_d = price of domestic honey;
 GNP = GNP (nominal); R^2 = coefficient of determination;
 SEE = Standard error of estimate; DW = Durbin-Watson statistic.

Source: Compiled by the U.S. International Trade Commission.

APPENDIX D

RESPONSES OF DOMESTIC AND IMPORTED INDUSTRIAL HONEY SOLD TO
PROCESSORS TO CHANGES IN THE PRICE OF CORN SIRUP .

One calculation was made in the hope of assessing cross-elasticities of substitute sweeteners. The economic meaning of this cross-elasticity is the reaction of demand for industrial honey to a price change in the substitute commodity, corn sirup. One would expect that a rise in the price of corn sirup would trigger an increased demand for honey; that is, one would expect a positive elasticity. The best reading obtained was a cross-elasticity of 2.037 for purchases by processors of domestic industrial honey, but the reading possessed a low statistical significance level. Inspection of the data indicates that the comparable cross-elasticity for imported industrial honey would have an even lower statistical significance.

An explanation may serve to clarify the lack of a statistically significant result: It is most likely that the level of corn sirup prices is much more important than changes in corn sirup prices in determining substitution. That is, since corn sirup sells at a much lower per-pound price, its substitutability is not dependent upon price fluctuations but upon the actual relative price spread between corn sirup and honey. Given the large spread between honey prices and corn sirup prices, the only barriers to corn sirup's completely taking over the honey market are consumer tastes and possibly some technical characteristics of honey (e.g., honey absorbs moisture from the air, keeping bakery products from going stale).

APPENDIX E

INTERRELATIONSHIPS AMONG VARIABLES IN THE HONEY INDUSTRY

It was noted previously that the maximum drop in domestic prices for which data are available was approximately 13 percent, that drop being a decline in total domestic bulk honey prices from July 1974 to November 1975. However, yields dropped 19 percent from 1973 to 1975. Since data are not available for a direct comparison of any injury due to yields with an injury due to prices, correlation analysis was employed in order to assess possible causes of injury more easily.

The correlation coefficient is a standard statistical measurement used to judge the magnitude and direction of related movements of two variables, such as yield and pesticide payments. Depending upon the sign of the coefficient, two variables are seen to move in the same (+) or opposite (-) direction during a series of periods. The magnitude of the correlation coefficient is an indicator of the strength of the apparent relationship between the two given factors. When the coefficient is near +1, it is indicative of a strong movement in the same direction; a negative or -1 indicates an opposite and strong relationship. One would expect, for instance, a relatively strong negative movement between the price of honey and the quantity of honey demanded. A low correlation coefficient indicates little correlation between variables, with zero indicating no correlation at all.

It is important that judgment be used in the interpretation of a set of correlation coefficients, since there is no theoretical proof or assumption of cause and effect. Instead, while correlation analysis might represent evidence supporting causation, a high correlation may be spurious; two factors may be statistically correlated but have no

cause or effect relationship. Corn pasturage and payments for pesticide losses, for example, were correlated, but yielded a meaningless or spurious coefficient, since it is unlikely that the decline in corn pasturage was caused by pesticides.

In this study, the data used for correlation are actual changes, positive and negative, for several variables, between the years from 1969 through 1975. The definitions of variables are listed on page A-154, and the data are to be found in table 38. The following discussion of results will be twofold: first, a short discussion of trends or average movements and, second, a discussion of the selected coefficients.

Over the years 1969-75 1/ most injury-related variables showed the anticipated sign. On the average, the number of colonies decreased (20,000 losses per year) and yields were off nearly a pound per year. Each of these is responsible for lost gross income for honey producers. Inventories were decreasing at nearly 4 million pounds a year on the average, while production dipped by 5 million pounds a year on the basis of annual averages from 1969 to 1975. Measures of bee pasturage all showed decreases, cumulative pesticide payments were up 2.2 million per year, and the gap between unit value of production and unit value of imports increased by 2.04 cents per pound annually.

1/ Some data were unavailable for 1969, and readings were confined to the period 1970-75.

Table 38.--Correlation analysis: Net changes in variables and average annual changes for 5- or 6-year periods, 1/

Item	: 1969- : 1970	: 1970- : 1971	: 1971- : 1972	: 1972- : 1973	: 1973- : 1974	: 1974- : 1975	: Average : annual : changes : for 5- or : 6-year : periods
Colonies-----	+0.1	-0.2	0	0	+0.1	0	-0.02
Yield-----	0.0	-3.7	+4.6	+5.5	-13.9	+3.0	-9.0
Weather-----	-1.0	-1.0	+1.0	+1.0	-1.0	0	0
Pasturage-----	-.005	-.005	-.004	-.004	-.002	-.001	-.0032
Pesticide payments--	+1.65	+3.24	+2.15	+1.58	+2.90	+1.09	+2.194
Production-----	+45.7	-24.6	+16.7	+23.6	-52.4	+11.2	-5.1
Inventories-----	-12.1	-19.7	-1.1	+7.9	-3.9	-1.1	-3.58
Imports-----	-5.8	+2.5	+27.6	-28.3	+15.3	+20.4	+7.5
Exports-----	-1.7	-.6	-3.5	+13.5	-13.0	-.6	-.84
Apparent consumption--	-15.9	-12.3	-29.0	-27.1	-12.2	+29.3	+1.34
Unit value of production-----	-.1	+4.4	+8.4	+14.2	+5.6	-.4	+6.44
Unit value of imports-----	-1.8	+2.6	+7.7	+12.5	+5.3	-6.1	+4.40
World imports-----	0	0	+3.0	+11.0	-49.0	0	-11.67
HFCS consumption per capita-----	+4	+3	+2.0	+2.4	+9	+8	+1.28
Real GNP-----	-3.1	+23.8	+46.2	+46.7	-14.0	-3.0	+19.94
Corn pasturage-----	+2.4	+7.2	-7.1	+5.0	+5.8	+2	+2.22
Non and low honey crops-----	-2.0	+16.4	-6.0	+19.3	+13.6	+5.5	+48.8
Net prices-----	-1.9	+1.8	+7	+1.7	+3	+5.7	+2.04
Total supply-----	-34.0	+15.0	+4.0	-25.0	+26.0	0	-3.00
Retail sales-----	0	+9.0	+14.0	+16.0	+5.0	0	+8.88
Unit value of exports-----	+2.5	+10.6	+7.2	+12.4	+6.1	0	+7.76
World honey production-----	-47.0	+48.0	+39.0	-36.0	+18.0	0	+4.40
West German imports-----	+8.0	-4.3	+3.1	-8.8	+18.6	0	+3.6
World exports and imports-----	+9.7	+39.3	-7.2	-65.0	+74.5	0	+10.4
U.S. extracted honey price-----	+3.8	+9.0	+15.1	+5.6	-2.0	0	+7.1
U.S. retail price-----	+4.5	+6.5	+13.3	+11.7	+1.9	0	+7.78
Population-----	+2.1	+1.8	+2.4	+1.5	+1.4	0	+1.68
Sugar price-----	+5.51	+6.1	+9.8	+20.28	+3.8	0	+4.56
Corn sirup price-----	+2.25	-2.40	+2.21	+3.76	+3.75	0	+1.56
Hay acreage-----	-.09	-.52	+2.37	-2.19	-1.00	0	-5.4
Diverted acres-----	-19.4	+24.5	-42.5	-16.9	-1.7	0	-1.12

1/ See p. A-147 for definitions and units.

Correlation analysis: List of variables

- (CO) Colonies--Number of U.S. colonies, in millions
- (Y) Yield--Pounds per colony
- (W) Weather--A subjective determination of improvement (+1), no change (0), or worsening (-1) of weather conditions based upon interviews with beekeepers and weather reports from the USDA's Honey Market News
- (PAS) Pasturage--Total U.S. farmland, in billions of acres
- (PES) Pesticide payments--Change in accumulated beekeeper indemnification payments, in millions of current dollars
- (PR) Production--Production of domestic honey, in millions of pounds
- (INV) Inventories--Dec. 15 producers' stocks of honey on hand, in millions of pounds
- (M) Imports--Total imports of honey, in millions of pounds
- (X) Exports--U.S. exports of honey, in millions of pounds
- (AC) Apparent consumption--Apparent consumption of honey in the United States, in millions of pounds
- (UVP) Unit value of production--Unit value of domestic production, in cents per pound
- (UVI) Unit value of imports--Unit value of imports, in cents per pound
- (WI) World imports--Honey imports of West Germany, Japan, and the United Kingdom, the three largest foreign importers, in millions of pounds
- (HFCS) High fructose corn sirup consumption, per capita--U.S. per capita consumption of high fructose corn sirup, in pounds
- (RGNP) Real GNP--U.S. gross national production, in billions of 1958 dollars
- (CPAS) Corn pasturage--Acres of corn planted, in millions
- (NLH) Non and low honey crops--Acres of wheat, soybean, and certain low-honey-production crops planted, in millions

Correlation analysis: List of variables--Continued

- (NETP) Net prices--The net domestic price of honey over import price of honey, in cents per pound
- (TS) Total supply--U.S. production, imports, and inventories, in millions of pounds.
- (RS) Retail sales--Retail sales of honey in the United States, in millions of pounds
- (UVE) Unit value of exports--Unit value of honey exports, in cents per pound
- (WHP) World honey production--World honey production, in millions of pounds
- (WGI) West German imports--West German imports, in millions of pounds
- (WEI) World exports-imports--World exports of honey plus world imports of honey, in millions of pounds
- (EHP) U.S. extracted honey price--Domestic price for extracted honey, in cents per pound
- (RP) U.S. retail price--Price of honey in the United States at retail, in cents per pound
- (POP) Population--U.S. population, in millions
- (SP) Sugar price--Domestic sugar price, in cents per pound
- (CSP) Corn sirup price--Domestic price of corn sirup, in cents per pound
- (HA) Hay acreage--U.S. farm acreage planted in hay, in millions of acres
- (DA) Diverted acres--Farm acreage, diverted from crop usage to open fields, in millions of acres

The correlation analysis itself illuminated certain allegations made in the hearings and found in other data. Increases in pesticide payments were correlated to a slight extent with declines in colony numbers ($PES-CO = -.3554$), yield was highly correlated with weather (.8776) and somewhat with pesticide payments (-.5219). Inventories elicited marginal positive contributions from colony numbers (.7554), yield (.9842), weather (.9223), and overall production (.6484), while showing a relatively strong negative correlation to cumulative pesticide payments (-.5799).

Exports and imports were highly negatively correlated (-.7492), indicating a balancing effect on apparent consumption. Indeed, the other noticeable coefficient was "import-consumption" (.8388), the highest reading for consumption. This would suggest that imports serve to even out consumption needs.

One final interesting correlation group is that obtained from world imports (in this case, these are imports of the three large importing countries, West Germany, Japan, and the United Kingdom). U.S. imports are negatively correlated (-.4221) with world imports, suggesting that reduced imports into West Germany, Japan, and the United Kingdom occurred when honey imports into the United States increased, and vice versa.

Other correlation coefficients are listed in table 39. Prices all seemed to be on the rise and therefore correlated with one another positively. As might be expected, the unit value of production, a surrogate "domestic price," was negatively correlated with apparent

consumption of honey (-.3348) and import unit value was negatively correlated with gross imports (-.4910). Other correlations may be examined individually in table 39.

Table 39.--Correlation analysis: Significant correlations found for variables 1/

<u>6-year data,</u> <u>1969-70</u>	<u>6-year data,</u> <u>1969-70</u>	<u>6-year data,</u> <u>1969-70</u>	<u>5-year data,</u> <u>1970-75</u>
<u>Colonies</u>	<u>Production</u>	<u>Unit value of production</u>	<u>World exports- imports</u>
CO-PAS .7071	PR-CO .1090		
CO-PES -.2398	PR-Y .9842	UVP-UVI .9167	WEI-WI .6698
CO-INV .7554	PR-W .9223	UVP-AC -.3348	WEI-WGI .7646
CO-CPAS -.2411	PR-PAS .1267	UVP-NGNP .7722	
	PR-PES -.5213		<u>Corn sirup price</u>
<u>Yield</u>	PR-INV .6484	<u>Unit value of imports</u>	
Y-W .8776	PR-M -.0589		CSP-SW -.2512
Y-PAS .0001	PR-X .6755	UVI-UVI .9167	
Y-PES -.5219	PR-AC .4264	UVI-M -.4459	<u>Hay acreage</u>
Y-PR .9842	<u>Inventories</u>		
Y-INV .5267		<u>World imports</u>	HA-Y .5418
Y-X .7171	INV-CO .7554		HA-PR .5315
Y-AC .4190	INV-Y .5267	WI-M -.4221	HA-INV .3143
Y-CPAS -.4988	INV-W .7914		HA-M -.9303
Y-NLH -.0866	INV-PAS .4508	<u>5-year data,</u> <u>1970-75</u>	HA-X .9553
	INV-PES -.5799		
<u>Weather</u>	INV-PR .6484	<u>Total supply</u>	<u>Diverted acres</u>
	INV-CPAS -.3136		
W-Y .8776		TS-CO .3579	DA-PR .1461
W-PR .9223	<u>Imports</u>	TS-W .7464	DA-AC .9024
W-INV .7914		TS-PAS .4235	
W-X .5819	M-X -.7491	TS-PES -.9216	
	M-AC .8388	TS-PR .8169	
<u>Pasturage</u>		TS-INV .6839	
	<u>Exports</u>	TS-AC .6769	
PAS-CO .7071		TS-CPAS -.7355	
PAS-Y .0001	X-M -.7491	TS-DA .4211	
PAS-PR .1267	X-W .5819		
PAS-INV .4508	X-PES -.4810	<u>Unit value of exports</u>	
	X-PR .6755		
<u>Pesticide payments</u>	<u>Apparent consumption</u>	UVE-X -.4994	
PES-CO -.2398			
PES-Y -.5219	AC-Y .4190	<u>West German imports</u>	
PES-PR -.5213	AC-PAS .4807		
PES-INV -.5799	AC-PES -.3013	WGI-WI .8992	
PES-AC -.3013	AC-PR .4262	WGI-WEI .7646	
	AC-M .8388		

1/ See list beginning on p. A-147 for definitions and units.

Source: Compiled by the U.S. International Trade Commission.

APPENDIX F

MEMORANDUM ON STATISTICAL VALIDITY OF THE SURVEY
OF HONEY PRODUCERS

UNITED STATES
INTERNATIONAL TRADE COMMISSION
WASHINGTON, D.C. 20436

To: Charles Ervin, Deputy Director,
Office of Investigations
Thru: Joseph L. Williams, Chief of
Support Division

From: Harry Bushar

Harry F. Bushar

May 18, 1976

Subject: Survey of Honey Producers

Attached is a description of the sample design used in the survey of honey producers under investigation TA-201-14. The attached memorandum also discusses the preliminary results of this survey.

The Sample Design

As part of its investigation, the Commission sought to obtain certain selected data from domestic producers of honey, under investigation TA-201-14.

Since it was not feasible to canvass all of the honey producers in the United States, it was decided to restrict the survey to include only commercial producers of honey, i.e., all producers with at least 300 colonies. It was decided further to rely on questionnaires sent to random samples drawn from various groups of honey producers obtained from a USDA mailing list.

Table 1 shows the number of commercial producers having at least 300 colonies, in the domestic honey industry for 1975.

Table 1.--1975 Universe of commercial producers

Number of Colonies	:	Number in universe	:	Number in Sample
300-899-----	:	968	:	161
900-1,549-----	:	414	:	106
1,550-2,699-----	:	195	:	98
2,700-21,506-----	:	99	:	99
Total-----	:	1,676	:	464
	:		:	

Table 2 shows the number of respondents for each of the years 1971 through 1976 who provided partial or complete information.

Table 2.--Number of respondents from 1971-1976

Number of colonies	Number of respondents					
	1971	1972	1973	1974	1975	1976
300-899-----	37	34	36	37	35	30
900-1,549-----	26	28	29	28	31	29
1,550-2,699-----	29	32	29	35	31	33
2,700-21,506-----	25	29	36	34	38	39
Total-----	117	123	130	134	135	131

Sample results

Table 3 shows the approximate universe totals determined from the sample of commercial producers. The corresponding error percentages are shown in table 4.

Table 3.--Sample results for 1971-1976

Item	1971	1972	1973	1974	1975	1976
Universe of Commercial Producers	:	:	:	:	:	:
Number of colonies---10,000 colonies--	190	183	183	185	183	184
Production of honey---million pounds--	126	142	148	122	119	1/
Average yield per colony-----pounds--	66	78	81	66	65	1/
Sales of honey and	:	:	:	:	:	:
wax-----million dollars--	30	39	59	58	58	1/
Profit-or-loss-----do----	11	18	29	22	21	1/
Profit to sales ratio-----percent--	37	46	49	38	36	1/
Average price per pound-----cents--	24	27	40	48	49	1/

1/ Not available.

Table 4.--Error percentages based on current response

Selected items	Percent sampling				variability 1/	
	1971	1972	1973	1974	1975	1976
Number of colonies-----	6	6	5	5	5	5
Production of honey-----	12	13	11	11	11	2/
Sales of honey and wax-----	17	21	12	11	13	2/
Profit-or-loss-----	19	21	17	18	23	2/

1/ These figures show the percentage errors (based on 95 percent confidence limits) that pertain to each selected item for each year.

2/ Not available.

For example, the estimated total number of colonies in the domestic universe of commercial honey producers in 1975 was 1,830,000 colonies. However, the actual total number of colonies may be as low as 95 percent (100 less 5 percent), i.e., 1,740,000, or as high as 105 percent (100 plus 5 percent), i.e., 1,920,000, as determined from the sample. The chances are about one in 20 that the actual total number of colonies lies outside the interval (1,740,000-1,920,000).

Table 5 shows the upper and lower 95 percent confidence limits for total honey production by apiaries with 300 or more colonies. For example, the estimated total production by commercial apiaries in 1975 was 119,000,000 pounds; the chances are 19 in 20 that the actual total production was no less than 106,000,000 pounds or no more than 132,000,000 pounds. The average yield per colony, corresponding to these limits for total production, ranges from as low as 58 pounds per colony to as high as 72 pounds per colony.

Table 5.--Universe of commercial producers

Year	Lower limit	Upper limit	Range of
	for total production	for total production	average yield per colony
	Million pounds	Million pounds	Pounds
1971-----	111	141	58-74
1972-----	124	160	68-87
1973-----	132	164	72-90
1974-----	109	135	59-73
1975-----	106	132	58-72

Table 6 shows the upper and lower 95 percent confidence limits for total profit-or-loss by apiaries with 300 or more colonies. For example, the estimated total profit-of-loss by commercial apiaries in 1975 was \$21,000,000, the chances are 19 in 20 that the actual total profit-or-loss was no less than \$16,000,000 or no more than \$26,000,000. The average profit to sales ratio corresponding to these limits for total profit-or-loss, ranges from as low as 28 percent to as high as 45 percent.

Table 6.--Universe of commercial producers

Year	: Lower limit : for total : profit-or- : loss : <u>Million</u> : <u>dollars</u>	: Upper limit : for total : profit-or- : loss : <u>Million</u> : <u>dollars</u>	: Range of : average profit : to sales : ratio : <u>Percent</u>
1971-----	: 9 :	: 13 :	: 30-43
1972-----	: 14 :	: 22 :	: 36-56
1973-----	: 24 :	: 34 :	: 41-58
1974-----	: 18 :	: 26 :	: 31-45
1975-----	: 16 :	: 26 :	: 28-45
	: :	: :	: :

Possible improvement in sample results

If all 464 commercial producers in the sample, out of the universe of 1,676 commercial producers, had responded completely to the survey, then the percent sampling variabilities to be expected would be those shown in table 7.

Table 7.--Error percentages based on 100 percent response

Selected items	Percent sampling variability <u>1/</u>					
	: 1971	: 1972	: 1973	: 1974	: 1975	: 1976
Number of colonies-----	: 2	: 2	: 2	: 2	: 2	: 2
Production of honey-----	: 5	: 5	: 4	: 5	: 5	: <u>2/</u>
Sales of honey and wax-----	: 7	: 8	: 5	: 4	: 5	: <u>2/</u>
Profit-or-loss-----	: 7	: 8	: 6	: 7	: 9	: <u>2/</u>
	: :	: :	: :	: :	: :	: :

1/ See footnote 1 for table 4.

2/ Not available.

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