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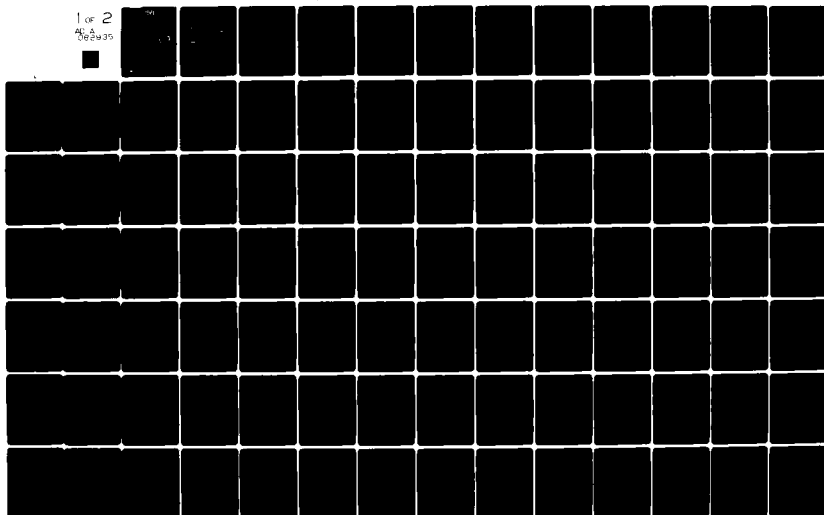
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MARKETING ANALYSIS AND STRATEGY FOR A SMALL BUSINESS IN THE BEE-- TC(U)
AUG 80 J A CARTWRIGHT

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MARKETING ANALYSIS FOR A SMALL BUSINESS
IN THE BEEKEEPING INDUSTRY

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Final Report
August 18, 1980

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MARKETING ANALYSIS AND STRATEGY FOR A SMALL
BUSINESS IN THE BEEKEEPING INDUSTRY

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To my parents, for giving me love and inspiration

MARKETING ANALYSIS AND STRATEGY FOR A SMALL
BUSINESS IN THE BEEKEEPING INDUSTRY

by

J. ALAN CARTWRIGHT, A.B.

PROFESSIONAL REPORT

Prepared for B.A. 398 Under the Supervision of
Dr. Robert E. Witt in Partial Fulfillment
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CHAPTER I

INTRODUCTION

Beekeeping has been an agricultural pursuit of man for at least as long as written history has been kept. Man has recognized since his earliest days that bees are beneficial in pollinating fruits, vegetables, and flowers. He has used honey as a food staple and beeswax for candles and sculpture. Within recent years even royal jelly and pollen have found a variety of uses in the drug and cosmetic industries.

Those who have ever been stung by a honey bee or seen a bee hive from a distance would likely never perceive the importance of the beekeeping industry in the United States. Without honey bees, such fruits as apples, pears, oranges, peaches and many others would not be available in our supermarkets. Similarly many other crops would bear only a fraction of their potential without cross pollination by honey bees.

The figures involved in beekeeping are staggering to those not familiar with the beekeeping industry. There are an estimated 212,000 beekeepers in the United

States who have a total of between four and five million bee hives. In 1979, the total honey production in the United States amounted to over 230,000 pounds worth over \$125,000,000.00. More than 50 privately owned companies operate to provide the beekeeper with the equipment and bees he needs to produce honey. This study is about one of those companies providing the beekeeper with beekeeping equipment. The company is known as Cartwright Plastics, Incorporated, and is located in Seymour, Indiana.

Purpose and Scope of the Study

The purpose of this study is to arrive at a marketing strategy for Cartwright Plastics hereafter referred in this study by the letters CP. This marketing strategy is based upon a company review found in Chapter II, a review of the bee equipment industry in Chapter III, and a survey of beekeepers in Chapter IV. A recommended long range marketing plan is found in Chapter V. The one year tactical plan to implement this long range plan is delineated in Chapter VI. Finally, a summary and conclusion is presented in Chapter VII.

The scope of this study is confined to the beekeeping industry within the United States as applies

to CP. Although mention will be made of opportunities in other industries, no in-depth analysis will be attempted for such industries.

CHAPTER II

COMPANY REVIEW

In this chapter all the key aspects of Cartwright Plastics are considered. A review of the current business status is necessary to lay the background for strategic alternatives of the firm and to systematically analyze possible changes to the market plan.

The Company

Cartwright Plastics, Incorporated, is a small, family owned company that produces plastic parts for bee hives and other beekeeping equipment. The firm is located in Seymour, Indiana, and has been in existence for not quite ten years.

The president and founder of the company, Mr. Patrick E. Cartwright, first thought of the idea for plastic bee hives while still an employee of Amoco Chemical Corporation. Mr. Cartwright had run an apiary of over 50 hives for nearly 15 years. He considered making bee hives from plastic a novel idea as he had no

knowledge at the time of bee hives being made from anything but wood.

Mr. Cartwright approached the management of Amoco Chemicals with his idea in 1970 but was rejected on the grounds that such a product would not fit into their other product lines made from structural foam plastics. In 1971, Mr. Cartwright took his idea for plastic bee hives to Mr. Walter T. Kelley, from whom he had bought bee supplies for many years. Mr. Kelley owned and operated one of the largest bee supply businesses in the United States.

Mr. Kelley recognized the potential of bee hive parts made from plastic and asked Mr. Cartwright to build molds for bottom boards and inner covers which are parts of a standard bee hive. Both men entered into a verbal agreement whereby Mr. Kelley provided the capital needed by Mr. Cartwright for development of the molds in exchange for the right for exclusive distributorship of the plastic products for the first year of production. This was to be the beginning of a long business relationship between Mr. Kelley and Mr. Cartwright.

After having received the approval of Mr. Kelley for development of the first plastic parts for bee hives, Mr. Cartwright rented a local tool shop in the

winter months of 1971-1972. Mr. Cartwright is a tool and dye maker by trade and fabricated the first molds himself. The molds were completed in the spring of 1972. AMOCO agreed to make production runs using Mr. Cartwright's molds just as though he were an outside customer. That same year over 2000 bottom boards and inner covers were produced and sold through Mr. Kelley's company. Further product revisions were made in succeeding years as well as introduction of other new plastic products as shown in Table 1.

In the fall of 1975, Mr. Cartwright decided that the idea for his plastic bee hive parts had caught on well enough within the industry to require patent protection. The United States Patent Office subsequently issued several patents protecting the product from design or material imitation.

Cartwright Plastics was actually born on October 26, 1976, under the laws of the State of Indiana. Mr. Cartwright's attorney had recommended incorporation for business and tax purposes and initiated the required paperwork for incorporation.

Sales and profitability grew substantially in all years except 1978 as shown in Table 2.

TABLE 1
UNIT SALES BY YEARS

	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>
Inner Covers	1,025	720	21,954	8,602	20,268	14,826	10,160	21,452
Bottom Boards	1,025	5,890	10,225	15,015	22,172	10,110	10,272	15,970
Queen Cages		64,000		26,106			3,000	
Feeders			30,752	59,960	40,148	1,000	7,000	40,004
Outer Covers			10,751	8,925	9,901	10,346	10,608	12,996
Deep Supers				3,579	7,545	9,955	3,000	7,740
Shallow Supers				295	5,243	5,003		3,790
Frames							1,000	
Commercial Covers							2,779	3,511
Illinois Supers						2,975		3,420

TABLE 2
DOLLAR SALES BY YEARS

<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>
\$4,100	\$31,429	\$102,962	\$111,755	\$203,311
<u>1977</u>	<u>1978</u>	<u>1979</u>		
\$204,243	\$141,754	\$280,148		

After 1974, the increases in sales dollars were primarily a result of inflation and the introduction of new products. The growth in unit sales of the older products quickly level off and fall as seen in Table 1. This rapid leveling off and decline of sales should be a source of consternation to CP and will be addressed in detail later in this study.

The novelty and advantages of plastic bee hives caught even the attention of beekeepers in other nations. In 1978, Mr. Cartwright met with a manufacturer of plastics from Australia. This manufacturer expressed an interest in importing the plastic technology of producing bee hive parts to Australia. Mr. Cartwright and the manufacturer from Australia eventually reached an agreement whereby plastic bee hive parts would be produced in Australia as a joint venture beginning in 1981.

As of the time of the writing of this study, Mr. Cartwright was concerned with the future of the company. Much like Topsy in Harriet Beecher Stowe's Uncle Tom's Cabin, the company "just grewed" without much structured analysis of the industry or consideration of how the company should grow. Problems with distribution of the product, product flaws, pricing, and other considerations were troubling Mr. Cartwright.

The Product

Cartwright Plastics produces ten bee hive parts or other beekeeping equipment from plastic:

- Inner Covers
- Bottom Boards
- Outer Covers
- Deep Supers
- Shallow Supers
- Deep Frames
- Commercial Covers
- Illinois Supers
- Queen Cages
- Feeders

The first eight products listed are parts of a bee hive as shown in Exhibit 1. The last two serve special purposes for the beekeeper for transporting queen bees and feeding bees.

These parts are now manufactured by Projection Products, Incorporated, located in Newton, North

Carolina, although Amoco Chemical Corporation in Seymour, Indiana, and Minneapolis, Minnesota, had manufactured them up to the spring of 1980. Mr. Cartwright switched to Projection Products because the savings in transportation costs from factory to distributor was substantial considering the longer distance from Minneapolis to the distributor of the products in Kentucky versus the distance from North Carolina to Kentucky. The manufacturer uses the patented molds owned by Cartwright Plastics in the production process.

The manufacturing process begins by feeding pellets of polyethylene or other plastic into a press and then are heated. At this point, those products that are to be made from structural foam have a foaming agent shot into the plastic that causes air bubbles to form. Then the molten plastic is shot under several hundreds of pounds of pressure into a mold of the product. Those products that are to be made from injected plastics are shot directly into the mold under thousands of pounds of pressure. The mold is then quickly cooled and the product is flipped out of the mold. This whole process takes only seconds and thousands of units of the product can be produced in a day.

After the parts are produced, they are transported to the Walter T. Kelley Company in Clarkson, Kentucky. Mr. Kelley's Company has an established clientele of beekeepers and advertises regularly in trade journals related to the beekeeping industry. He sends a catalog annually to all of his established customers and to those who request one through his advertisements. Mr. Kelley ships beekeeping equipment ordered by the customer by parcel post, bus, and air delivery.

Making bee hives and bee related parts from plastic was not an entirely novel idea. A small company in New York and a German company had both produced small numbers of such products previous to Mr. Cartwright doing so. Many of the parts proved to be unprofitable partly because many of the products were made in one piece and could not be broken down into more easily transportable pieces. These products commanded excessive transportation costs because so much empty space was being shipped. Mr. Cartwright was able to design parts for bee hives which could be shipped disassembled and resulted in reduction in transportation costs.

Plastic bee hive parts are much superior to the traditional wooden parts in many product characteristics. Plastic parts are somewhat lighter than wooden parts and can be broken down into sections which saves transportation costs. The plastic never needs painting nor does it rot as does wood. Additionally, plastic parts are impervious to termite and wax worm damage which takes a heavy annual toll upon wooden parts. There have been some problems with using plastic which are discussed in greater detail in Chapters IV and VI.

Pricing of the product at the factory, wholesale, and retail levels is relatively simple. The manufacturer prices his output based upon his fixed and variable costs and gives quantity discounts on large orders. These discounts vary but are in the range of five to ten percent for each 2,500 units additionally ordered.

Mr. Cartwright adds a ten percent markup to the manufacturer's costs before he ships them to Mr. Kelley's company. Mr. Kelley adds 25 to 35 percent to the cost of the product after he receives it from Mr. Cartwright. He offers the retail customer discounts on progressively larger orders in the range of three to seven percent for each five units ordered.

There has been little specific promotion of the plastic products to date other than advertisements in Mr. Kelley's catalog. Mr. Cartwright does some promotion by going to trade shows in the United States and displays his products to those who attend. Advertising in other media such as trade journals, magazines, radio, or television has not yet been undertaken.

CHAPTER III

INDUSTRY REVIEW

In this chapter, the beekeeping industry is discussed with particular emphasis on the bee equipment industry. The review of the industry may also be considered a critical component in the analysis of strategic alternatives for the company.

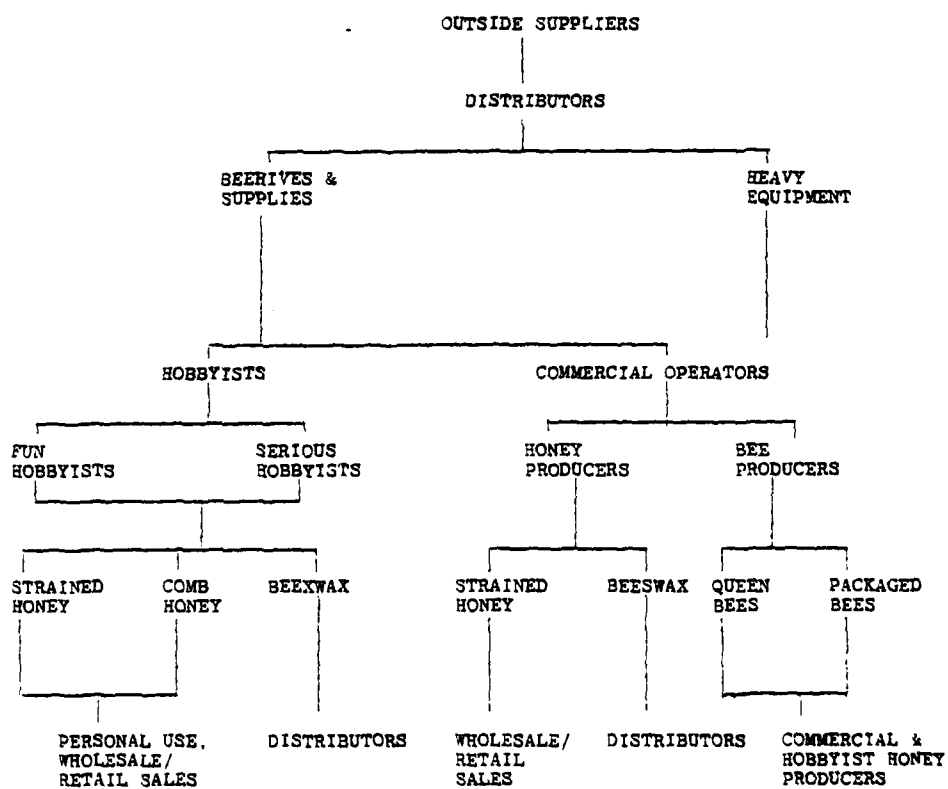
Market Identification

The entire beekeeping equipment and honey production industry is depicted in Table 3.

Bee hive equipment distributors supply both beekeepers who are hobbyists and commercial operators. Hobbyists produce honey and beeswax which is used for personal use or sold for profit. The commercial operator either produces honey and beeswax or bees for other beekeepers.

The equipment that these beekeepers purchase from the distributors includes bee hives and bee hive

TABLE 3
BEEKEEPING INDUSTRY



parts, protective clothing, chemicals, honey extracting equipment, tools, packaging and labeling materials, and other beekeeping equipment. These distributors obtain this equipment from many outside suppliers. Most distributors also engage in some light manufacturing by building wooden bee hives and bee hive parts.

Heavy equipment distributors provide beekeepers with the heavy lift and transportation capability that some of the larger beekeepers need to move tons of bee hives and equipment. The heavy equipment distributors have cranes, lift slings, A frames, trailers, hitches and other related equipment.

Currently and for at least the near future, the market that Cartwright Plastics identifies with is as an outside supplier of bee hive parts and equipment supplied to bee equipment distributors that is ultimately consumed by both beekeepers who are considered hobbyists and commercial operators.

Market Magnitude

To find any information concerning market size, market growth and other pertinent data about the bee supply business proved to be extremely difficult. No

literature exists concerning such data. The distributors are all privately owned companies that do not publish or in any way reveal information concerning sales, growth, profits, etc. The trade organizations and the USDA have data on honey production but none on the bee equipment industry. However, since the demand for bee equipment is a derived demand based on many factors relating to honey production then some approximation of the market size may be calculated. Some of the pertinent factors upon which demand is based is average life of a bee hive, the number of bee hives in the United States, the number of parts in each bee hive, and the average cost for these parts.

According to the calculations shown in Exhibit 2, 840,000 each of bottom boards and inner covers out of the total number of bee hives in the United States are replaced each year. Also, 420,000 each of deep supers and outer covers, 1,680,000 shallow supers, 8,400,000 deep frames, and 33,600,000 shallow frames are replaced each year. The value of these replacement parts using the average price of 19 competitors totals to about \$42,000,000.00 a year. This, of course, does not account for the demand caused by new beekeepers per year. The number of people becoming beekeepers per year is an extremely difficult figure to estimate.

Using USDA data found in Exhibit 3, the number of colonies in the United States have been growing at about a one percent rate per year and honey production has been growing at about a six percent rate per year. This might approximate the range of the increase of new beekeepers each year. This is not to say that the total increase per year in colonies and honey production is due to new beekeepers because expansion by older beekeepers could account for much of the increase. However, by using the most conservative estimate of a one percent increase in the number of new beekeepers per year means that somewhere around 2,120 people become new beekeepers in the United States each year. (Currently there are 212,000 beekeepers in the United States.) An average beekeeper has about 20 bee hives, according to USDA data. A new beekeeper, however, would likely have as few as perhaps five to ten hives. Using an average of five bee hives for each of the 2,120 new beekeepers would mean 10,600 new bee hives would be demanded by new beekeepers each year. This means 10,600 more bottom boards, deep supers, inner covers, and outer covers will be needed each year by these new beekeepers along with 42,400 shallow supers, 106,000 deep frames, and 424,000 shallow frames.

Total estimated demand per year for both replacement of worn out parts and demand of new beekeepers totals to 850,600 bottom boards and inner covers each, 430,600 deep supers and outer covers, 1,722,400 shallow supers, 8,506,000 deep frames, and 34,024,000 shallow frames. This brings the total market for these bee hive parts to about \$42,500,000.00 per year. Note must be made at this point that these calculations were derived from sample data from the USDA and management estimates of the life span of bee hive parts and the average price of such parts which is subject to wide variation from the actual market data.

Using these aggregate market data means that Cartwright Plastics runs between a low of .01 percent of the total shallow super unit sales to a high of about three percent of total outer cover unit sales. Translating CP's dollar sales in 1979 (280,148.00) into percent of total dollars spent in this market (42,500,000.00) means that CP has about .8 percent of the total dollar sales of bee hive parts. This market share has apparently stayed the same or decreased slightly since 1974 looking at the volume of sales by year in Table 1. This very small stable market share should be a source of concern to Mr. Cartwright.

The Competition

The bee equipment industry is dominated by three firms: Dadant and Sons of Hamilton, Illinois, Walter T. Kelley Company of Clarkson, Kentucky, and A.I. Root Company of Medina, Ohio. No industry literature is available that estimates their market shares. However, in a questionnaire devised for this study and distributed to 557 beekeepers in 37 states, 46 percent identified Dadant's as being their primary distributor, 32 percent identified Kelley's, and 8 percent identified Root as their primary distributor. (See Exhibit 6.36) The actual market share of Dadant is likely higher than the percent of those who identified him as their primary distributor. This is likely for two reasons. One hundred thirty-five of the 318 respondents were from Indiana which heavily favored Kelley because of his proximity to them. Also well over 50 percent of all beekeepers who had over 100 hives identified Dadant as their primary distributor. (See Exhibit 7.21) Those beekeepers with over 100 hives would represent approximately 75 percent of all bee hives in the U.S.¹ A reasonable estimate considering these factors would give Dadant's 50 to

¹USDA Crop Reporting Board, 1978.

60 percent of the total market for bee hive parts; Kelley's 15 to 25 percent and Root 5 to 10 percent.

Many other distributors round out the remaining 10 to 20 percent of the market. Other distributors mentioned in the questionnaire included Hubbard, Miller, Superbee, Stewart, Leahy, Knorr, Forbes and Johnston, Western Bee, Strauser, and Los Angeles Honey Company. Even Wards and Sears sell bee hives and beekeeping equipment and were both mentioned as primary distributors in the questionnaire.

Dadant is well represented in all regions of the U.S. by exclusive dealers of his products in Watertown, Wisconsin, Fresno, California, Paris, Texas, Wayland, Michigan, Waverly, New York, Lynchburg, Virginia, Hahira, Georgia, Umatilla, Florida, Sioux City, Iowa and their main location in Hamilton, Illinois. Dadant prides themselves with having been in the industry since 1863 and having five generations in their beekeeping family. Their catalog offers a full line of beekeeping supplies to include several items of equipment made from plastic. As shown in Exhibit 4, their prices are among the very highest of all distributors which is likely a reflection of their dominant market share position. As stated previously, the larger

beekeepers in particular favor Dadant over any other distributor. His widespread distribution is one reason for this but another reason might be that he offers large discounts for large orders. Dadant is GM's counterpart in the beekeeping equipment industry.

Kelley is likely the second largest distributor of beekeeping equipment in the U.S. next to Dadant. He is particularly strong in the Midwest states which border Kentucky. Kelley has no dealers as does Dadant. The responses to the questionnaires seemed to indicate that although Kelley had customers all over the U.S., the further from Kentucky a respondent was, the less likely the respondent would be to identify Kelley as their main distributor. Kelley also prides himself in being in business since 1924 and offers a full line of beekeeping equipment. Mr. Kelley's prices are often 25 percent less than Dadant prices. He claims to have high quality equipment which seems to be supported by the perceptions of the respondents in the questionnaire.

Mr. Kelley is still the only distributor carrying Cartwright Plastic's products. There are several reasons why this might not be a desirable state of affairs for Cartwright Plastics. First, Mr. Kelley is very elderly (83) and the continued

distributorship when he leaves of Cartwright Plastics' products in his company is much in question.

Second, as mentioned previously, Mr. Kelley's main competitive strength is only in the midwestern states. Third, Mr. Kelley has added sufficient markup to the plastic products of Cartwright Plastics to make these products as much as 25 percent more expensive than similar wooden products made by Kelley himself. Whether Mr. Kelley has placed higher markups on plastic products than on wooden products is not known; however, when Mr. Cartwright several years ago dropped his markup from 12.5 percent to the current 10 percent, Mr. Kelley did not reciprocate by reducing the retail price. Lastly, Mr. Kelley has not given Cartwright Plastics the cooperation necessary to obtain needed customer feedback for product modification nor provided much feedback from the customers himself. Mr. Cartwright has chosen not to test his marketing strength with Mr. Kelley regarding the markups and lack of cooperation. Mr. Cartwright's products represent only a small part of Mr. Kelley's total product line and Mr. Cartwright has no other distributors for his products. However, note should be made that Mr. Cartwright is the only source of supply for

outer and inner covers and bottom boards to Mr. Kelley's company. Mr. Kelley cannot readily construct wooden ones because lumber companies no longer supply the thickness of wood Mr. Kelley desires.

A.I. Root Company owns a third place in market share in the U.S. if the respondents in the questionnaire are representative. Root's main strength lies in the eastern, midwestern, and southern states where it has dealerships in every state east of the Mississippi River as well as Texas and Iowa west of the Mississippi. An intriguing question posed itself as a result of the questionnaire. Why was Root, despite a vast network of dealers, mentioned significantly less as a primary distributor of beekeepers than Kelley who operates from only one location in Kentucky? No answer is readily available for this question although Root's strength in the East or South was not well represented by the sample which was largely from midwestern states. One might expect however that representativeness of the sample may not be the only reason for this poor showing. Even Indiana beekeepers who are next door to Root's main location in Ohio and who have 14 Root dealers available in Indiana still prefer Kelley seven to one over Root. If there are other reasons for Root's third place showing, they are not readily apparent. In pricing,

as can be readily seen in Exhibit 4, Root follows Dadant very closely by being a few cents to a dollar lower. In the questionnaire, only one of the 80 respondents who had over 500 hives mentioned Root as their primary dealer.

Other competitors demonstrate strength in certain regions of the U.S. or in certain sizes of beekeepers. Lagrants claims to be New England's largest manufacturer of bee supplies. Strauser claims to be the fastest growing distributor in the U.S. Knorr and Western are both trying to capture part of the large western U.S. market. Hubbard appears to have strength in its home state of Michigan and northern Indiana and Ohio. Hubbard, Miller, Superbee, and Stewart all had some mention as being the primary suppliers of beekeepers with over 1000 hives in the sample.

To this point, no specific mention has been made of direct competitors of Cartwright Plastics who make plastic bee hives and plastic equipment themselves. There are two such competitors which are known: Papio Valley and Apiary Plastics.

Papio Valley, located in Omaha, Nebraska, is a relatively small newcomer to the bee equipment industry. It advertises its "Insul-Hive" frequently

in major trade magazines. The "Insul-Hive" is advertised as "termite and vermin resistant, rot proof, and stronger than wood construction." In November of 1979, when these hives were first introduced, Papio Valley offered a 15 to 20 percent discount on the usual price of \$30.00 to have beekeepers experiment with them to determine the survivability of bees through the winter with these plastic hives. That compares favorably with the range of prices from \$28.50 to \$37.00 from the largest distributors for a wooden hive. Papio Valley also sells wooden products but seems to emphasize its plastic products such as the "Insul-Hives," bottom boards, outer covers, and round comb frames.

Little is presently known of the company called Apiary Plastics. Apiary Plastics is located in Visalia, California, and is a division of another company called Airdrome Orchards, Inc. Apiary Plastics makes a product called "Polyframe." "Polyframe" carries patent number 4,186,458 and is billed as being "super strong and the most progressive frame available." Currently polyframe is their only bee supply product. However, Apiary Plastics announced in a major trade journal that as of March 1, 1979, the "Polyframe" would be available at Dadant branches and dealers. The price per 50 frames is \$36.50 versus around \$20.00 per 50

for wooden frames of the major distributors.

In summary, the competition in the bee supply business is dominated by three companies with others competing well in certain regions or with certain beekeepers. All of the dominant firms and the vast majority of the other smaller companies have been in business for over ten years and in many cases over 50 years. The bee equipment industry may be characterized as being slow to adopt new ideas, lacking in research and development facilities, and catering to the needs of a market which change very slowly over time.

Market Segmentation

Market segmentation is the basic recognition that a market (such as the market for bee equipment) is made up of distinguishable segments of buyers with different needs, buying styles, and responses to variation.² No one product or approach to the market can be expected to satisfy all buyers. The importance of recognizing the various segments of customers within a market is critical to any business. Each segment has opportunities associated with it that may be profitably

²Philip Kotler, "Marketing Management: Analysis, Planning, and Control," Prentice-Hall, Inc., p. 57.

exploited by the discerning business.

There are four potentially useful ways of segmenting the customers of the bee equipment industry:

- Geographically
- Usage Rate
- Customer Function
- Marketing Factors

The first way of segmenting the customers of the bee equipment industry is by geography. Although the three dominant firms ship equipment all over the U.S., they cannot be equally strong everywhere. A company located in a certain state or region may enjoy several advantages over its competitors in that area. First, the local company likely knows the needs of the beekeeper in that locale and the peculiarities of beekeeping in that area better than a more distant competitor. Knowledge of such factors as type of flowers worked on by bees, timing of honey flow, use of insecticides, and many others relate to very specific local conditions. More distant competitors would not know about these local conditions and this would give the local distributor a distinct advantage. Secondly, a local manufacturer/distributor would have an advantage on freight costs and charges. He could, therefore, have greater profit margins and/or lower the retail price to the customer.

The second way of segmenting the customers is by usage rate. Using the rate at which bee equipment is purchased by the beekeeper would point at four possible segments:

- The Hobbyist
- The Serious Hobbyist
- The Small Commercial Operator
- The Large Commercial Operator

The hobbyist may be defined as a beekeeper who has one to twenty-five bee hives although this is not a hard and fast rule. Basically he is involved with beekeeping for enjoyment and to produce a little honey for himself and friends. Closeness to a dealer as well as dealer advice and courtesy may be of more importance than other factors to him.

The serious hobbyist may be defined as a beekeeper having from 25 to 300 bee hives. This number of bee hives would provide much more honey than the beekeeper or his friends could use. The serious beekeeper would likely be interested in turning a profit with some of his honey. Price of equipment might become more of a factor with him along with quality and speed of delivery.

The small commercial operator would have from 300 to 1000 hives. He does beekeeping for a living. He is not on quite the scale of a large operator and makes

very little of his own equipment. Speed of delivery, price, and quality of equipment would all be expected to have a great impact on his purchase decision. Also quantity discounts are becoming more of a factor to him than it was to the hobbyists.

The large commercial operator has over 1000 bee hives. Some have as many as 30,000 or more bee hives. He has been in business for many years to develop this number of bee hives and likely has his operations scattered over a several hundred mile area if not several state area. The scale of his beekeeping allows him to hire full or part time employees to help him with the very labor consuming process of beekeeping. Many large commercial operators have their own woodworking shops where they make their own bee hives. The large commercial operator also has a fairly large inventory of spare bee hive parts. This might make him less anxious for the speed of delivery of bee hive parts and more concerned with price, quantity discounts, and transportation costs.

Customer function is the third way that the customers may be segmented in the beekeeping industry. End users in the beekeeping industry produce either honey or bees. The honey is sold either wholesale

or retail with its final destination the supper tables of America. Those beekeepers who produce bees are raising queen bees or worker bees for sale to other beekeepers. The needs in equipment are quite diverse between these two groups of beekeepers. Development of products for one or both groups could be potentially profitable.

Marketing factors is yet a fourth way to segment the market. All beekeepers are believed to be sensitive in widely varying degrees to price, equipment available, service, quality and other market factors. Producing premium quality equipment at the lowest price is nearly an unachievable goal for a distributor or supplier to expect to realize. Concentrating on the needs of a particular segment would allow him to differentiate his products from the rest of the market and achieve a distinct advantage over his competition.

The bee equipment industry could also be segmented vertically into bee equipment manufacturers and bee equipment dealers. The manufacturers sell equipment from the factory to the distributors who, in turn, sell it to beekeepers. The alternative is always available for a manufacturer to move forward into being a distributor or a distributor backward into being

a manufacturer. Such forward or backward integration has been relatively unknown to this point within the bee equipment industry. A manufacturer looking to integrate forward encounters well established channels of distribution, considerable expenditures for inventory and facilities, and a possible lack of knowledge about beekeeping which is essential to potential clientele. A bee equipment distributor who might consider backward integration encounters high initial fixed costs of purchasing tools and machines. Forward or backward integration by manufacturers or bee equipment distributors is possible. However, the special knowledge needed in each area would tend to preclude either integration.

CHAPTER IV

MARKET SURVEY

This chapter delineates the purpose and results of a marketing survey which consisted of a questionnaire distributed to beekeepers.

Purpose

All of the analysis to this point has been useful from the standpoint of developing an understanding of the structure of the industry and how business has been conducted in the past at Cartwright Plastics. More detailed knowledge is needed, however, concerning the industry and customer behavior in order to enable the management of Cartwright Plastics to make effective decisions regarding its marketing plan. An exploratory research design was initiated to answer questions concerning product awareness and image, customer preferences and dislikes, the reasons for customer purchasing behavior and comparison of customer preference based on demo-

graphic data.

Results

Exhibit 5 illustrates the questionnaire which was devised to obtain needed customer feedback. The questionnaire was distributed to 557 members of the Indiana State Beekeepers Association (ISBA) and the North American Honey Producers Association (NAHPA). These two trade organizations were used to gain customer feedback because they were the only lists of beekeepers which were readily available which might provide the desired feedback. A 25 cent incentive was mailed with 150 questionnaires, 50 cents with another 150 questionnaires, and the remaining 257 questionnaires were mailed without any incentive. Out of a total of 557 questionnaires mailed, 334 responses were received. Of the 334 responses, 318 were recorded, 15 respondents disqualified themselves from filling out the questionnaire because they were not active beekeepers and one respondent made comments but did not use the questionnaire. Four letters were returned by the Post Office marked "addressee unknown" or "no such address." The frequency of different responses to the questions

of the questionnaire and cross tabulation of data is found in Exhibits 6.1 through 7.21.

Refer to Exhibit 6.1. Question one identified the respondents as being heavily weighted toward many years of experience as beekeepers. Approximately 47 percent of the respondents said they had more than 20 years in the business.

Refer to Exhibit 6.2 and 6.3. Question two showed that the respondents were much more likely to have more than one dealer. (Approximately 71% versus 27%). About 59% of the respondents said they used two or three dealers each year.

Refer to Exhibit 6.4. Responses to question three indicate that 86% of all beekeepers are definitely or moderately satisfied with their current bee equipment and services. Only three respondents out of 290 said they were definitely not satisfied.

Refer to Exhibit 6.12 and 7.8. Of the nine features which the beekeeper would consider before deciding which dealer or equipment to purchase, durability of the equipment had the highest response rate of all in the very important category (79%). The hobbyists did consider it very important a little less than did the other categories of beekeepers. Forty-five percent of all beekeepers said there were

extreme differences between dealers.

Refer to Exhibit 6.5 and 7.1. Equipment availability was the next most important feature with 71% of the respondents saying this was very important. The serious hobbyist and the small commercial operator responded that this feature was very important to them somewhat more than did either the hobbyists or the large commercial operators. Only 35% of the respondents said there were extreme differences between dealers on equipment availability.

Refer to Exhibits 6.8 and 7.4. Price was the third most important feature overall with 71% of the respondents answering this was very important. The small commercial operators placed more emphasis on this than any other group of beekeepers. Approximately 43% of the respondents identified extreme differences between dealers on this feature.

Refer to Exhibits 6.6 and 7.2. Fifty-nine percent of beekeepers ranked speed of delivery as being very important. The serious hobbyists responded that this feature was very important slightly more frequently than the other groups. About 28% thought that there were extreme differences in dealers on this feature.

Refer to Exhibits 6.7 and 7.3. Fifty-three percent of the respondents said a full line of equipment was very important to them. There was little difference in the response of any group of beekeepers although perhaps this feature is slightly more important to commercial operators. Twenty-nine percent thought there were extreme differences between dealers.

Refer to Exhibits 6.11 and 7.7. Fifty percent of all respondents answered that design was very important. The hobbyists considered this feature to be very important much less frequently than did the other groups. Only 26% considered there to be extreme differences between dealers.

Refer to Exhibits 6.9 and 7.5. Quantity discounts were very important to 49% of the respondents. Not surprisingly, the more bee hives a beekeeper had, the more likely he was to respond that this feature was very important. However, only 28% of the respondents thought there were extreme differences in dealers.

Refer to Exhibits 6.10 and 6.13. Closeness to the dealer and the product being lightweight was very important to only 35% and 26% of the respondents

respectively. Very little differences between responses of different categories of beekeepers could be determined for either feature. Only 28% of the respondents considered there to be extreme differences in dealers with respect to closeness and only 14% thought there were extreme differences with respect to a product being lightweight.

Exhibit 6.24 summarizes the other factors in question 4 that were not listed in the questionnaire which beekeepers listed as being important when they purchased equipment. Quality of material and workmanship were mentioned by 32 beekeepers followed by such factors as knowledgeable distributor, helpfulness or courtesy shown by a distributor, and standardization of parts.

Refer to Exhibit 6.25. In regard to question 5, beekeepers mentioned 21 different responses in what two features their current dealers could improve the most. Price was the most commonly mentioned factor (36) followed by quality of workmanship/material, availability of equipment, quantity discounts, and speed of delivery.

Refer to Exhibits 6.26, 6.27 and 6.28. Over 92% of the respondents answered they had heard of plastic bee

hives in question 6. Cross tabulation reveals that nearly all of Kelley's customers had heard of them (98%), followed by Dadant and Root's customers. The more bee hives a beekeeper had also meant he was more likely to have heard of the plastic bee hives. In questions seven and eight, 89% and 54% respectively of the respondents mentioned they had heard of plastic bee equipment or used plastic bee hives or equipment. The response patterns to these questions were similar to question six.

Exhibit 6.30 lists the reasons and the frequencies of responses in question 10. The main dislikes of plastic products and the frequency with which they were mentioned were warpage (46), breakage/cracking (16), and moisture/sweating (13). Among the likes, durability was mentioned most frequently (17), followed by ease of handling (9), and rot and insect proof (5).

Refer to Exhibit 6.31. Of those asked to respond to question 11, 8% said they would definitely buy plastic bee hives in the future, 9% moderately yes, 38% neutral, 21% moderately no, and 25% responded definitely no, they would not purchase plastic bee hives in the future. Note must be made that those who used only plastic equipment might have been inclined to answer this question based upon their experiences with

that equipment even though the question only asked for their intentions toward plastic bee hives. Only those respondents who answered yes to question 8 were asked to answer the question so that some feeling for future repeat purchases might be gained. An analysis of variance was run to answer the question "Does the number of bee hives or length of years in beekeeping affect a beekeeper's intentions to buy plastic beehives?" The results of this ANOVA are found in Exhibit 8. The ANOVA revealed that both length of years in beekeeping and the number of bee hives that a beekeeper had affected a beekeeper's intentions to buy plastic products. Both were significant at the .10 level. Further analysis revealed a linear relationship between the number of hives a beekeeper had with his future purchase intentions. The more bee hives a beekeeper had, the more inclined he was to respond with negative intentions toward purchasing plastic products. Similarly, the more years a person was a beekeeper, the less inclined he was to respond positively on purchasing plastic products.

Refer to Exhibit 6.32. Those who were asked to respond to question 12 had generally never used plastic bee hives or equipment. Twenty-nine percent

responded they would definitely try plastic equipment, 23% moderately yes, 23% neutral, 9% moderately no, and 15% definitely no. Hobbyists were more inclined to respond positively than other beekeepers.

Refer to Exhibit 6.33. In response to question 13, 8% said they would expect to pay much less for plastic hives in comparison to wooden hives, 15% said somewhat less, 47% said about the same, 26% said somewhat more and 3% said they expected to pay much more. Those who responded with negative reactions in question 12 were more likely to respond "much less" in question 13.

Refer to Exhibit 6.34. The states that respondents were from and the frequency of responses from those states are shown in this exhibit. Relatively greater numbers of respondents from Indiana, Iowa, Illinois, Texas, and Arizona were recorded. These four states represented 60% of all responses. This was not unexpected as 150 of the members of the ISBA received a 50 cent incentive. Members of the NAHPA from Arizona, Illinois, and Iowa all received 25 cent incentives. Of those states with the highest response rates, only Texas beekeepers received no incentives.

Refer to Exhibit 6.37. Of those 150 who received a 50 cent incentive, 76% gave a response. Of those 150 who received a 25 cent incentive, 45% gave

a response. Finally, of those 227 who received no incentive, 60% responded. The total response rate for the entire questionnaire was 57%. The implication is obvious. If a good response rate is desired, a high incentive is needed. Note was made that those receiving incentives tended to return the questionnaire quicker and make a greater effort to fill out the form properly.

Exhibit 9 gives the effects of multiple variables on a beekeeper's intentions to buy plastic bee hives. A multiple regression was run to determine what factors affected a beekeeper's intentions to buy plastic bee hives in the future. The factors which were used to determine these intentions were the responses to length of years in beekeeping (question one), satisfaction with current equipment and service (question three), how much a beekeeper would expect to pay for a plastic bee hive (question 13), and the number of bee hives (question 15). The regression technique used was method = forward in which the computer places a factor into the regression equation based upon the strength of its correlation with a beekeeper's purchase intentions.

The regression equation having the highest significance and the best predictive capability of a beekeeper's future intentions was:

$$y = .81119094 + .19151479Q_{15} + .24568704Q_3$$

with y = predicted intentions of beekeeper

1 = definitely yes, will purchase

2 = moderately yes, will purchase

3 = neutral on purchasing

4 = moderately no, will not purchase

5 = definitely no, will not purchase

Q_{15} = numerical response to Question 15

Q_3 = numerical response to Question 3

Multicollinearity was not a significant problem with any of the variables. Q_{15} in the final equation was significant at the .001 level and Q_3 at the .039 level. The overall significance of the equation was at the .001 level. Note is made, however, that ordinal data for all the independent variables was used. Therefore, a direct calculation of the magnitude of purchase intent was not possible.

To give an example of how this equation might be used, the following example is given: If a respondent said he had from 501 - 1000 hives (ordinal number 5) and was moderately satisfied with his current equipment and service (ordinal number 2), then the prediction of what his future intentions on purchasing plastic bee hives would be calculated:

$$\begin{aligned}y &= .81119094 + .19151479(5) + .24568704(2) \\ &= 2.260\end{aligned}$$

On an ordinal scale from 1 to 5 with one being definitely yes and five being definitely no, this respondent's predicted answer would have been 2.6. Since he could only rate by whole numbers, he likely would have responded moderately yes or neutral toward buying plastic bee hives in the future. The number of bee hives a beekeeper owns has an effect because of the tendency of big beekeepers to respond that they have negative intentions of purchasing plastic bee hives. The more a beekeeper is dissatisfied with his current equipment and service also tends to reflect negatively on his intentions to buy. The significance of all this discussion on regression is not only to predict a beekeeper's intentions based on his response to other questions but to point to the inclination of beekeepers with many hives not to have positive purchase intentions and why he has these inclinations. Note must be made that the regression equation above explained only 6% of the intentions of the beekeepers. Undoubtably, more thought and analysis will have to be put into this question but a hypotheses may be posed for future testing. Perhaps these large beekeepers represent the innovators within the beekeeping industry and have

tried the product in quantity already and had negative experiences with the product. Further analysis of this hypothesis is beyond the scope of this study but poses an interesting subject for further examination.

CHAPTER V

STRATEGIC PLANNING FOR CARTWRIGHT PLASTICS

This chapter summarizes the situation facing the company today and enumerates alternative courses of action it could implement to address this situation. Later in the chapter, these alternatives are evaluated in light of company assumptions and objectives as well as company and industry characteristics. The last section of this chapter delineates a strategic plan based upon two contingencies.

Summary of Problems and Strengths

Chapter II noted that unit sales of the various products made by Cartwright Plastics had peaked and sometimes dropped in the last five years. Chapters two through four identified several possible reasons which include:

- Lack of distribution
- Product problems
- High price
- Poor promotion

Since Mr. Kelley has only 15 to 25 percent of the market, Mr. Cartwright must recognize that his product can have no wider distribution considering Mr. Kelley is his only distributor.

The product problems were summarized in Exhibit 6.30. In particular, the problems of warpage, moisture condensation and cracking/breakage of plastic products had a significant negative impact on the intentions of beekeepers to purchase plastic bee hives. The strong negative response of many large beekeepers is especially alarming.

The high price of plastic products produced by Cartwright Plastics is a function of the cost of the raw material, manufacturing costs and the markups of the product. The cost of oil, which is the prime ingredient of plastic, has risen over 100% in the last two years and this cost has been passed on to Cartwright Plastics and, in turn, to the customer. The cost of manufacturing the product has generally risen faster than the rate of inflation in the consumer price index not only because of the raw material but also because of the ever increasing cost of labor involved in the manufacturing process. The markup Mr. Kelley applies to plastic products has already been mentioned. Since wood and plastic may be considered very closely

substitutable products, this high price could be expected to cause negative customer reaction as seems to be indicated in the market survey.

The poor promotion of the product has not caused low awareness. Customers displayed an 80 to 90% level of awareness on plastic products. However, there is a reservoir of approximately 50% of all beekeepers who have not yet translated this awareness into a purchase which good promotion could affect. Also, no effort has been placed by Mr. Cartwright or Mr. Kelley outside of the beekeeping industry through advertisement to potential beekeeping customers such as gardeners, health enthusiasts and farmers.

All of these problems have likely had an impact on Cartwright Plastics' continued low market share. If Cartwright Plastics is to gain any economies of scale for higher profitability, it must gain market share. Since the beekeeping industry is growing at only 1 to 6% per year, Cartwright Plastics will have to gain share from wooden products.

The problems mentioned above are not without their countervailing strengths. Among the strengths which CP has are:

The beekeeping industry is a "sleepy" industry;

Potential customers react favorably to the
product core benefit proposal;

Cartwright Plastics has a headstart over the
other plastic bee equipment manufacturers;

The current products have patent protection;

Good management;

Sound financial position

Even though CP will have to gain market share at the expense of wooden equipment, that may not be difficult to do because the bee equipment industry is a relatively sleepy industry. Although the management of competing distributors are far from being stupid, decades of being dominant firms have led to a certain amount of complacency. Since the competitors have no way of keeping track of sales of each other or the industry, a firm may be able to gain market share quite some time before being detected. Even then considerable time may pass before an effective reaction could be established. CP does hope, however, that such a course of action won't be necessary if all distributors could be gained to distribute its products.

Potential customers have reacted quite favorably to the core benefit proposal of the product to "never need painting, is rot, termite, and wax-worm proof and lasts years longer than wooden hives." As Exhibit 6.32 demonstrates, 53% of the beekeepers who never

tried plastic bee hives said that they would either definitely or moderately favor purchasing the bee hives. Many of those in the other categories of neutral, moderately no, and definitely no stated some contact with the product through word of mouth or seeing the product.

CP has been making plastic beekeeping equipment longer than either Papio Valley or Apiary Plastics. In terms of experience CP should be able to keep just ahead of its competitors if it presses its advantage with new products and modifications to old products.

Certainly not to be disregarded is the patent protection that the company has on its current products. The company may be able to use this as a weapon against new entrants and control of the expansion of the other two firms.

Although the management of CP is not sophisticated yet it enjoys certain advantages. Mr. Cartwright is a very creative person who has the technical expertise needed to personally make new molds or modify old ones. His wife and daughter work as the bookkeeper and secretary. His son (the author of this study) is a graduate student in business and offers consultation based upon the studies he has had at The University of Texas.

CP is in a sound financial position. It owes no debts and has access to funds from its own coffers and from financial intermediaries to sponsor whatever projects, within reason, it decides to undertake.

The strengths and problems, as well as the history of the company and the industry presented in the preceding chapters, must now be systematically analyzed by enumerating the strategic alternatives which the company could take.

Strategic Alternatives

In the past, decisions had been made within the company based largely upon Mr. Cartwright's technical expertise, beekeeping experiences and intuition. This had some degree of success in the first years of the company. However, as more products were introduced and with the wild economic swings within the U.S., a more structured way of analyzing the future course of the business was called for. Accordingly, the strategic alternatives of the future of the company in the summer of 1980 were:

- 1) Make no change in the current business;
- 2) Divestiture from the business;

- 3) Expansion of the business either horizontally into other product lines and distributors or vertically into production or retail sales.

Before making a decision on which course the company will follow, the strengths and problems of the company and the history of the company and industry must be considered as presented in the preceding chapters. Additionally, the assumptions about the future of the economy and industry and the company objectives must be weighed before arriving at the best strategic alternative.

Assumptions of the Future

Key assumptions which may be reasonably made about the next five years include:

- 1) The economy will continue to be volatile and unpredictable with near term expectations of the end of the recession early in 1981. Following the recession, high levels of inflation are likely which will increase the price of oil and labor even more thus increasing the price of plastic products. Wage and price controls must be regarded as a possibility.
- 2) Interest rates will rise again early next year.
- 3) Wood prices will remain stable or fall in

the next six months but will rise with increased demand from the construction industry early next year.

4) Sugar and honey prices will continue to rise regardless of the swings of the economy.

5) Honey will be looked to as a substitute sweetner increasingly more by a public concerned with the possible health hazards of sugar and saccharin.

6) The demand for beekeeping equipment will continue a slow growth in the range of one to six percent per year.

7) Mr. Kelley will retire or be unable to continue his business within the next five years.

Company Objectives

CP does not have a sophisticated set of objectives for return on investment, growth of the firm, or other financial ratios as do many larger firms. It does have several ideals that may be expressed as objectives that when verbalized will serve as a guide to future action within the company. These objectives may be expressed as:

Ease of control of the business;
Controlled growth;
15% return on assets

Ease of control of the business is of primary concern to Mr. Cartwright now. He does not want to be "tied down" to a business and involved with a host of problems which will cost him his freedom to travel and get involved with other projects. If the business is to expand, it should not be done at the loss of ease of control of the business. As the situation is now, Mr. Cartwright may work only a few hours a week which he perceives as being essential to his freedom.

Growth in the company in terms of assets, sales, and profitability is a desired objective within the company. But it is a qualified objective. The rate of growth should not exceed the company's ability to easily control that growth.

A 15% or greater return on assets should be a reasonable objective for the business to attain. Any lesser figure would mean a risk free asset such as a certificate of deposit or other financial instrument would be a better investment than the company. Given the current assets of the company, this means that the company should be earning in the neighborhood of \$30,000.00 a year after cost of goods and expenses.

The strategic alternatives may now be evaluated with consideration of the company objectives,

assumptions of the future, industry characteristics, and CP's position within that industry. Each alternative will be evaluated with regard to its advantages and disadvantages and the relative weighting of each advantage and disadvantage.

Evaluation of Alternatives

The first course of action to be evaluated is making no changes to the business as it operates now. There are several advantages to this course of action. The advantages are:

- (1) Meets the company objectives, and
- (2) Is the easiest course of action to implement.

The way business is done now provides Mr. Cartwright with the ease of control he desires. Since there has been no growth in sales within the last five years, there would be no violation of the controlled growth objective. Currently, this course of action does meet the minimum expected return on assets. Additionally, no action has to be taken to implement the program.

However, the disadvantages are considerable. The disadvantages are:

- (1) Declining sales because of further alienation of customers,

(2) Lack of economies of scale, and

(3) Continued vulnerability of business to one distributor.

Although this course of action currently meets the objective of return on assets, this may not be the case in the near future. Considering the assumptions of the future, the increasing prices of oil and labor may be reasonably expected to push the price of plastic products even further past the price of wooden products, thus further alienating price sensitive customers. Given the current level of alienation of many customers who have tried plastic products and have had bad product experiences, the longer CP goes without product modifications, the more of a chance it will encounter further declining sales within the next five years. Moreover, its small market share does not allow it to achieve the economies of scale it could have in its operation by ordering larger quantities and receiving larger discounts from the manufacturer. CP will continue to be vulnerable to having one distributor for its product if it makes no changes to its current manner of doing business. This vulnerability takes on more importance now as the likelihood increases each year that Mr. Kelley will not be able to continue as the president of his

company thus exposing CP to extreme uncertainty on what the new management will do.

Course of action two calls for immediate divestiture of the business. The advantages are:

- (1) All of the company objectives are met, and
- (2) No risk is taken concerning future events or circumstance.

Again the company objectives would be met as Mr. Cartwright's ease of control would be maintained and the liquidated assets could be placed in financial instruments which would earn a risk-free income in the neighborhood of 15%. Additionally, no risk of debt, law suits or other business hazards would have to be gauged and endured if the business were sold.

The disadvantages may be summarized as:

- (1) Difficulty in finding a willing buyer of the business at a reasonable price;
- (2) Disregards the company strengths; and
- (3) Disregards opportunities within the industry.

The first disadvantage is not an easy one to overcome. Since the number of potential buyers are small, finding a willing one who would give a reasonable price for the assets of the company would be difficult at best.

Taking this course of action would also mean the strengths of the company discussed early in this chapter would not be used advantageously. Additionally, the opportunities within the industry would be disregarded. Since only three distributors account for about 80% of the market, a greater distribution of the product could easily be gained if these distributors carried CP's products.

Course of action three is expansion of the business either by horizontal or vertical integration. This is the most difficult course of action to evaluate because of all the possibilities within this course of action. Horizontally, sales of the business may be expanded by adding new products or by gaining new distributors. Vertically, the business may either go backward into manufacturing of the product or forward into retail sales. Each of these possibilities will be discussed separately.

The first variation of this course of action is adding new products either within the industry or outside of the industry and keeping the current distributor. Adding products outside of the industry is beyond the scope of this study, although consideration should be given to adding such products to diversify the risks of operating in only one industry.

There are several promising products within the industry which could be made from plastic that CP is not currently making. These include nucleus bee hives for commercial bee producers, shallow frames, foundation and hive stands. The advantages of adding products within the industry are:

(1) Company objectives are met in the near term, and

(2) Advantage is taken of some company strengths. Again, near term company objectives will likely be met. This course of action also presses CP's head start over its competitors by continuing to introduce new products first.

The disadvantages of adding products are:

(1) Difficulty in implementation,

(2) The more products that are added, the more potential conflict with company objectives is possible,

(3) Customer alienation with plastic products has not yet been resolved, and

(4) Distribution of these products would not be beyond the distribution of current products.

Adding products is a time consuming process of tooling new molds. The expense is considerable also as a new mold for a product costs in the neighborhood of \$5,000.00. The more products that are added to the current line

increases the likelihood that Mr. Cartwright's ease of control of the organization will be threatened. Sales may increase in the short term by adding products but the problem of alienation of the customers with bad product experiences has not been resolved with this action. The company is still vulnerable to the uncertainty of having only one distributor and still cannot gain the economies of scale with only a single distributor.

The next variation to expanding the business is gaining distributors. This variation has all of the advantages of the previous variation and eliminates some of the disadvantages. The difficulty in implementation with respect to time will be greatly reduced. Gaining distributors likely will not conflict with Mr. Cartwright's desire for ease of control and enhance growth and profitability prospects. If Mr. Cartwright could gain more distributors, he would both reduce his vulnerability to any one distributor and increase the economies of scale of the manufacturer who passes these on as quantity discounts to the company. Customer alienation with plastic products would not have been addressed by this variation.

The business might be expanded by backward integration into manufacturing. This variation would have the following advantages:

- (1) A source of supply would be assured,
- (2) The profits of the manufacturer would be captured, and
- (3) Shorter response time to demand from distributors.

Some consternation in the past has been caused by manufacturers threatening to drop the manufacture of the product line because it was considered custom work which is not highly profitable. Backward integration would eliminate worries about the manufacturer and assure a source of supply. The profits of the manufacturer would be captured by backward integration. Their profit percentage is not known but is likely within the 10 to 20% range. Lost sales might be reduced by quicker response to the distributor. In the past, the manufacture of these parts were likely scheduled at the end of full production runs of other products thus causing the distributor to be out of stock for some time.

The disadvantages of this variation are:

- (1) Difficulty in implementation,
- (2) Running such an operation is beyond the experience of management,

(3) Large capital outputs for facilities, tools, machines and labor,

(4) More distributors would be required to have the economy of scale needed to make the operation profitable, and

(5) The problem of customer alientation would not have been addressed.

This variation grossly violates the ease of control which Mr. Cartwright desires by immensely expanding the magnitude of the business and would be very difficult to implement. Such an operation is beyond the experience of the management. The exact costs have not been estimated but easily could be many hundred thousands of dollars. Gaining many of the distributors in the bee equipment business would become critical to obtain the economies of scale necessary for a profitable operation. The problem of customer alientation from plastic products is not addressed by this variation either.

The last variation of expansion of the business is forward integration into retail sales. The advantages of this variation may be summarized as follows:

(1) An outlet for the products would be assured,

(2) The profits of the distributor could be captured, and

(3) This is within the realm of expertise management has developed in beekeeping.

The vulnerability of the current distribution of the product has already been discussed. Becoming a retailer of equipment would ensure an outlet for CP products. The profits of the distributor which are thought to run between 25 and 35 percent could be captured. Knowledge of beekeeping would be indispensable in the bee equipment industry. The management in CP has such expertise.

The disadvantages of this variation are:

- (1) Difficulty in implementation,
- (2) Large capital expenditures for facilities, inventory and labor,
- (3) Violation of company objectives,
- (4) Fighting against established channels of distribution, and
- (5) Customer alienation with current plastic products would not be addressed.

Just as with backward integration, this would be a difficult variation to implement because of the analysis of business needs required for going into the retail business. Additionally, this variation also would

require large amounts of capital initially. Such an expansion of business would grossly violate Mr. Cartwright's desire for ease of control of the business and would tie him down to a host of problems and demands. How successful a new distributor would be against well established distributors is very questionable because the vast majority of beekeepers indicate a high degree of satisfaction with their current distributor. This variation also does not address the customer alienation caused by some of the product flaws.

Of course, various combinations of these variations within these courses of action of expansion of the business might maximize the advantages and minimize the disadvantages of any one variation. However, a decision must be made on which course of action to follow before any possible combination of variations are decided upon.

The Strategic Plan

None of the three alternatives were clearly superior in terms of an overriding advantage. Individually, all three courses of action could claim benefit to the company by meeting company objectives,

its assumptions of the future, or by using a strength to maximum effect.

Similarly, no course of action could be easily eliminated because of its disadvantages except for expansion of the business through forward or backward integration. Both of these ways of expanding the business require capital and expertise that the company cannot readily acquire in the near future.

One might expect, if the company were to make no changes to its current business practices, that it would continue to have minimally profitable yearly sales for the near term as it has in the past. However, rising manufacturing costs pushing up the price of plastic products even faster than wooden products could be expected have an ever increasing detrimental effect on sales in the future. Continuing with one distributor would never allow the company to gain the economies of scale it needs and would continue its vulnerability to the one dealer. These factors coupled with customer alienation caused by bad product experiences indicated by the market survey could eventually be expected to lead to a decline in sales and withdrawal of the company from the business.

Sales might actually increase in the near term if the business were to expand through either new products or more distributors. The problem of customer alienation is not addressed by either of these alternatives and could be expected to seriously limit future sales. The expansion of the business has the additional disadvantage of not allowing the business to gain the economies of scale it needs for better profitability and competitiveness versus wood.

Divesting from the business would eliminate future risk from the company but would also eliminate a major source of income for Mr. Cartwright. Finding a willing buyer of the company's assets also poses a problem. Nevertheless, this course of action must be considered if problems with the other two courses of action prove to be insurmountable.

A classroom discussion of the company might end at this point with the students and teacher being satisfied that all of the issues had been raised and analyzed. This study is about a real live company, however, that won't benefit from issues being raised and analyzed without a decision being made.

This study's recommendation to Mr. Cartwright comes as a contingency plan. The contingency is whether the major product flaws such as warpage, moisture condensation, and breakage can be eliminated or at least minimized. Regardless of whether these flaws can be corrected, Mr. Cartwright should seek more distributors for his products immediately. The contingency plan part of the strategy comes into play on the actions of the company after it has gained more distributors. If the company is able to correct the product flaws through either improved design or materials then it should actively pursue a policy of introducing new products into the market. If these flaws cannot be corrected, introduction of new products should be minimized to reduce the risk of losing investment capital.

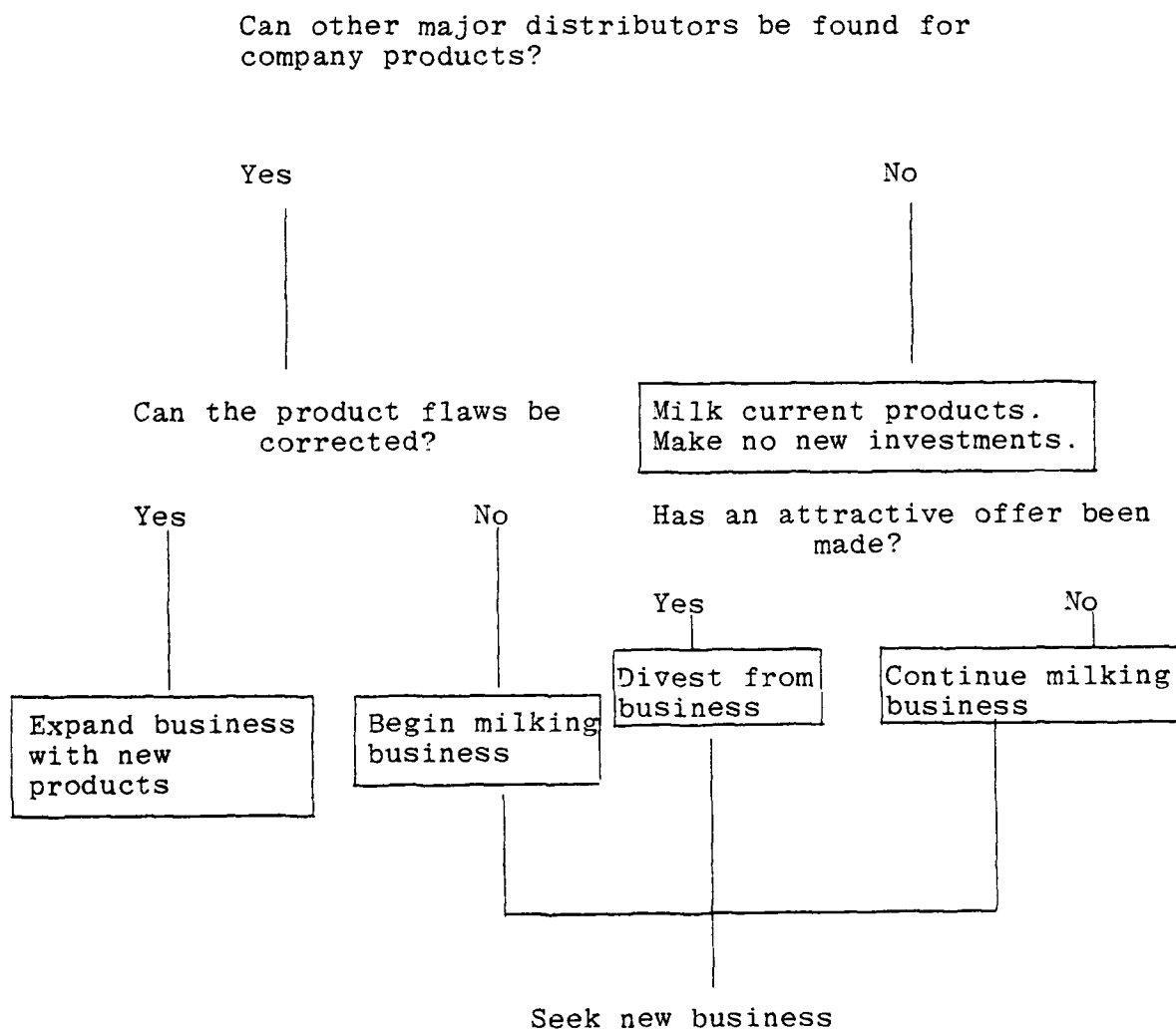
Following this strategy would eliminate Mr. Cartwright's vulnerability to one distributor and allow him to make larger orders to the manufacturer and receive more quantity discounts. The sales of the company could be expected to increase even with customer alienation because of product flaws. Being very cautious about introducing new products would be a prudent strategy if the flaws couldn't be corrected. This would protect against an unexpected increase in

customer alienation that could cause the loss of capital in new molds.

A contingency plan should also be available if Mr. Cartwright cannot find at least one more major distributor to carry his product. In this case, Mr. Cartwright should follow course of action one and not make any changes. This would have the effect of "milking" the current products for all they were worth with little risk of losing new capital invested in new products or product modifications. Additionally, divestiture from the business should be considered if a lucrative offer is made. The summary of the contingencies and the plans of various contingencies are summarized in Table 4.

If the course of events lead to either divestiture or milking of the business, then active search for another business should be initiated. Although discussion of such alternate businesses is beyond the scope of this study, management should carefully evaluate potential businesses based upon management's areas of expertise, financial capability, profitability of the business and vulnerability to new entrants.

TABLE 4
SUMMARY OF STRATEGIES AND CONTINGENCIES



CHAPTER VI

TACTICAL PLANNING FOR CARTWRIGHT PLASTICS

After a grand strategy has been determined for a company, the implementation of this strategy must be considered. This implementation is done through tactical planning. Tactical planning may be considered the actual practical execution of the strategic plan in terms of the budget and marketing mix decisions.

The tactical planning discussed in this chapter is based upon the contingency of CP finding another major distributor for its products and on correcting the product flaws mentioned previously. The other contingencies produce strategic plans which result in either "milking" the business or divesting from it. No new funds would be invested if these contingency strategies were adopted and no product or marketing mix changes would be instituted.

The Budget

Discussion of the budget is tentative at this point because the company has yet to decide upon the total dollar funds to commit. However, priorities may be established so that these funds, once established, may be allocated to the areas which will promise the greatest returns to the company.

The recommended priority of allocation of funds assuming new distributors can be found and the product flaws can be corrected are:

- (1) current operations,
- (2) product modifications,
- (3) new product development, and
- (4) promotion.

Current operations has such a high priority because these expenditures ensure the current level of income. These are normally the costs labeled "general and administrative expenses" on the income statement.

Product modifications rate high because such modifications are the key to reducing customer alienation caused by recognized product flaws.

New product development deserves funds because this represents further expansion of the business. A

fuller line of plastic products would also complement the current line and offer the customer an alternative to wood in more products.

Promotion is rated low as a priority for two reasons. One is that the effects of advertising in the bee equipment industry is unknown to CP. The other is that some promotion is done by the distributors in trade journals and their catalogs. Costs of personal selling to distributors (such as travel) however, will likely produce quicker more easily identifiable results.

The Product

Needed modifications to current products have already been discussed. These product modifications are necessary to reduce the level of customer alienation caused by product flaws.

CP should seriously consider adopting a brand name to differentiate its products from those of its competitors. Papio Valley and Apiary Plastics have already done so with their "Insul Hive" and Polyframe." Such a brand name would lend prestige to the product and allow a customer to determine whether the product he preferred was produced by Cartwright Plastics. Such

a name, if the product is well-liked, may also give the company more leverage with distributors when customers demand it by name. "Permahive," "Durahive" and others have been considered so far. Whatever name is adopted should bring to the customers mind a clear image of the benefits offered by the product.

What segmentation strategy to pursue with its products should be a matter of serious analysis by the company. Segmentation by marketing factors revealed little differences in the needs or desires between hobbyists and commercial honey producers which CP could take advantage of except price. CP could develop the tactic of using less plastic and more foaming agent to create a low priced product or differentiate a higher priced product on the basis of color or some other relatively minor product characteristic.

Segmentation by customer function revealed an interesting oversight of the market. Nucleus hives for commercial bee producers have not been produced to this point. Why the market has not done so is not clear. Perhaps the major distributors considered there was not enough profit to be made or that standardization would be a problem. In any case, all commercial bee producers make their own nucleus hives now. Preliminary contact has already been made to one large bee producer

in Navasota, Texas, to determine the feasibility of making such a product and determining the potential market size.

If this or other segments are to be exploited and new products introduced, a systematic way of developing the product should be considered. Urban and Hauser³ recommend a five step process of new product development:

- (1) opportunity identification,
- (2) design,
- (3) testing,
- (4) introduction, and
- (5) profit management.

This process identifies target markets and consumers and determines the unique needs which may not be served presently. From these ideas stem new product ideas. The list of new product ideas is prioritized based upon company ability to develop and profitability. The design of the product takes place with massive customer input and feedback. Then the product is further tested to see if it meets its objectives or can be further improved. The introduction of the product requires the finalization of the product design and the specification of price, promotion, and distribution. Profit management takes the product through all phase of

³G.L. Urban and J.R. Hauser, "Design and Marketing New Products," Prentice-Hall, Inc., p. 73.

its life cycle and specifies strategies to follow for each phase.

Following this process of new product development might prevent premature introduction of flawed or unwanted products in the future. In particular, CP must get customer input into the design of the products.

Price

The whole idea of differentiating a product by unique characteristics is to allow management the luxury of deciding upon a pricing strategy rather than having it dictated to them by the market.

The company has succeeded, to some degree, in differentiating the product to the customer based on its benefits. The market has been willing to try the product even though it is generally higher priced than wooden products.

If higher markups and profitability are going to be possible, however, even higher levels of product differentiation are necessary. If this high level of differentiation is achieved, the company could follow a premium strategy whereby a premium price would be charged for a superior product. In order to capture the customers who are extremely price sensitive,

an alternate product could be offered which was cheaper to manufacture and have a cheaper retail price.

Distribution

Having greater distribution is a must for the company. This represents the single quickest way to increase sales and reduce the vulnerability of having only one outlet. Negotiations between CP and Dadant have already begun as of the writing of this study. Having Dadant as a distributor would greatly increase the sales of CP and penetrate the very large western state market where Dadant is strong. Mr. Cartwright would be advised that even Dadant has weaknesses in regional coverage. If Mr. Cartwright ends his pursuit of distributors with Kelley and Dadant, he will be closing himself out of areas where other distributors are strong.

Promotion

Although promotion was listed lowest on the priority of receiving funds, this is not to say that

promotion is unimportant. Indeed, personal selling by Mr. Cartwright to distributors is going to be critical if the company's plastic products are going to receive wider distribution coverage.

The effects of advertising, however, are unknown now to CP. If funds permit, taking out an advertisement in a trade journal or magazine would be advisable. The more prominent trade publications and their distribution in the U.S. are:

The Speedy Bee--10,000

Gleanings in Bee Culture--20,000

American Bee Journal--24,000

All of these publications have similar but not identical distribution to beekeepers. Advertisement could possibly develop brand awareness. Also advertisements could counter some of the adverse customer reaction to plastic products especially if the product flaws were corrected and the product billed as "Cartwright Permahive, a new improved plastic bee hive that will not warp or sweat and is rot, termite and wax worm proof." Also coupons could be placed in the ad to spur new customers to try the product and old customers who had bad product experiences to reconsider a purchase.

CHAPTER VII

SUMMARY AND CONCLUSION

This chapter contains a brief summary of the findings of this study and a conclusion of actions based upon these findings.

Summary

The major findings and analysis of this study are:

(1) CP is competing with limited success in the \$43,000,000.00 a year bee equipment market which may be characterized as being dominated by three companies, as being slow to adopt new ideas, and being relatively unaware of competitor strengths or weaknesses.

(2) The two firms who compete with CP in making plastic bee equipment may be characterized as not having the experience or breadth of products that CP does.

(3) The market may be usefully segmented by region, usage rate, customer function and marketing factors.

(4) The market survey revealed very high awareness and use of plastic products. Among those who have used plastic products, it revealed a very strong negative reaction toward several product flaws. Among those who have not used plastic products, the survey revealed a very positive reaction toward the product core benefit proposal (product benefits).

(5) The company had three strategic alternatives:

- a) Make no changes to the business
- b) Divest from the business
- c) Expand the business

These alternatives were evaluated in terms of company position in the market, industry analysis, assumptions of the future and company objectives.

Conclusion

Based upon the evaluation of the strategic alternatives the following recommendations depicted in Table 4 were made to the management of CP:

(1) Obtain as wide a distribution of its products as possible.

(2) If CP obtains a wider distribution, it should determine if the widely mentioned product flaws are correctable.

- a) If the flaws are correctable, it should make the necessary modifications and expand the business with new products.
- b) If flaws are uncorrectable, then no more investment should be made and the business should be "milked" for cash flow.

(3) If further search for distributors is unsuccessful, then CP should consider if an attractive offer has been made for the business.

- a) If an attractive offer has been made, management should divest from the business as soon as possible.
- b) If an attractive offer has not been made, then it should continue "milking" the business for maximum cash flow.

(4) If the contingency plan dictates "milking" or divestiture, the company should start an immediate search for another market where it could produce

profitable products that are consistent with the company's abilities and resources.

The tactical implementation of the strategic plan specifies:

(1) No change or investment be made to the business if a "milking" or divestiture strategy is pursued.

(2) If the business is to be expanded then the following tactical decisions are indicated:

- a) Prioritization of budget allocation with the following priority:
current operating requirements, product modifications, new products, and promotion.
- b) The product should be modified to eliminate major product flaws. A brand name should be adopted. Profitable segments should be identified and exploited such as the commercial bee producers. New product development should proceed along a five step process of opportunity identification, design, testing, introduction and profit management.

- c) A premium pricing strategy should be followed if differentiation is successful. Price sensitive customers could be won by offering a cheaper product.
- d) Mr. Cartwright should gain as wide a distribution as possible by having as many distributors as possible.
- e) Personal selling to distributors must be continued. Advertising should be done when funds permit to promote brand awareness and counter negative consumer reaction.

This thesis is only a preliminary study of the company and bee equipment industry. Further study is needed on consumer behavior, competition, and other marketing factors in order to make more informed decisions. In addition to these studies, the company should begin gathering information on opportunities consistent with company expertise and resources in other industries if the contingency plan indicates a "milking" or divestiture strategy.

EXHIBITS

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MARKETING ANALYSIS AND STRATEGY FOR A SMALL BUSINESS IN THE BEE-- TC(U)
AUG 80 J A CARTWRIGHT

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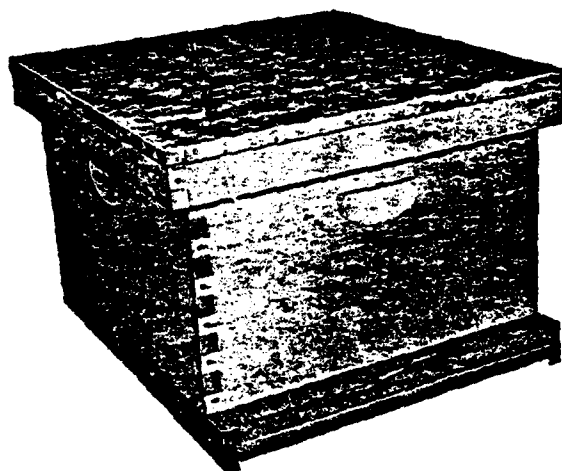
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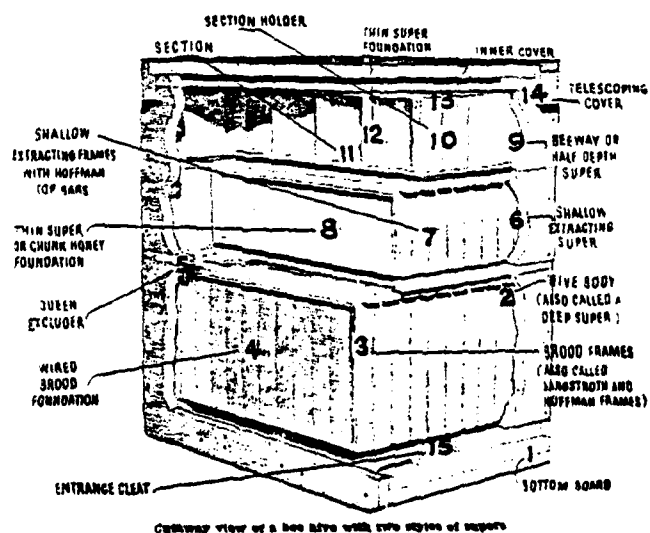


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EXHIBIT 1
STANDARD BEE HIVE



Cutaway view of one bee hives
with two styles of supers



SOURCE: Kelley's Bee Supply Catalogue, 1980.

EXHIBIT 2
CALCULATION OF BEE HIVE PART SALES

1 Part Name	2 Estimated number of bee hives in U.S.	3 Estimated Life span of part (years)	4 Number of parts in an Average hive	5 Average Price per part (dollars)	6 Total number of parts replaced per year = column 2 x column 4 + column 3	Total cost in dollars of replacement of parts = column 6 x column 5
Bottom Board	4,200,000	5	1	5.22	840,000	4,384,800
Deep Super	"	10	1	7.01	420,000	2,944,200
Shallow Super	"	10	4	4.81	1,680,000	8,080,800
Deep Frames	"	5	10	.51	8,400,000	4,284,000
Shallow Frames	"	5	40	.50	33,600,000	16,800,000
Inner Cover	"	5	1	3.24	840,000	2,721,600
Outer Cover	"	10	1	6.57	420,000	2,759,400
Total cost of replacement of parts in dollars						\$41,974,800

¹ USDA Crop Reporting Board, 1978.

EXHIBIT 3
BEEKEEPING INDUSTRY DATA

HONEY AND BEESWAX: PRODUCTION AND VALUE OF PRODUCTION AND HONEY STOCKS, 1966-78

YEAR	COLONIES THOUSANDS	HIVES PER COLONY	HONEY		TOTAL VALUE 1,000 DOLLARS	STOCKS ON HAND 1,000 LBS	BEESWAX		TOTAL VALUE 1,000 DOLLARS
			PRODUCTION: 1,000 LBS	PRICE PER POUND			PRODUCTION: 1,000 LBS	PRICE PER POUND	
1966	4,330	42.2	191,291	.169	32,400	41,021	3,797	.616	2,340
1967	4,431	40.3	267,486	.175	46,782	62,783	5,171	.611	3,162
1970	4,290	51.7	221,862	.174	38,550	50,575	4,277	.602	2,568
1971	4,110	42.0	197,426	.178	35,130	30,307	3,589	.613	2,196
1972	4,086	52.4	214,079	.182	64,619	29,835	3,988	.621	2,496
1973	4,103	57.9	237,657	.184	108,494	37,662	4,231	.744	3,147
1974	4,196	44.1	185,479	.170	94,272	33,740	3,405	1.14	2,897
1975	4,181	47.3	197,536	.186	100,086	32,981	3,270	1.02	3,454
1976	4,295	46.3	198,292	.199	99,094	34,258	3,182	1.12	3,762
1977	4,346	41.1	178,499	.182	94,154	30,111	3,096	1.58	4,876
1978	4,089	56.4	220,209	.184	125,599	21,834	2,536	1.74	4,836

HONEY: PRODUCTION IN APIMARIES WITH 300 OR MORE COLONIES IN 20 SELECTED STATES, 1966-78

STATE	1966		1977		1978		1979		1980		1981		1982	
	PRODUCTION POUNDS	PERCENT	PRODUCTION POUNDS	PERCENT	PRODUCTION POUNDS	PERCENT	PRODUCTION POUNDS	PERCENT	PRODUCTION POUNDS	PERCENT	PRODUCTION POUNDS	PERCENT	PRODUCTION POUNDS	PERCENT
ALAB	47	46	46	100	62	48	50	2,014	2,200	2,300	704			
CA	410	410	390	95	76	76	66	10,400	10,600	11,300	741			
COLO	31	30	29	97	67	74	76	2,077	2,220	2,204	99			
FLA	127	210	208	99	95	55	80	12,015	11,568	16,048	144			
GA	180	120	115	64	76	37	78	2,834	3,600	3,270	81			
IND	101	94	91	97	40	49	46	4,080	4,680	4,186	91			
ILL	10	8	7	88	65	52	42	960	416	384	38			
IO	37	37	42	114	95	92	63	3,115	3,484	2,780	88			
KY	56	54	54	100	57	62	64	3,192	3,288	3,464	103			
MO	129	129	120	88	82	62	109	11,000	10,700	12,000	122			
NE	81	92	94	102	113	56	80	8,153	5,336	6,400	198			
NEB	127	130	117	90	50	50	66	6,380	6,520	7,086	117			
NF	54	52	46	82	49	33	64	2,646	1,716	3,072	179			
NC	10	10	10	100	22	15	70	720	560	720	127			
NH	122	128	152	119	120	88	120	14,640	11,264	10,464	173			
OH	76	76	30	32	102	36	41	936	1,290	1,440	112			
OK	146	136	105	70	50	50	121	6,468	9,040	19,905	221			
TX	103	106	97	97	59	60	60	6,077	6,380	5,620	92			
WASH	73	66	69	101	22	53	37	1,680	3,604	2,553	71			
WIS	74	81	91	112	92	79	51	4,080	6,309	4,641	73			
20 STS	1,874	1,987	1,912	96	99.1	52.6	77.0	110,841	104,569	147,121	141			

1/ SUM OF STATE TOTALS EXCEEDS THE 20 STATE TOTAL BECAUSE OF DUPLICATION OF COLONIES BETWEEN STATES.

SOURCE: USDA Crop Reporting Board, 1979.

EXHIBIT 4
PRODUCT UNIT PRICES OF COMPETITORS

Note: All prices are for wood except those marked (P) for plastic.

	Inner Covers	Bottom Boards	Queen Cages	Feeders	Outer Covers	Deep Supers	Shallow Supers	Deep Frames	Commercial Covers	Illinois Supers	Shallow Frames
Dadant	3.81	6.17	.0685	1.30	8.81	5.67	5.67	.66		6.48	.66
Root	3.60	6.14		<u>1.10(P)</u> 1.75	7.54	8.55	5.59	.64		6.45	.67
Kelley	3.10(P)	6.20(P)	.085	.40(P)	6.40(P)	7.20 9.00(P)	4.60 7.80(P)	.40	4.67	5.30 7.00(P)	.40
Strauser		3.00		1.30	3.20	4.63	3.43	.39		3.43	.39
Hubbard	1.95	4.79		1.10	6.87	6.79	5.25	.50		5.25	.50
Western		2.50			2.50	3.75	3.25	.25		3.50	.25
Cloverleaf	3.00	5.00		2.78	9.00	7.00	4.40	.40		5.00	.40
Papio Valley		6.95(P)		2.10(P)	7.95(P)	7.95(P)					
Aplary Plastics											
Bee-Jay	4.27	7.50		1.05	9.28	9.90	6.01	.80(P)		6.83	.53
Economy Supply	2.50est	3.50			4.00est	5.50	3.60	.30		4.00	.28
SW Ohio Hive Parts Co.	3.00	8.50			7.00			.53		6.70	.47
Superbee	2.65	3.50		1.20	5.95	4.95	3.65			3.75	
B&B	3.65	3.58		1.15	6.49	6.50	4.82	.49		4.82	.49
Forbes & Cypress Johnston	3.70	3.20		1.20	4.25	6.15	3.95	.38		4.10	.38
Leahy	3.40	7.00		1.20	8.08	8.00	5.10	.57		5.90	.57
Lagrants	3.38	5.80		1.10	7.84	7.94	5.14	.64		5.72	.59

EXHIBIT 5

88

General Instructions: Either a pen or pencil may be used to complete this questionnaire. Follow any specific instructions given in the following questions. Please write additional comments whenever you wish to do so.

- How long have you been keeping bees? Mark one box. ☐ Less than 1 year ☐ 1 to 3 years
☐ 3 to 5 years ☐ 5 to 10 years ☐ 10 to 20 years ☐ more than 20 years
- Do you purchase bee equipment and supplies from more than one equipment dealer during a normal year? (Dealer is used in the sense of the supplier of equipment like Dadant, Root, Kelly, Strauser, etc.)
☐ No ☐ Yes (If yes, how many?) _____
- In general, are you satisfied with the bee equipment and service you are now getting? ☐ definitely yes
☐ moderately yes ☐ neutral ☐ moderately no ☐ definitely no

The following is a list of features which you might consider important in choosing what dealer to use or which bee equipment to buy. After each feature, please mark in the appropriate column how important each of these features is to you. Mark only one column for each feature.

	Not Important	Slightly Important	Moderately Important	Very Important
equipment availability	_____	_____	_____	_____
speed of delivery	_____	_____	_____	_____
full line of equipment	_____	_____	_____	_____
price	_____	_____	_____	_____
quantity discounts	_____	_____	_____	_____
closeness to dealer	_____	_____	_____	_____
design	_____	_____	_____	_____
durability	_____	_____	_____	_____
light-weight	_____	_____	_____	_____

From your knowledge of different dealers how much difference do you feel there is in each of these features? Please place a check in the appropriate column. (Only one check which best indicates your opinion of the differences which are present.)

	No Difference	Slight Difference	Moderate Difference	Extremely Different
equipment availability	_____	_____	_____	_____
speed of delivery	_____	_____	_____	_____
full line of equipment	_____	_____	_____	_____
price	_____	_____	_____	_____
quantity discounts	_____	_____	_____	_____
closeness to dealer	_____	_____	_____	_____
design	_____	_____	_____	_____
durability	_____	_____	_____	_____
light-weight	_____	_____	_____	_____

- List any other factors which you consider important when you purchase bee equipment that were not listed above.

- What two features do you think your current dealer needs to improve the most?

- Have you heard of plastic bee hives? ☐ Yes ☐ No ☐ Not sure

- Have you heard of any other plastic equipment such as feeders, queen cages, etc? ☐ Yes ☐ No ☐ Not Sure

- Have you ever used plastic bee hives or equipment? ☐ Yes ☐ No

(If yes continue to question 9; if no skip to #12)

- Why did you purchase the plastic bee hives or equipment? Please comment in the space below.

- Please comment on any features you especially liked or disliked about the plastic bee hives or equipment.

- Do you intend to buy plastic bee hives in the future? ☐ definitely yes ☐ moderately yes ☐ neutral
☐ moderately no ☐ definitely no

(Skip to question # 13)

- If plastic bee hives never needed painting, were rot, termites, and wear-worn proof, and lasted years longer than wooden hives, would these features persuade you to try plastic hives? ☐ definitely yes ☐ moderately yes
☐ neutral ☐ moderately no ☐ definitely no

- In comparison to wooden bee hives, how much would you expect to pay for plastic hives? ☐ much less
☐ somewhat less ☐ about the same ☐ somewhat more ☐ much more

- In what state do you live? _____

- Approximately how many bee hives do you have? ☐ 1 to 25 ☐ 25-100 ☐ 101-200 ☐ 201-500
☐ 501-1000 ☐ over 1000

- What bee supply dealer do you use the most?

Thank you for completing the questionnaire. If you would be interested in the results of this survey please place a check in the box below and I will send you a copy.

☐ I would like a copy of the results of this survey.

EXHIBIT 6.1

FREQUENCY OF RESPONSES TO QUESTION 1

Q1 : How Long Have You Been Keeping Bees?

CATEGORY LABEL	CODE	ABSOLUTE FREQUENCY	RELATIVE FREQUENCY (PERCENT)	ADJUSTED FREQUENCY (PERCENT)	CUMULATIVE ADJ FREQ (PERCENT)
Less than 1 year	1	1	.3	.3	.3
1 to 3 years	2	15	4.7	4.8	5.1
3 to 5 years	3	37	11.6	11.6	16.9
5 to 10 years	4	64	20.1	20.4	37.3
10 to 20 years	5	49	15.4	15.6	52.9
Over 20 years	6	148	46.5	47.1	100.0
Did not answer		4	1.3	MISSING	
	TOTAL	318	100.0	100.0	
MEAN	4.876	STD ERR	.072	MEDIAN	5.316
MODE	6.000	STD DEV	1.272	VARIANCE	1.617
KURTOSIS	0	SKEWNESS	-.769	RANGE	5.000
MINIMUM	1.000	MAXIMUM	6.000	SUM	1531.000
C.V. PCT	26.081	.95 C.I.	4.735	TO	5.017
VALID CASES	314	MISSING CASES	4		

EXHIBIT 6.2

FREQUENCY OF RESPONSES TO QUESTION 2

Q2: Do you purchase bee equipment and supplies from more than one equipment dealer during a normal year?

CATEGORY LABEL	CODE	ABSOLUTE FREQUENCY	RELATIVE FREQUENCY (PERCENT)	ADJUSTED FREQUENCY (PERCENT)	CUMULATIVE ADJ FREQ (PERCENT)
Yes	1	227	71.4	72.8	72.8
No	2	85	26.7	27.2	100.0
Did not answer		6	1.9	MISSING	
	TOTAL	318	100.0	100.0	
MEAN	1.272	STD ERR	.025	MEDIAN	1.187
MODE	1.000	STD DEV	.446	VARIANCE	.199
KURTOSIS	0	SKEWNESS	1.027	RANGE	1.000
MINIMUM	1.000	MAXIMUM	2.000	SUM	397.000
C.V. PCT	35.045	.95 C.I.	1.223	TO	1.322
VALID CASES	312	MISSING CASES	6		

EXHIBIT 6.3

FREQUENCY OF RESPONSE TO QUESTION 2a

Q2A :How many equipment dealers do you use in a normal year?

CATEGORY LABEL	CODE	ABSOLUTE FREQUENCY	RELATIVE FREQUENCY (PERCENT)	ADJUSTED FREQUENCY (PERCENT)	CUMULATIVE ADJ FREQ (PERCENT)
	1	85	26.7	27.2	27.2
	2	113	35.5	36.2	63.5
	3	76	23.9	24.4	87.8
	4	29	9.1	9.3	97.1
	5	5	1.6	1.6	98.7
	6	1	.3	.3	99.0
	7	1	.3	.3	99.4
	8	1	.3	.3	99.7
	9	1	.3	.3	100.0

Did not answer

TOTAL	318	1.9	MISSING
		100.0	100.0

MEAN	2.276	STD ERR	.066	MEDIAN	2.128
MODE	2.000	STD DEV	1.160	VARIANCE	1.344
KURTOSIS	0	SKEWNESS	1.520	RANGE	8.000
MINIMUM	1.000	MAXIMUM	9.000	SUM	710.000
C.V. PCT	51.127	.95 C.I.	2.146	TO	2.406

VALID CASES 312 MISSING CASES 6

EXHIBIT 6.4

FREQUENCY OF RESPONSES TO QUESTION 3

Q3: In general, are you satisfied with the bee equipment and service you are now getting?

CATEGORY LABEL	CODE	ABSOLUTE FREQUENCY	RELATIVE FREQUENCY (PERCENT)	ADJUSTED FREQUENCY (PERCENT)	CUMULATIVE ADJ FREQ (PERCENT)
Definitely yes	1	126	39.6	40.8	40.8
Moderately yes	2	140	44.0	45.3	86.1
Neutral	3	24	7.5	7.0	93.9
Moderately no	4	16	5.0	5.2	99.0
Definitely no	5	3	.9	1.0	100.0
Did not answer		9	2.8	MISSING	
	TOTAL	318	100.0	100.0	

MEAN	1.803	STD ERR	.049	MEDIAN	1.704
MODE	2.000	STD DEV	.862	VARIANCE	.743
KURTOSIS	0	SKEWNESS	1.249	RANGE	4.000
MINIMUM	1.000	MAXIMUM	5.000	SUM	557.000
C.V. PCT	47.831	.95 C.I.	1.706	TD	1.899

VALID CASES	309	MISSING CASES	9
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EXHIBIT 6.5

FREQUENCY OF RESPONSES TO QUESTION F1

F1: How important is equipment availability to you?

CATEGORY LABEL	CODE	ABSOLUTE FREQUENCY	RELATIVE FREQUENCY (PERCENT)	ADJUSTED FREQUENCY (PERCENT)	CUMULATIVE ADJ FREQ (PERCENT)
Not important	1	2	.6	.7	.7
Slightly Important	2	13	4.1	4.2	4.9
Moderately Important	3	65	20.4	21.2	26.1
Very Important	4	226	71.1	73.9	100.0
Did not answer		12	3.8	MISSING	
TOTAL		318	100.0	100.0	
MEAN	3.683	STD ERR	.033	MEDIAN	3.823
MODE	4.0000	STD DEV	.585	VARIANCE	.342
KURTOSIS	0	SKENNESS	-1.885	RANGE	3.0000
MINIMUM	1.0000	MAXIMUM	4.0000	SUM	1127.0000
C.V. PCT	15.874	.95 C.I.	3.617	TO	3.749
VALID CASES	306	MISSING CASES	12		

EXHIBIT 6.6

FREQUENCY OF RESPONSES TO QUESTION F2

F2: How important is speed of delivery to you?

CATEGORY LABEL	CODE	ABSOLUTE FREQUENCY	RELATIVE FREQUENCY (PERCENT)	ADJUSTED FREQUENCY (PERCENT)	CUMULATIVE ADJ FREQ (PERCENT)
Not important	1	5	1.6	1.6	1.6
Slightly important	2	15	4.7	4.9	6.6
Moderately important	3	96	30.2	31.5	38.0
Very important	4	189	59.4	62.0	100.0
Did not answer		13	4.1	MISSING	
		-----	-----	-----	
	TOTAL	318	100.0	100.0	

MEAN	3.538	STD ERR	.038	MEDIAN	3.693
MODE	4.0000	STD DEV	.668	VARIANCE	.447
KURTOSIS	0	SKEWNESS	-1.469	RANGE	3.0000
MINIMUM	1.0000	MAXIMUM	4.0000	SUM	1079.0000
C.V. PCT	18.894	.95 C.I.	3.462	TD	3.613

VALID CASES	305	MISSING CASES	13
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EXHIBIT 6.7

FREQUENCY OF RESPONSES TO QUESTION F3

F3 : How important is a full line of equipment to you?

CATEGORY LABEL	CODE	ABSOLUTE FREQUENCY	RELATIVE FREQUENCY (PERCENT)	ADJUSTED FREQUENCY (PERCENT)	CUMULATIVE ADJ FREQ (PERCENT)
Not important	1	15	4.7	5.0	5.0
Slightly important	2	30	9.4	9.9	14.9
Moderately important	3	90	28.3	29.7	44.6
Very important	4	168	52.8	55.4	100.0
Did not answer		15	4.7	MISSING	
	TOTAL	318	100.0	100.0	
MEAN	3.356	STD ERR	.049	MEDIAN	3.598
MODE	4.000	STD DEV	.853	VARIANCE	.727
KURTOSIS	0	SKEWNESS	-1.240	RANGE	3.000
MINIMUM	1.000	MAXIMUM	4.000	SUM	1017.000
C.V. PCT	25.400	.95 C.I.	3.260	TO	3.453
VALID CASES	303	MISSING CASES	15		

EXHIBIT 6.8

FREQUENCY OF RESPONSES TO QUESTION F4

F4: How important is price to you?

CATEGORY LABEL	CODE	ABSOLUTE FREQUENCY	RELATIVE FREQUENCY (PERCENT)	ADJUSTED FREQUENCY (PERCENT)	CUMULATIVE ADJ FREQ (PERCENT)
Not important	1	3	.9	1.0	1.0
Slightly important	2	7	2.2	2.3	3.3
Moderately important	3	71	22.3	23.2	26.5
Very important	4	225	70.8	73.5	100.0
Did not answer		12	3.8	MISSING	
	TOTAL	318	100.0	100.0	

MEAN	3.693	STD ERR	.032	MEDIAN	3.820
MODE	4.0000	STD DEV	.564	VARIANCE	.318
KURTOSIS	0	SKEWNESS	-2.013	RANGE	3.0000
MINIMUM	1.0000	MAXIMUM	4.0000	SUM	1130.0000
C.V. PCT	15.281	.95 C.I.	3.629	TO	3.756

VALID CASES	306	MISSING CASES	12
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EXHIBIT 6.9

FREQUENCY OF RESPONSES TO QUESTION F5

F5: How important are quantity discounts to you?

CATEGORY LABEL	CODE	ABSOLUTE FREQUENCY	RELATIVE FREQUENCY (PERCENT)	ADJUSTED FREQUENCY (PERCENT)	CUMULATIVE ADJ FREQ (PERCENT)
Not important	1	25	7.9	8.4	8.4
Slightly important	2	39	12.3	13.0	21.4
Moderately important	3	79	24.8	26.4	47.8
Very important	4	156	49.1	52.2	100.0
Did not answer		19	6.0	MISSING	
	TOTAL	318	100.0	100.0	
MEAN	3.224	STD ERR	.056	MEDIAN	3.542
MODE	4.0000	STD DEV	.969	VARIANCE	.940
KURTOSIS	0	SKEWNESS	-1.019	RANGE	3.000
MINIMUM	1.0000	MAXIMUM	4.0000	SUM	964.000
C.V. PCT	30.065	.95 C.I.	3.114	10	3.334
VALID CASES	299	MISSING CASES	19		

EXHIBIT 6.10

FREQUENCY OF RESPONSES TO QUESTION F6

F6 : How important is closeness to the dealer to you?

CATEGORY LABEL	CODE	ABSOLUTE FREQUENCY	RELATIVE FREQUENCY (PERCENT)	ADJUSTED FREQUENCY (PERCENT)	CUMULATIVE ADJ FREQ (PERCENT)
Not important	1	33	10.4	10.9	10.9
Slightly important	2	40	12.6	13.2	24.1
Moderately important	3	118	37.1	38.9	63.0
Very important	4	112	35.2	37.0	100.0
Did not answer		15	4.7	MISSING	
TOTAL		318	100.0	100.0	

MEAN	3.020	STD ERR	.056	MEDIAN	3.165
MODE	3.000	STD DEV	.970	VARIANCE	.940
KURTOSIS	0	SKEWNESS	-.764	RANGE	3.000
MINIMUM	1.000	MAXIMUM	4.000	SUM	915.000
C.V. PCT	32.106	.95 C.I.	2.910	TO	3.129
VALID CASES	303	MISSING CASES	15		

EXHIBIT 6.11

FREQUENCY OF RESPONSES TO QUESTION F7

F7 : How important is design of equipment to you?

CATEGORY LABEL	CODE	ABSOLUTE FREQUENCY	RELATIVE FREQUENCY (PERCENT)	ADJUSTED FREQUENCY (PERCENT)	CUMULATIVE ADJ FREQ (PERCENT)
Not important	1	17	5.3	5.7	5.7
Slightly important	2	24	7.5	8.1	13.9
Moderately important	3	95	29.9	32.1	45.9
Very important	4	160	50.3	54.1	100.0
Did not answer		22	6.9	MISSING	
	TOTAL	318	100.0	100.0	
MEAN	3.345	STD ERR	.050	MEDIAN	3.575
MODE	4.000	STD DEV	.857	VARIANCE	.735
KURTOSIS	4	SKEWNESS	-1.280	RANGE	3.000
MINIMUM	1.000	MAXIMUM	4.000	SUM	990.000
C.V. PCT	25.635	.95 C.I.	3.247	TO	3.443
VALID CASES	296	MISSING CASES	22		

EXHIBIT 6.12
FREQUENCY OF RESPONSES TO QUESTION F8

F8 : How important is durability of equipment to you?

CATEGORY LABEL	CODE	ABSOLUTE FREQUENCY	RELATIVE FREQUENCY (PERCENT)	ADJUSTED FREQUENCY (PERCENT)	CUMULATIVE ADJ FREQ (PERCENT)
Not important	1	3	.9	1.0	1.0
Slightly important	2	1	.3	.3	1.3
Moderately important	3	50	15.7	16.4	17.8
Very important	4	250	78.6	82.2	100.0
Did not answer		14	4.4	MISSING	
TOTAL		318	100.0	100.0	
MEAN	3.799	STD ERR	.027	MEDIAN	3.892
MODE	4.000	STD DEV	.476	VARIANCE	.227
KURTOSIS	0	SKEWNESS	-2.924	RANGE	3.000
MINIMUM	1.000	MAXIMUM	4.000	SUM	1155.000
C.V. PCT	12.518	.95 C.I.	3.746	TO	3.853
VALID CASES	304	MISSING CASES	14		

EXHIBIT 6.13

FREQUENCY OF RESPONSES TO QUESTION F9

F9: How important is lightweight equipment to you?

CATEGORY LABEL	CODE	ABSOLUTE FREQUENCY	RELATIVE FREQUENCY (PERCENT)	ADJUSTED FREQUENCY (PERCENT)	CUMULATIVE ADJ FREQ (PERCENT)
Not important	1	31	9.7	10.5	10.5
Slightly important	2	56	17.6	19.0	29.5
Moderately important	3	124	39.0	42.0	71.5
Very important	4	84	26.4	28.5	100.0
Did not answer		23	7.2	MISSING	
TOTAL		318	100.0	100.0	
MEAN	2.885	STD ERR	.055	MEAN	2.988
MODE	3.000	STD DEV	.941	VARIANCE	.885
KURTOSIS	0	SKENNESS	-.534	RANGE	3.000
MINIMUM	1.000	MAXIMUM	4.000	SUM	851.000
C.V. PCT	32.604	.95 C.I.	2.777	TO	2.993
VALID CASES	295	MISSING CASES	23		

EXHIBIT 6.14

CORRECT IDENTIFICATION OF HEADINGS FOR FACTOR DIFFERENCES

CU : Did the respondent understand the questions concerning differences among dealers?

CATEGORY LABEL	CODE	ABSOLUTE FREQUENCY	RELATIVE FREQUENCY (PERCENT)	ADJUSTED FREQUENCY (PERCENT)	CUMULATIVE ADJ FREQ (PERCENT)
Did correctly identify	1	188	59.1	61.4	61.4
Did not correctly identify	2	118	37.1	38.6	100.0
Did not answer		12	3.8	MISSING	
		-----	-----	-----	
	TOTAL	318	100.0	100.0	
MEAN	1.386	STD ERR	.028	MEDIAN	1.314
MODE	1.0000	STD DEV	.488	VARIANCE	.238
KURTOSIS	0	SKEWNESS	.472	RANGE	1.000
MINIMUM	1.0000	MAXIMUM	2.000	SUM	424.000
C.V. PCT	35.186	.95 C.I.	1.331	TO	1.440
VALID CASES	306	MISSING CASES	12		

EXHIBIT 6.15

FREQUENCY OF RESPONSES TO QUESTION G1

G1: How much difference is there in equipment availability among dealers?

CATEGORY LABEL	CODE	ABSOLUTE FREQUENCY	RELATIVE FREQUENCY (PERCENT)	ADJUSTED FREQUENCY (PERCENT)	CUMULATIVE ADJ FREQ (PERCENT)
No difference	1	21	6.6	7.9	7.9
Slight difference	2	59	18.6	22.3	30.2
Moderate difference	3	92	28.9	34.7	64.9
Extremely different	4	93	29.2	35.1	100.0
Did not answer		53	16.7	MISSING	
		-----	-----	-----	
TOTAL		318	100.0	100.0	
MEAN	2.970	STD ERR	.058	MEDIAN	3.071
MODE	4.000	STD DEV	.945	VARIANCE	.893
KURTOSIS	0	SKEWNESS	-.509	RANGE	3.000
MINIMUM	1.000	MAXIMUM	4.000	SUM	787.000
C.V. PCT	31.820	.95 C.I.	2.856	TO	3.084
VALID CASES	265	MISSING CASES	53		

EXHIBIT 6.16

FREQUENCY OF RESPONSES TO QUESTION G2

G2 : How much difference is there in speed of delivery among dealers?

CATEGORY LABEL	CODE	ABSOLUTE FREQUENCY	RELATIVE FREQUENCY (PERCENT)	ADJUSTED FREQUENCY (PERCENT)	CUMULATIVE ADJ FREQ (PERCENT)
No difference	1	23	7.2	8.9	8.9
Slight difference	2	60	18.9	23.3	32.2
Moderate difference	3	78	24.5	30.2	62.4
Extremely different	4	97	30.5	37.6	100.0
Did not answer		60	18.9	MISSING	
	TOTAL	318	100.0	100.0	
MEAN	2.965	STD ERR	.061	MEDIAN	3.090
MODE	4.000	STD DEV	.984	VARIANCE	.968
KURTOSIS	0	SKEWNESS	-.498	RANGE	3.000
MINIMUM	1.000	MAXIMUM	4.000	SUM	765.000
C.V. PCT	33.175	.95 C.I.	2.845	TO	3.086
VALID CASES	258	MISSING CASES	60		

EXHIBIT 6.17

FREQUENCY OF RESPONSES TO QUESTION G3

G3: How much difference is there in full line of equipment among dealers?

CATEGORY LABEL	CODE	ABSOLUTE FREQUENCY	RELATIVE FREQUENCY (PERCENT)	ADJUSTED FREQUENCY (PERCENT)	CUMULATIVE ADJ FREQ (PERCENT)
No difference	1	25	7.9	9.7	9.7
Slight difference	2	62	19.5	24.0	33.7
Moderate difference	3	80	25.2	31.0	64.7
Extremely different	4	91	28.6	35.3	100.0
Did not answer		60	18.9	MISSING	
	TOTAL	318	100.0	100.0	
MEAN	2.919	STD ERR	.062	MEDIAN	3.025
MODE	4.000	STD DEV	.989	VARIANCE	.978
KURTOSIS	4	SKEWNESS	.444	RANGE	3.000
MINIMUM	1.000	MAXIMUM	4.000	SUM	753.000
C.V. PCT	33.880	.95 C.I.	2.797	TO	3.040
VALID CASES	258	MISSING CASES	60		

EXHIBIT 6.18

FREQUENCY OF RESPONSES TO QUESTION G4

G4: How much difference is there in price among dealers?

CATEGORY LABEL	CODE	ABSOLUTE FREQUENCY	RELATIVE FREQUENCY (PERCENT)	ADJUSTED FREQUENCY (PERCENT)	CUMULATIVE ADJ FREQ (PERCENT)
No difference	1	7	2.2	2.7	2.7
Slight difference	2	36	11.3	13.9	16.6
Moderate difference	3	78	24.5	30.1	46.7
Extremely different	4	138	43.4	53.3	100.0
Did not answer		59	18.6	MISSING	
		-----	-----	-----	
	TOTAL	318	100.0	100.0	
MEAN	3.340	STD EHR	.051	MEDIAN	3.562
MODE	4.000	STD DEV	.817	VARIANCE	.667
KURTOSIS	0	SKEWNESS	-1.001	RANGE	3.000
MINIMUM	1.000	MAXIMUM	4.000	SUM	865.000
C.V. PCT	24.455	.95 C.I.	3.240	TO	3.440
VALID CASES	259	MISSING CASES	59		

EXHIBIT 6.19

FREQUENCY OF RESPONSES TO QUESTION G5

G5 : How much difference is there in quantity discounts among dealers?

CATEGORY LABEL	CODE	ABSOLUTE FREQUENCY	RELATIVE FREQUENCY (PERCENT)	ADJUSTED FREQUENCY (PERCENT)	CUMULATIVE ADJ FREQ (PERCENT)
No difference	1	23	7.2	9.1	9.1
Slight difference	2	60	18.9	23.7	32.8
Moderate difference	3	80	25.2	31.6	64.4
Extremely different	4	90	28.3	35.6	100.0
Did not answer		65	20.4	MISSING	
		-----	-----	-----	
TOTAL		318	100.0	100.0	
MEAN	2.937	STD ERR	.061	MEDIAN	3.044
MODE	4.000	STD DEV	.978	VARIANCE	.956
KURTOSIS	0	SKEWNESS	-.463	RANGE	3.000
MINIMUM	1.000	MAXIMUM	4.000	SUM	743.000
C.V. PCT	33.299	.95 C.I.	2.816	TO	3.058
VALID CASES	253	MISSING CASES	65		

EXHIBIT 6.20

FREQUENCY OF RESPONSES TO QUESTION G6

G6 : How much difference is there in closeness to different dealers?

CATEGORY LABEL	CODE	ABSOLUTE FREQUENCY	RELATIVE FREQUENCY (PERCENT)	ADJUSTED FREQUENCY (PERCENT)	CUMULATIVE ADJ FREQ (PERCENT)
No difference	1	32	10.1	12.5	12.5
Slight difference	2	57	17.9	22.4	34.9
Moderate difference	3	78	24.5	30.6	65.5
Extremely different	4	88	27.7	34.5	100.0
Did not answer		63	19.8	MISSING	
	TOTAL	318	100.0	100.0	
MEAN	2.871	STD ERR	.064	MEDIAN	2.994
MODE	4.000	STD DEV	1.029	VARIANCE	1.058
KURTOSIS	0	SKENNESS	-.438	RANGE	3.000
MINIMUM	1.000	MAXIMUM	4.000	SUM	732.000
C.V. PCT	35.832	.95 C.I.	2.744	TO	2.997
VALID CASES	255	MISSING CASES	63		

EXHIBIT 6.21

FREQUENCY OF RESPONSES TO QUESTION G7

G7 : How much difference is there in design of equipment among dealers?

CATEGORY LABEL	CODE	ABSOLUTE FREQUENCY	RELATIVE FREQUENCY (PERCENT)	ADJUSTED FREQUENCY (PERCENT)	CUMULATIVE ADJ FREQ (PERCENT)
No difference	1	26	8.2	10.2	10.2
Slight difference	2	70	22.0	27.3	37.5
Moderate difference	3	77	24.2	30.1	67.6
Extremely different	4	83	26.1	32.4	100.0
Did not answer		62	19.5	MISSING	
		-----	-----	-----	
TOTAL		318	100.0	100.0	
MEAN	2,848	STD ERR	.062	MEDIAN	2,916
MODE	4,000	STD DEV	.992	VARIANCE	.985
KURTOSIS	0	SKEWNESS	-.321	RANGE	3,000
MINIMUM	1,000	MAXIMUM	4,000	SUM	729,000
C.V. PCT	34.844	.95 C.I.	2,726	TO	2,970
VALID CASES	256	MISSING CASES	62		

EXHIBIT 6.22

FREQUENCY OF RESPONSES TO QUESTION G8

G8 : How much difference is there in durability of equipment among dealers?

CATEGORY LABEL	CODE	ABSOLUTE FREQUENCY	RELATIVE FREQUENCY (PERCENT)	ADJUSTED FREQUENCY (PERCENT)	CUMULATIVE ADJ FREQ (PERCENT)
No difference	1	22	6.9	8.6	8.6
Slight difference	2	53	16.7	20.7	29.3
Moderate difference	3	65	20.4	25.4	54.7
Extremely different	4	116	36.5	45.3	100.0
Did not answer		62	19.5	MISSING	
	TOTAL	318	100.0	100.0	
MEAN	3.074	STD ERR	.063	MEDIAN	3.315
MODE	4.000	STD DEV	1.001	VARIANCE	1.002
KURTOSIS	0	SKEWNESS	-.670	RANGE	3.000
MINIMUM	1.000	MAXIMUM	4.000	SUM	787.000
C.V. PCT	32.566	.95 C.I.	2.951	TO	3.197
VALID CASES	256	MISSING CASES	62		

EXHIBIT 6.23

FREQUENCY OF RESPONSES TO QUESTION G9

G9: How much difference in in lightness of equipment is there among dealers?

CATEGORY LABEL	CODE	ABSOLUTE FREQUENCY	RELATIVE FREQUENCY (PERCENT)	ADJUSTED FREQUENCY (PERCENT)	CUMULATIVE ADJ FREQ (PERCENT)
No difference	1	44	13.8	17.8	17.8
Slight difference	2	84	26.4	34.0	51.8
Moderate difference	3	74	23.3	30.0	81.8
Extremely different	4	45	14.2	18.2	100.0
Did not answer		71	22.3	MISSING	
TOTAL		318	100.0	100.0	
MEAN	2.486	STD ERR	.063	MEDIAN	2.446
MODE	2.0000	STD DEV	.987	VARIANCE	.974
KURTOSIS	4	SKEWNESS	.052	RANGE	3.000
MINIMUM	1.000	MAXIMUM	4.000	SUM	614.000
C.V. PCT	39.710	.95 C.I.	2.362	TO	2.610
VALID CASES	247	MISSING CASES	71		

EXHIBIT 6.24

FREQUENCY OF RESPONSE TO QUESTION 4

Q4 : List other factors which you consider important not asked above.

CATEGORY LABEL	CODE	ABSOLUTE FREQUENCY	RELATIVE FREQUENCY (PERCENT)	ADJUSTED FREQUENCY (PERCENT)	CUMULATIVE ADJ FREQ (PERCENT)
No answer/other response	0	238	78.6	78.6	78.6
Helpfulness/courtesy	1	15	4.7	4.7	83.3
Knowledgeable dealer	2	14	2.2	2.2	85.5
Good communication	3	2	.6	.6	86.2
Reduction of freight charges	4	4	.9	.9	87.1
Quality of material/workmanship	5	32	9.7	9.7	96.9
Improper Deespace	6	3	.6	.6	97.5
Honesty of dealer	7	2	.6	.6	98.1
Availability of wax and honey market	8	1	.3	.3	98.4
Replacement for repair parts	9	7	1.6	1.6	100.0
TOTAL		310	100.0	100.0	
MEAN	.884	STD ERR	.112	MEDIAN	.136
MODE	0	STD DEV	2.005	VARIANCE	4.021
KURTOSIS	0	SKENNESS	2.310	RANGE	9.000
MINIMUM	0	MAXIMUM	9.000	SUM	281.000
C.V. PCT	226.931	.95 C.I.	.662	TO	1.105
VALID CASES	310	MISSING CASES	0		

EXHIBIT 6.24 (continued)

FREQUENCY OF RESPONSE TO QUESTION 4

<u>Category Label</u>	<u>Other Responses</u>	<u>Frequency</u>
Unspecified		1
Interchangeability/standardization		11
Availability of dealer		1
Credit availability		2
Ease of assembly		1
Flexibility to individual needs		1
How much the dealer does for the industry		1
Back orders be delivered		1
Prices should be displayed on equipment in store		1

EXHIBIT 6.25

FREQUENCY OF RESPONSES TO QUESTION 5

Q5: What two features do you think your current dealer needs to improve the most?

CATEGORY LABEL	CODE	ABSOLUTE FREQUENCY	RELATIVE FREQUENCY (PERCENT)	ADJUSTED FREQUENCY (PERCENT)	CUMULATIVE ADJ FREQ (PERCENT)
No answer/other response	0	213	73.6	73.6	73.6
Replacement for obsolete equipment	1	1	.3	.3	73.9
Availability of equipment	2	28	8.5	8.5	82.4
Speed of delivery	3	19	4.7	4.7	87.1
Keeping accurate accounts	4	4	.6	.6	87.7
Full line of equipment	5	14	2.8	2.8	90.6
Standardization	6	3	.3	.3	90.9
More franchises available	7	2	.6	.6	91.5
Inadequate hours	8	3	.9	.9	92.5
Quality of material/workmanship	9	31	7.5	7.5	100.0
TOTAL		310	100.0	100.0	
MEAN	1.299	STD ERR	.149	MEDIAN	.179
MODE	0	STD DEV	2.655	VARIANCE	7.049
KURTOSIS	0	SKEWNESS	2.104	RANGE	9.000
MINIMUM	0	MAXIMUM	9.000	SUM	413.000
C.V. PCT	204.432	.95 C.I.	1.006	TO	1.592
VALID CASES	310	MISSING CASES	0		

EXHIBIT 6.25 (continued)

FREQUENCY OF RESPONSES TO QUESTION 5

<u>Category Labels</u>	<u>Frequency</u>	<u>Category Labels</u>	<u>Frequency</u>
Price	36	Ironside frames	1
Quantity discounts	15	Holds back equipment for friends	1
Catalog vague/unclear	6	Favors big customer	1
Durability	2	Merchandising of product	1
Credit availability	2	Dealer market/factory discounts	1
Closeness of dealer	5	Availability of different equipment sizes	1
Availability of honey and wax market	3	More product development	1
Standardization of hive into 9 or 10 frames	2	Needs of commercial operator	1
Availability of dealer	2	Complete accessories	1
Design	3	More free samples	1
Bee spacing	2	Needs to order packaged bees	1
Better displays of equipment	1	Help to stop spraying	1
Lightweight equipment	1	Better way of putting in comb	1
Hives that don't need painting	1	Bee veil design	1
		Gloves to fit a woman's hand	1

EXHIBIT 6.26
FREQUENCY OF RESPONSES TO QUESTION 6

Q6: Have you heard of plastic bee hives?

CATEGORY LABEL	CODE	ABSOLUTE FREQUENCY	RELATIVE FREQUENCY (PERCENT)	ADJUSTED FREQUENCY (PERCENT)	CUMULATIVE ADJ FREQ (PERCENT)
Yes	1	295	92.8	93.4	93.4
No	2	18	5.7	5.7	99.1
Not sure	3	3	.9	.9	100.0
Did not answer		2	.6	MISSING	
TOTAL		318	100.0	100.0	
MEAN	1.076	STD ERR	.017	MEDIAN	1.036
MODE	1.000	STD DEV	.299	VARIANCE	.089
KURTOSIS	0	SKEWNESS	4.232	RANGE	2.000
MINIMUM	1.000	MAXIMUM	3.000	SUM	340.000
C.V. PCT	27.797	.95 C.I.	1.043	TO	1.109
VALID CASES	316	MISSING CASES	2		

EXHIBIT 6.27

FREQUENCY OF RESPONSES TO QUESTION 7

Q7: Have you heard of other plastic equipment such as feeders, queen cages, etc.?

CATEGORY LABEL	CODE	ABSOLUTE FREQUENCY	RELATIVE FREQUENCY (PERCENT)	ADJUSTED FREQUENCY (PERCENT)	CUMULATIVE ADJ FREQ (PERCENT)
Yes	1	282	88.7	89.5	89.5
No	2	24	7.5	7.6	97.1
Not sure	3	9	2.8	2.9	100.0
Did not answer		3	.9	MISSING	
		-----	-----	-----	
	TOTAL	318	100.0	100.0	
MEAN	1.133	STD ERR	.023	MEDIAN	1.059
MODE	1.000	STD DEV	.416	VARIANCE	.173
KURTOSIS	0	SKEWNESS	3.266	RANGE	2.000
MINIMUM	1.000	MAXIMUM	3.000	SUM	357.000
C.V. PCT	36.726	.95 C.I.	1.087	TO	1.179
VALID CASES	315	MISSING CASES	3		

EXHIBIT 6.28

FREQUENCY OF RESPONSES TO QUESTION 8

Q8: Have you ever used plastic bee hives or equipment?

CATEGORY LABEL	CODE	ABSOLUTE FREQUENCY	RELATIVE FREQUENCY (PERCENT)	ADJUSTED FREQUENCY (PERCENT)	CUMULATIVE ADJ FREQ (PERCENT)
Yes	1	170	53.5	53.6	53.6
No	2	147	46.2	46.4	100.0
Did not answer		1	.3	MISSING	
TOTAL		318	100.0	100.0	
MEAN	1.464	STD ERR	.028	MEDIAN	1.432
MODE	1.0000	STD DEV	.499	VARIANCE	.249
KURTOSIS	0	SKEWNESS	.146	RANGE	1.0000
MINIMUM	1.0000	MAXIMUM	2.0000	SUM	464.0000
C.V. PCT	34.123	.95 C.I.	1.409	TO	1.519
VALID CASES	317	MISSING CASES	1		

EXHIBIT 6.29

FREQUENCY OF RESPONSES TO QUESTION 9

Q9 : Why did you purchase the plastic bee hives or equipment?

CATEGORY LABEL	CODE	ABSOLUTE FREQUENCY	RELATIVE FREQUENCY (PERCENT)	ADJUSTED FREQUENCY (PERCENT)	CUMULATIVE ADJ FREQ (PERCENT)
No answer/other response	0	176	62.6	62.6	62.6
Comparison of wood vs. plastic	1	52	16.4	16.4	78.9
Curiosity	2	11	3.5	3.5	82.4
All that was available	3	12	3.5	3.5	85.8
Inexpensive price	4	7	1.6	1.6	87.4
No painting required	5	12	1.9	1.9	89.3
Rot or insect proof	6	2	.6	.6	89.9
Given to/part of a repurchase	7	19	6.0	6.0	95.9
Speed or ease of assembly	8	8	1.3	1.3	97.2
Durability	9	19	2.6	2.6	100.0
TOTAL		316	100.0	100.0	
MEAN	1.305	STD ERR	.136	MEDIAN	.299
MODE	0	STD DEV	2.410	VARIANCE	5.984
KURTOSIS	0	SKEWNESS	1.999	RANGE	9.000
MINIMUM	0	MAXIMUM	9.000	SUM	415.000
C.V. PCT	186.180	.95 C.I.	1.037	TO	1.573
VALID CASES	310	MISSING CASES	0		

EXHIBIT 6.29

FREQUENCY OF RESPONSES TO QUESTION 9

<u>Category Labels</u>	<u>Frequency</u>
Unspecified	27
Maintenance free	5
Time/labor saving	4
Leakproof feeders	2
Durability	4
Improved design	1
Check bee acceptance	1
Customers requested them	1
Dissatisfied with masonite	1
Lightweight	3
Knew Cartwright's patent lawyer	1
Cut cost	1
Heat	1
Mail order	1
For display purpose	1

EXHIBIT 6.30

FREQUENCY OF RESPONSE TO QUESTION 10

Q10: Please comment on any features you liked or disliked about plastic equipment.

CATEGORY LABEL	CODE	ABSOLUTE FREQUENCY	RELATIVE FREQUENCY (PERCENT)	ADJUSTED FREQUENCY (PERCENT)	CUMULATIVE ADJ FREQ (PERCENT)
No answer/other response	0	178	70.8	70.8	70.8
Warpage	1	46	14.5	14.5	85.2
Moisture condensation	2	13	3.1	3.1	88.4
Slippery to handle	3	9	2.2	2.2	90.6
Ease of assembly	4	6	.9	.9	91.5
Breaking/cracking problems	5	16	3.1	3.1	94.7
Ease of cleaning	6	4	1.3	1.3	95.9
Durability	7	17	3.5	3.5	99.4
No painting	8	4	.6	.6	100.0
Rot and insect proof	9	5	.6	.6	100.0
TOTAL		318	100.0	100.0	
MEAN	.843	STD ERR	.103	MEDIAN	.207
MODE	0	STD DEV	1.834	VARIANCE	3.363
KURTOSIS	0	SKEWNESS	2.556	RANGE	9.000
MINIMUM	0	MAXIMUM	9.000	SUM	260.000
C.V. PCT	217.605	.95 C.I.	.640	TD	1.045
VALID CASES	318	MISSING CASES	0		

EXHIBIT 6.30 (continued)

FREQUENCY OF RESPONSE TO QUESTION 10

(other responses)

For Bee Hives and Bee Hive Parts		For Bee Equipment	
Category Labels	Frequency	Category Labels	Frequency
Difficult to handle	3	Bees don't draw out wax	9
Ease of handling	9	well and other problems	2
Difficulty in mailing	1	Foundation won't stay in	2
Takes hive staples well	1	Feeders drown bees	1
Sharp edges	1	Poor design of feeder	1
No life	1	Frames don't hold up with uncapping machine or extractor	3
Not compatible with other equipment	3	Frames hide wax moths	1
Cannot scorch out hives for disease	2	Frames melt when wax is melted out	1
Inner cover has no bee space	1		
Covers too light	2		
Too heavy	1		
Cracks in winter	2		
Poor insulation properties	8		
Good insulation	1		
Propolis sticks to equipment	1		
Stains badly	1		
Good appearance	1		
Lacks hand holds	3		
Poor ventilation	3		
Too flimsy	4		
Too much light admission	2		
Cannot repair	1		
Caution needed near heat	1		
Discoloration	1		
Entrance size	1		
Poor durability	2		
Not a renewable resource	1		
Color easy to spot by thieves	1		
		Miscellaneous	
		Ready to use	2
		Price too high	4
		Price cheap	3
		Bees accept slowly	8
		Not yet fully tested	1

EXHIBIT 6.31

FREQUENCY OF RESPONSES TO QUESTION 11

Q11: Do you intend to buy plastic bee hives in the future?

CATEGORY LABEL	CODE	ABSOLUTE FREQUENCY	RELATIVE FREQUENCY (PERCENT)	ADJUSTED FREQUENCY (PERCENT)	CUMULATIVE ADJ FREQ (PERCENT)
Definitely yes	1	13	4.1	7.9	7.9
Moderately yes	2	14	4.4	8.5	16.4
Neutral	3	63	19.8	38.2	54.5
Moderately no	4	34	10.7	20.6	75.2
Definitely no	5	41	12.9	24.8	100.0
Did not answer		153	48.1	MISSING	
TOTAL		318	100.0	100.0	
MEAN	3.461	STD ERR	.092	MEDIAN	3.381
MODE	3.000	STD DEV	1.182	VARIANCE	1.396
KURTOSIS	4	SKEWNESS	-.331	RANGE	4.000
MINIMUM	1.000	MAXIMUM	5.000	SUM	571.000
C.V. PCT	34.146	.95 C.I.	3.279	TO	3.642
VALID CASES	165	MISSING CASES	153		

EXHIBIT 6.32

FREQUENCY OF RESPONSES TO QUESTION 12

Q12: If plastic bee hives never needed painting, were rot, termite, and wax worm proof and lasted years longer than wooden hives, would you try plastic hives?

CATEGORY LABEL	CODE	ABSOLUTE FREQUENCY	RELATIVE FREQUENCY (PERCENT)	ADJUSTED FREQUENCY (PERCENT)	CUMULATIVE ADJ FREQ (PERCENT)
Definitely yes	1	55	17.3	28.9	28.9
Moderately yes	2	45	14.2	23.7	52.6
Neutral	3	44	13.8	23.2	75.8
Moderately no	4	17	5.3	8.9	84.7
Definitely no	5	29	9.1	15.3	100.0
		128	40.3	MISSING	
TOTAL		318	100.0	100.0	

MEAN	2.579	STD ERR	.101	MEDIAN	2.389
MODE	1.000	STD DEV	1.388	VARIANCE	1.928
KURTOSIS	0	SKEWNESS	.476	RANGE	4.000
MINIMUM	1.000	MAXIMUM	5.000	SUM	490.000
C.V. PCT	53.835	.95 C.I.	2.380	TO	2.778
VALID CASES	190	MISSING CASES	128		

EXHIBIT 6.33

FREQUENCY OF RESPONSES TO QUESTION 13

Q13 : In comparison to wooden bee hives, how much would you expect to pay for plastic hives?

CATEGORY LABEL	CODE	ABSOLUTE FREQUENCY	RELATIVE FREQUENCY (PERCENT)	ADJUSTED FREQUENCY (PERCENT)	CUMULATIVE ADJ FREQ (PERCENT)
Much less	1	25	7.9	8.4	8.4
Somewhat less	2	45	14.2	15.1	23.5
About the same	3	141	44.3	47.3	70.8
Somewhat more	4	78	24.5	26.2	97.0
Much more	5	9	2.8	3.0	100.0
Did not answer		20	6.3	MISSING	
TOTAL		318	100.0	100.0	

MEAN	3.003	STD ERR	.054	MEDIAN	3.060
MODE	3.000	STD DEV	.934	VARIANCE	.872
KURTOSIS	0	SKEWNESS	-.406	RANGE	4.000
MINIMUM	1.000	MAXIMUM	5.000	SUM	895.000
C.V. PCT	31.093	.95 C.I.	2.897	TO	3.110
VALID CASES	298	MISSING CASES	20		

EXHIBIT 6.34

FREQUENCY OF RESPONSE TO QUESTION 14

Q14 : What state do you live in?

CATEGORY LABEL	CODE	ABSOLUTE FREQUENCY	RELATIVE FREQUENCY (PERCENT)	ADJUSTED FREQUENCY (PERCENT)	CUMULATIVE ADJ FREQ (PERCENT)
Alabama	1	1	.3	.3	.3
Arizona	3	12	3.0	3.0	4.1
Arkansas	4	4	1.3	1.3	5.4
California	5	4	1.3	1.3	6.6
Colorado	6	3	.9	.9	7.6
Florida	9	4	1.3	1.3	8.8
Georgia	10	2	.6	.6	9.5
Idaho	12	1	.3	.3	9.8
Illinois	13	15	4.7	4.7	14.5
Indiana	14	135	42.5	42.6	57.1
Iowa	15	25	7.9	7.9	65.0
Kansas	16	5	1.6	1.6	66.6
Kentucky	17	1	.3	.3	66.9
Massachusetts	21	1	.3	.3	67.2

EXHIBIT 6.34 (continued)

Michigan	22	6	1.9	1.9	69.1
Minnesota	23	5	1.6	1.6	70.7
Mississippi	24	3	.9	.9	71.6
Montana	25	3	.9	.9	72.6
Nebraska	26	9	2.8	2.8	75.4
Nevada	27	2	.6	.6	76.0
New Jersey	29	1	.3	.3	76.3
New Mexico	30	4	1.3	1.3	77.6
New York	31	7	2.2	2.2	79.8
North Carolina	32	3	.9	.9	80.8
North Dakota	33	1	.3	.3	81.1
Ohio	34	5	1.6	1.6	82.6
Oklahoma	35	10	3.1	3.2	85.8
Pennsylvania	37	2	.6	.6	86.4
South Dakota	40	8	2.5	2.5	89.0
Tennessee	41	2	.6	.6	89.6
Texas	42	17	5.3	6.4	95.0
Virginia	45	1	.3	.3	95.3
Washington	46	1	.3	.3	95.6

EXHIBIT 6.34 (continued)

West Virginia	47	1	.3	.3	95.9
Wisconsin	48	7	2.2	2.2	98.1
Wyoming	49	2	.6	.6	98.7
Missouri	50	4	1.3	1.3	100.0
Did not answer		1	.3	MISSING	
TOTAL	318		100.0	100.0	
MEAN	20,177	STD ERR	.669	MEDIAN	14,333
MODE	14,000	STD DEV	11,913	VARIANCE	141,931
KURTOSIS	0	SKEWNESS	1,009	RANGE	49,000
MINIMUM	1,000	MAXIMUM	50,000	SUM	6396,000
C.V. PCT	59,046	.95 C.I.	18,860	TO	21,493
VALID CASES	317	MISSING CASES	1		

EXHIBIT 6.35

FREQUENCY OF RESPONSE TO QUESTION 15

Q15: Approximately how many bee hives do you have?

CATEGORY LABEL	CODE	ABSOLUTE FREQUENCY	RELATIVE FREQUENCY (PERCENT)	ADJUSTED FREQUENCY (PERCENT)	CUMULATIVE ADJ FREQ (PERCENT)
1 to 25	1	102	32.1	32.4	32.4
26 to 100	2	68	21.4	21.6	54.0
101 to 200	3	36	11.3	11.4	65.4
201 to 500	4	29	9.1	9.2	74.6
501 to 1000	5	22	6.9	7.0	81.6
over 1000	6	58	18.2	18.4	100.0
Did not answer		3	.9	MISSING	
	TOTAL	318	100.0	100.0	
MEAN	2,921	STD ERR	.106	MEDIAN	2,316
MODE	1,000	STD DEV	1,083	VARIANCE	3,545
KURTOSIS	0	SKEWNESS	.553	RANGE	5,000
MINIMUM	1,000	MAXIMUM	6,000	SUM	920,000
C.V. PCT	64.463	.95 C.I.	2.712	TO	3,129
VALID CASFS	315	MISSING CASES	3		

EXHIBIT 6.36

FREQUENCY OF RESPONSES TO QUESTION 16

Q16 : What bee supply dealer do you use the most?

CATEGORY LABEL	CODE	ABSOLUTE FREQUENCY	RELATIVE FREQUENCY (PERCENT)	ADJUSTED FREQUENCY (PERCENT)	CUMULATIVE ADJ FREQ (PERCENT)
Kelley	1	101	31.8	35.2	35.2
Dadant	2	145	45.6	50.5	85.7
Root	3	25	7.9	8.7	94.4
Hubbard	4	0	2.5	2.8	97.2
Miller's	5	1	.3	.3	97.6
Superbee	6	1	.3	.3	97.9
Stewart	7	3	.9	1.0	99.0
Leahy	8	2	.6	.7	99.7
Wards	9	1	.3	.3	100.0
Other Dealer/ Did not answer		31	9.7	MISSING	
TOTAL		316	100.0	100.0	
MEAN	1.934	STD ERR	.068	MEDIAN	1.793
MODE	2.000	STD DEV	1.149	VARIANCE	1.321
KURTOSIS	0	SKEWNESS	3.025	RANGE	0.000
MINIMUM	1.000	MAXIMUM	9.000	SUM	555.000
C.V. PCT	50.430	.95 C.I.	1.000	TO	2.067
VALID CASES	267	MISSING CASES	31		

EXHIBIT 6.36 (continued)

FREQUENCY OF RESPONSES TO QUESTION 16

<u>Category Labels</u>	<u>Frequency</u>
Pierce (Anaheim, California)	1
Knorr (Del Mar, California)	1
Forbes and Johnston	1
Western Bee	1
L.A. Honey Company	1
Strauser	1
Sears and Roebuck	3
Economy Supply	1
Happy Hive	1
Diamond International	1
Cloverleaf	1

EXHIBIT 6.37

FREQUENCY OF RESPONSES TO QUESTION 17

Q17 : What incentive did the respondent receive?

CATEGORY LABEL	CODE	ABSOLUTE FREQUENCY	RELATIVE FREQUENCY (PERCENT)	ADJUSTED FREQUENCY (PERCENT)	CUMULATIVE ADJ FREQ (PERCENT)
Nothing	1	137	43.1	43.1	43.1
25¢	2	67	21.1	21.1	64.2
50¢	3	114	35.8	35.8	100.0
	TOTAL	318	100.0	100.0	
MEAN	1.928	STD ERR	.050	MEDIAN	1.020
MODE	1.000	STD DEV	.887	VARIANCE	.787
KURTOSIS	0	SKENNESS	.142	RANGE	2.000
MINIMUM	1.000	MAXIMUM	3.000	SUM	613.000
C.V. PCT	46.008	.95 C.I.	1.030	TO	2.026
VALID CASES	318	MISSING CASES	0		

EXHIBIT 7.1
CROSSTABULATION OF QUESTION F1 WITH QUESTION 15

Q15											TOTAL
		COUNT	1-25	26-100	101-200	201-500	501-1000	over 1000			
(equipment availability)	F1	ROW PCT	1	2	3	4	5	6			
		COL PCT	1	2	3	4	5	6			
Not important	1	1	2	0	0	0	0	0	0	2	
	2	1	100.0	0	0	0	0	0	0	.7	
	3	1	2.7	0	0	0	0	0	0		
Slightly important	2	1	3	5	2	1	1	1	1	13	
	1	1	23.1	30.5	15.4	7.7	7.7	7.7	7.7	4.3	
	3	1	3.1	7.7	5.6	3.4	4.5	1.9	1.9		
Moderately important	1	1	1.0	1.7	1.7	.3	.3	.3	.3		
	3	1	25	12	6	4	3	14	14	64	
	1	1	39.1	10.0	9.4	6.3	4.7	21.9	21.9	21.1	
Very important	1	1	25.5	10.5	16.7	13.0	13.6	26.4	26.4		
	1	1	8.3	4.0	2.0	1.3	1.0	4.6	4.6		
	4	1	60	40	28	24	10	30	30	224	
TOTAL	1	1	30.4	21.4	12.5	10.7	0.0	17.0	17.0	73.9	
	1	1	69.4	73.0	77.0	82.0	01.0	71.7	71.7		
	1	1	22.4	15.8	9.2	7.9	5.9	12.5	12.5		
COLUMN TOTAL			98	65	36	29	22	53	53	303	
TOTAL			32.3	21.5	11.9	9.6	7.3	17.5	17.5	100.0	
RAW CHI SQUARE *			11.52731 WITH 15 DEGREES OF FREEDOM.		SIGNIFICANCE = .7194						

EXHIBIT 7.2

CROSSTABULATION OF QUESTION F2 WITH QUESTION 15

		Q15 (number of bee hives)						ROW TOTAL	ROW PCT	
		1-25	26-100	101-200	201-500	501-1000	over 1000			
(speed of delivery) F2	COUNT	1	2	3	4	5	6	TOTAL		
	ROW PCT	1	2	3	4	5	6			
Not important	1	75.0	0	0	0	1	0	76.0	4.3	
	2	3.1	0	0	0	4.5	0	7.6	1.3	
	3	1.0	0	0	0	.3	0	1.3		
	4	1.0	0	0	0	.3	0	1.3		
Slightly important	1	26.7	20.0	20.0	6.7	13.3	13.3	100.0	15.0	
	2	4.1	4.7	8.3	3.4	9.1	3.7	43.3	5.0	
	3	1.3	1.0	1.0	.3	.7	.7	5.0		
	4	2.9	2.2	8.4	10.5	7.4	20.0	51.4	9.5	
Moderately important	1	30.5	23.2	8.4	10.5	7.4	20.0	100.0	31.5	
	2	29.9	34.4	22.2	34.5	31.8	35.2	188.0	62.3	
	3	9.6	7.3	2.6	3.3	2.3	6.3	31.4	18.8	
	4	6.1	3.9	2.5	1.8	1.2	3.3	18.8	62.3	
Very iportant	1	32.4	20.7	13.3	9.6	6.4	17.6	100.0	62.3	
	2	62.9	60.9	69.4	62.1	54.5	61.1	382.0	100.0	
	3	20.2	12.9	8.3	6.0	4.0	10.9	62.3	18.8	
	4	1.0	0	0	0	0	0	1.0		
COLUMN TOTAL		97	64	36	29	22	54	302	100.0	
TOTAL		32.1	21.2	11.9	9.6	7.3	17.9	100.0		

RAW CHI SQUARE = 10.56145 WITH 15 DEGREES OF FREEDOM. SIGNIFICANCE = .7830

EXHIBIT 7.3

CROSSTABULATION OF QUESTION F3 WITH QUESTION 15

		Q15 (number of bee hives)						ROW TOTAL
		1-25	26-100	101-200	201-500	501-1000	over 1000	
(full line of equipment)	COUNT							ROW TOTAL
	ROW PCT							
F3	TOT PCT	1	2	3	4	5	6	
Not important	1	7	4	1	3	0	0	15
		46.7	26.7	6.7	20.0	0	0	5.0
	1	7.2	6.3	2.8	10.7	0	0	
	1	2.3	1.3	.3	1.0	0	0	
Slightly important	2	9	7	2	2	4	5	29
		31.0	24.1	6.9	6.9	13.8	17.2	9.7
	1	9.3	10.9	5.6	7.1	18.2	9.4	
	1	3.0	2.3	.7	.7	1.3	1.7	
Moderately important	3	32	18	13	5	5	17	90
		35.6	20.0	14.4	5.6	5.6	18.9	30.0
	1	33.0	28.1	36.1	17.9	22.7	32.1	
	1	10.7	6.0	4.3	1.7	1.7	5.7	
Very important	4	49	35	20	10	13	31	166
		29.5	21.1	12.0	10.8	7.8	18.7	55.3
	1	50.5	54.7	55.6	64.3	59.1	58.5	
	1	16.3	11.7	6.7	6.0	4.3	10.3	
COLUMN TOTAL		97	64	36	28	22	53	300
		32.3	21.3	12.0	9.3	7.3	17.7	100.0

RAW CHI SQUARE = 13.29789 WITH 15 DEGREES OF FREEDOM. SIGNIFICANCE = .5

RAW CHI SQUARE = 13.29789 WITH 15 DEGREES OF FREEDOM. SIGNIFICANCE = .5793

EXHIBIT 7.4

CROSTABULATION OF QUESTION F4 WITH QUESTION 15

		Q15 (number of bee hives)							ROW TOTAL
		1-25	26-100	101-200	201-500	500-1000	over 1000		
COUNT	PRICE								
ROW PCT									
COL PCT									
TOT PCT									
F4									
1		0	2	1	3	1	5	6	
		0	66.7	33.3	0	0	0	0	
		0	3.1	2.8	0	0	0	0	
		0	.7	.3	0	0	0	0	
Not important									
2		3	1	1	0	0	0	2	
		42.9	14.3	14.3	0	0	0	28.6	
		3.1	1.5	2.8	0	0	0	3.6	
		1.0	.3	.3	0	0	0	.7	
Slightly important									
3		25	15	8	5	3	1	14	
		35.7	21.4	11.4	7.1	4.3	1	20.0	
		26.0	23.1	22.2	17.2	13.6	1	25.5	
		8.3	5.0	2.6	1.7	1.0	1	4.6	
Moderately important									
4		68	47	26	24	19	1	39	
		30.5	21.1	11.7	10.8	8.5	1	17.5	
		70.8	72.3	72.2	82.8	86.4	1	70.9	
		22.4	15.5	8.6	7.9	6.3	1	12.9	
Not important									
COLUMN		96	65	36	29	22	55	303	
TOTAL		31.7	21.5	11.9	9.6	7.3	18.2	100.0	

RAW CHI SQUARE = 10.87815 WITH 15 DEGREES OF FREEDOM, SIGNIFICANCE = .7612

EXHIBIT 7.5

CROSSTABULATION OF QUESTION F5 WITH QUESTION 15

		Q15 (number of bee hives)						ROW TOTAL	ROW %
		1-25	26-100	101-200	201-500	500-1000	over 1000		
(quantity discounts)	F5	COUNT						COUNT	COUNT
		1	2	3	4	5	6		
Not important	1	19	5	0	1	0	0	25	8.4
	2	76.0	20.0	0	4.0	0	0	100.0	100.0
	3	20.4	7.8	0	3.7	0	0	31.8	31.8
	4	6.4	1.7	0	.3	0	0	8.4	8.4
Slightly important	1	25	5	4	2	1	2	39	13.2
	2	64.1	12.8	10.3	5.1	2.6	5.1	100.0	100.0
	3	26.9	7.8	11.1	7.4	4.5	3.7	60.7	60.7
	4	8.4	1.7	1.4	.7	.3	.7	13.2	13.2
Moderately important	1	24	23	10	1	6	14	78	26.4
	2	30.8	29.5	12.8	1.3	7.7	17.9	100.0	100.0
	3	25.8	35.9	27.8	3.7	27.3	25.9	154	52.0
	4	8.1	7.8	3.4	.3	2.0	4.7	52.0	52.0
Very important	1	25	31	22	23	15	30	154	52.0
	2	16.2	20.1	14.3	14.9	9.7	24.7	100.0	100.0
	3	26.9	48.4	61.1	85.2	68.2	70.4	344	114.6
	4	8.4	10.5	7.4	7.8	5.1	12.8	62.0	20.3
COLUMN TOTAL		93	64	36	27	22	54	296	100.0
TOTAL		31.4	21.6	12.2	9.1	7.4	18.2	100.0	100.0

RAW CHI SQUARE = 76.26888 WITH 15 DEGREES OF FREEDOM, SIGNIFICANCE = .0000

EXHIBIT 7.6

CROSSTABULATION OF QUESTION F6 WITH QUESTION 15

		Q15 (number of bee hives)						ROW TOTAL
		1-25	26-100	101-200	201-500	501-1000	over 1000	
F6 (closeness to dealer)	COUNT	1	2	3	4	5	6	
	ROW PCT	1	2	3	4	5	6	
Not important	COL PCT	1	1	1	1	1	1	
	TOT PCT	1	1	1	1	1	1	
		17	6	2	3	1	4	33
		51.5	18.2	6.1	9.1	3.0	12.1	11.0
Slightly important	COL PCT	1	1	1	1	1	1	
	TOT PCT	1	1	1	1	1	1	
		17.9	9.1	5.6	10.7	4.5	7.5	11.0
		5.7	2.0	1.7	1.0	.3	1.3	1.3
Moderately important	COL PCT	1	1	1	1	1	1	
	TOT PCT	1	1	1	1	1	1	
		11	10	4	2	3	9	39
		28.2	25.6	10.3	5.1	7.7	23.1	13.0
Very important	COL PCT	1	1	1	1	1	1	
	TOT PCT	1	1	1	1	1	1	
		11.6	15.2	11.1	7.1	13.6	17.0	17.0
		3.7	3.3	1.3	.7	1.0	3.0	3.0
TOTAL	COL PCT	1	1	1	1	1	1	
	TOT PCT	1	1	1	1	1	1	
		35	26	14	7	10	24	116
		30.2	22.4	12.1	6.0	8.6	20.7	38.7
TOTAL	COL PCT	1	1	1	1	1	1	
	TOT PCT	1	1	1	1	1	1	
		36.8	39.4	38.9	25.0	45.5	45.3	112
		11.7	8.7	4.7	2.3	3.3	8.0	37.3
TOTAL	COL PCT	1	1	1	1	1	1	
	TOT PCT	1	1	1	1	1	1	
		32	24	16	16	8	16	112
		28.6	21.4	14.3	14.3	7.1	14.3	37.3
TOTAL	COL PCT	1	1	1	1	1	1	
	TOT PCT	1	1	1	1	1	1	
		33.7	36.4	44.4	57.1	36.4	30.2	112
		10.7	8.0	5.3	5.3	2.7	5.3	37.3
COLUMNS		95	66	36	28	22	53	300
TOTAL		31.7	22.0	12.0	9.3	7.3	17.7	100.0

RAW CHI SQUARE = 15.39974 WITH 15 DEGREES OF FREEDOM. SIGNIFICANCE # .4230

EXHIBIT 7.7

CROSSTABULATION OF QUESTION F7 WITH QUESTION 15

		Q15 (number of bee hives)							ROW TOTAL
(Design)	COUNT	1-25	26-100	101-200	201-500	501-1000	over 1000		
F7	ROW PCT	1	2	3	4	5	6	1	
	COL PCT	1	1	1	1	1	1	1	
	TOT PCT	1	1	1	1	1	1	1	
Not important	1	6	4	3	1	1	2	17	
	1	35.3	23.5	17.6	5.9	5.9	11.8	5.8	
	1	6.5	6.3	8.6	3.7	4.8	3.8	1	
	1	2.0	1.4	1.0	.3	.3	.7	1	
	2	9	8	0	2	3	2	24	
	2	37.5	33.3	0	8.3	12.5	8.3	8.2	
	1	9.7	12.5	0	7.4	14.3	3.8	1	
	1	3.1	2.7	0	.7	1.0	.7	1	
Slightly important	3	38	21	10	5	4	16	94	
	3	40.4	22.3	10.6	5.3	4.3	17.0	32.1	
	1	40.9	32.8	28.6	18.5	19.0	30.2	1	
	1	13.0	7.2	3.4	1.7	1.4	5.5	1	
Moderately important	4	40	31	22	19	13	33	158	
	4	25.3	19.6	13.9	12.0	8.2	20.9	53.9	
	1	43.0	48.4	62.9	70.4	61.9	62.3	1	
	1	13.7	10.6	7.5	6.5	4.4	11.3	1	
Very important	COLUMN TOTAL	93	64	35	27	21	53	293	
	TOTAL	31.7	21.8	11.9	9.2	7.2	18.1	100.0	

RAW CHI SQUARE = 18.28952 WITH 15 DEGREES OF FREEDOM. SIGNIFICANCE = .2478

RAM CHI SQUARE = 18.28952 WITH 15 DEGREES OF FREEDOM. SIGNIFICANCE = .2478

EXHIBIT 7.8

CROSSTABULATION OF QUESTION F8 WITH QUESTION 15

Q15 (number of bee hives)									
(Durability)	F8	COUNT	15 DEGREES OF FREEDOM,						SIGNIFICANCE = .2545
			18,15700 WITH 15 DEGREES OF FREEDOM,						
			1-25	26-100	101-200	201-500	501-1000	over 1000	
ROW	COL	TOT	1	2	3	4	5	6	ROW
PCT	PCT	PCT							TOTAL
Not important	1	1	1	2	3	4	5	6	1
	1	1	1	2	0	0	0	0	1
	1	33.3	1	66.7	1	0	1	0	1
	1	1.0	1	3.1	1	0	1	0	1.0
Slightly important	2	1	.3	.7	0	0	0	0	1
	2	1	0	0	0	1	0	0	1
	1	0	0	0	0	100.0	0	0	.3
	1	0	0	0	0	3.4	0	0	1
Moderately important	3	1	19	13	3	3	3	8	49
	1	38.0	1	26.5	1	6.1	1	6.1	16.3
	1	19.0	1	20.3	1	10.3	1	13.6	14.8
	1	6.3	1	4.3	1	1.0	1	1.0	2.7
Very important	4	1	76	49	33	25	19	46	248
	1	30.6	1	19.8	1	10.1	1	7.7	82.4
	1	79.2	1	76.6	1	86.2	1	86.4	85.2
	1	25.2	1	16.3	1	8.3	1	6.3	15.3
COLUMN		96	64	36	29	22	54	301	
TOTAL		31.9	21.3	12.0	9.6	7.3	17.9	100.0	

RAW CHI SQUARE = 18.15700 WITH 15 DEGREES OF FREEDOM, SIGNIFICANCE = .2545

EXHIBIT 7.9

CROSSTABULATION OF QUESTION F9 WITH QUESTION 15

		015 (number of bee hives)									
(lightweight)	F9	COUNT									ROW TOTAL
		ROW PCT									
		COL PCT	1-25	25-100	101-200	201-500	501-1000	over 1000			
		TOT PCT	1	2	3	4	5	6			
Not important	1	1	11	8	1	4	3	4	31	10.6	
		1	35.5	25.8	3.2	12.9	9.7	12.9			
		1	11.7	12.3	2.8	14.8	14.3	8.2			
		1	3.4	2.7	3	1.4	1.0	1.4			
Slightly important	2	1	16	14	7	2	3	13	55	18.8	
		1	29.1	25.5	12.7	3.6	5.5	23.6			
		1	17.0	21.5	19.4	7.4	14.3	26.5			
		1	5.5	4.8	2.4	7	1.0	4.5			
Moderately important	3	1	44	30	12	12	8	21	123	42.1	
		1	32.5	24.4	9.8	9.8	6.5	17.1			
		1	42.6	46.2	33.3	44.4	38.1	42.9			
		1	13.7	10.3	4.1	4.1	2.7	7.2			
Very important	4	1	27	13	16	9	7	11	83	28.4	
		1	32.5	15.7	19.3	10.8	8.4	13.3			
		1	28.7	20.0	44.4	33.3	33.3	22.4			
		1	9.2	4.5	5.5	3.1	2.4	3.0			
COLUMN TOTAL		94	65	36	27	21	49	292	100.0		
TOTAL		32.2	22.3	12.3	9.2	7.2	16.8				

RAW CHI SQUARE = 14.35775 WITH 15 DEGREES OF FREEDOM. SIGNIFICANCE = .4986

EXHIBIT 7.10

CROSSTABULATION OF QUESTION 3 WITH QUESTION 16

Q16 (Dealer used the most)												
(How satisfied becker is with current equipment and Q3 service)	others	Kelley	Dadant	Root	Hubbard	Miller	Superbee	Stuart	Leahy	Wards	ROW TOTAL	
COL PCT	0	1	2	3	4	5	6	7	8	9		
1	0	43	59	11	3	0	0	1	1	0	120	
Definitely yes	6,3	32,1	46,0	0,7	2,4	0	0	1	1	0	40,0	
	26,7	43,9	42,1	44,0	37,5	0	0	33,3	50,0	0		
	2,6	13,0	19,1	3,6	1,0	0	0	3,3	3	0		
2	16	45	60	11	4	0	0	2	1	1	140	
Moderately yes	11,4	32,1	42,9	7,9	2,9	0	0	1,9	7	1	45,3	
	53,3	45,9	42,9	44,0	50,0	0	0	66,7	50,0	100,0		
	5,2	18,6	19,4	3,6	1,3	0	0	5,6	3,3	3		
3	3	7	11	2	0	1	0	0	0	0	24	
Neutral	12,5	29,2	45,0	0,3	0	4,2	0	0	0	0	7,0	
	10,0	7,1	7,9	0,0	0	100,0	0	0	0	0		
	1,0	2,3	3,6	0,6	0	3	0	0	0	0		
4	3	3	9	0	0	0	1	0	0	0	16	
Moderately no	10,0	10,0	56,3	0	0	0	6,3	0	0	0	5,2	
	10,0	3,1	6,4	0	0	0	100,0	0	0	0		
	1,0	1,0	2,9	0	0	0	3	0	0	0		
5	0	0	1	1	1	0	0	0	0	0	3	
Definitely no	0	0	33,3	33,3	33,3	0	0	0	0	0	1,0	
	0	0	7,7	4,0	12,5	0	0	0	0	0		
	0	0	3	3	3	0	0	0	0	0		
COLUMN TOTAL	30	90	140	25	0	1	1	3	2	3	109	
TOTAL	9,7	31,7	45,3	0,1	2,6	3	3	1,0	3	3	100,0	
RAM CHI SQUARE = 50,84397 WITH 36 DEGREES OF FREEDOM, SIGNIFICANCE = .0229												

EXHIBIT 7.11

CROSSTABULATION OF QUESTION 6 WITH QUESTION 15

		Q15 (number of bee hives)							ROW TOTAL
		1-25	26-100	101-200	201-500	501-100	over 1000		
(Ever heard of plastic bee hives)	COUNT	1	2	3	4	5	6		
	ROW PCT	COL PCT	TOT PCT	ROW PCT	COL PCT	TOT PCT	ROW PCT	COL PCT	
Q6	1	89	63	36	29	21	54	292	
		30.5	21.6	12.3	9.9	7.2	18.5	93.3	
		88.1	94.0	100.0	100.0	95.5	93.1		
		28.4	20.1	11.5	9.3	6.7	17.3		
Yes	2	11	3	0	0	1	3	18	
		61.1	16.7	0	0	5.6	16.7	5.8	
		10.9	4.5	0	0	4.5	5.2		
		3.5	1.0	0	0	.3	1.0		
No	3	1	1	0	0	0	1	3	
		33.3	33.3	0	0	0	33.3	1.0	
		1.0	1.5	0	0	0	1.7		
		.3	.3	0	0	0	.3		
Not sure	COLUMN TOTAL	101	67	36	29	22	58	313	
		32.3	21.4	11.5	9.3	7.0	18.5	100.0	

RAW CHI SQUARE = 10.66421 WITH 10 DEGREES OF FREEDOM, SIGNIFICANCE = .3843

EXHIBIT 7.12
CROSSTABULATION OF QUESTION 6 WITH QUESTION 16

(Heard of plastic bee hives)	COUNT ROW PCT COL PCT TOT PCT	Q16 (dealer used the most)										ROW TOTAL
		others	Kelley	Dadant	Ropt	Hubbard	Miller	Superbee	Stewart	Leahy	Wards	
		0	1	1	2	3	4	5	6	7	8	
Yes	1	25	99	136	21	7	1	1	1	7	9	295
	1	6.5	33.6	46.1	7.1	2.4	.3	.3	.3	1.0	2	93.4
	1	81.3	98.0	98.4	84.0	87.5	100.0	100.0	100.0	100.0	0	
	1	7.9	31.3	43.0	6.6	2.2	.3	.3	.3	.9	0	
No	2	4	2	4	4	1	1	0	0	0	1	10
	1	22.2	11.1	33.3	22.2	5.6	0	0	0	0	5.6	5.7
	1	13.3	2.0	4.2	16.0	12.5	0	0	0	0	100.0	
	1	1.3	.6	1.9	1.3	.3	0	0	0	0	.3	
Not sure	3	1	0	2	0	0	0	0	0	0	0	3
	1	3.3	0	6.7	0	0	0	0	0	0	0	.9
	1	3.3	0	1.4	0	0	0	0	0	0	0	
	1	.3	0	.6	0	0	0	0	0	0	0	
COLUMN TOTAL		30	101	144	25	8	1	1	1	3	2	316
		9.5	32.0	45.6	7.9	2.5	.3	.3	.3	.9	.6	100.0

RAW CHI SQUARE = 32.67660 WITH 10 DEGREES OF FREEDOM. SIGNIFICANCE = .0103

CROSSTABULATION OF QUESTION 8 WITH QUESTION 15

		Q15 (number of bee hives)								
(Ever used plastic products)		1-25	26-100	101-200	201-500	501-1000	over 1000	TOTAL		
Yes	COUNT	1	1	3	4	3	6			
	ROW PCT	42	34	23	19	13	37	168		
	COL PCT	25.0	20.2	13.7	11.3	7.7	22.0	53.5		
	FOR PCT	41.2	50.7	63.9	65.5	59.1	63.8			
		13.4	10.8	7.3	6.1	4.1	11.8			
No	COUNT	60	33	13	10	9	21	146		
	ROW PCT	41.1	22.6	8.9	6.8	6.2	14.4	46.5		
	COL PCT	58.8	49.3	36.1	34.5	40.9	36.2			
	FOR PCT	19.1	10.5	4.1	3.2	2.9	6.7			
COLUMNS TOTAL		102	67	36	29	22	58	314		
		32.5	21.3	11.5	9.2	7.0	18.5	100.0		
RAW CHI SQUARE =		12.42292 WITH 5 DEGREES OF FREEDOM.							SIGNIFICANCE =	.0294

EXHIBIT 7.14

CROSSTABULATION OF QUESTION 8 WITH QUESTION 16

(Ever used plastic products)	COUNT	Q16 (Dealer used the most)											ROW TOTAL
		Q16 (Dealer used the most)											
		other	Kelley	Dadant	Root	Hubbard	Miller	Superbee	Stewart	Leahy	Wards		
Yes	1	10.4	38.2	38.6	11.1	2.0	100.0	100.0	33.3	100.0	0	170	
	2	58.1	64.4	45.0	44.0	62.5	100.0	100.0	33.3	100.0	0	53.6	
	3	5.7	28.5	28.0	3.5	1.6	3.3	3.3	3.3	0	0	147	
No	1	13	36	70	14	3	0	0	2	0	1	147	
	2	0.8	24.3	53.1	9.5	2.0	0	0	1.4	0	1	46.4	
	3	41.9	35.6	54.2	56.0	37.5	0	0	66.7	0	0	100.0	
TOTAL	1	4.1	11.4	24.6	4.4	0	0	0	6.6	0	0	317	
	2	31	191	184	25	0	1	1	3	2	0	317	
	3	9.8	31.9	45.4	7.9	2.5	3	3	3	0	0	100.0	

ROW CHI SQUARE = 14.73532 WITH 9 DEGREES OF FREEDOM. SIGNIFICANCE = .0005

EXHIBIT 7.15

CROSSTABULATION OF QUESTION 10 WITH QUESTION 11

		Q11 (Intent to buy plastic hives in the future)									
likes/ dislikes	COUNT	definitely yes		moderately yes		Neutral		moderately no		definitely no	
		1	2	3	4	5	6	7	8	9	TOTAL
		1	2	3	4	5	6	7	8	9	TOTAL
Q10											
other responses	0	9	4	31	17	17					78
		11.5	5.1	39.7	21.8	21.8					47.3
		69.2	28.6	49.2	50.0	41.5					
		5.5	2.4	18.8	10.3	10.3					
warpage	1	0	4	16	8	17					45
		0	8.9	35.6	17.8	37.8					27.3
		0	28.6	25.4	23.5	41.5					
		0	2.4	9.7	4.8	10.3					
moisture condensation	2	1	1	0	2	4					4
		12.5	12.5	0	25.0	50.0					4.8
		7.7	7.1	0	5.9	9.8					
		0	0	0	1.2	2.4					
slippery	3	0	1	3	1	2					7
		0	14.3	42.9	14.3	28.6					4.2
		0	7.1	4.8	2.9	4.9					
		0	0	1.8	0	1.2					
ease of assembly	4	0	0	2	1	0					3
		0	0	66.7	33.3	0					1.8
		0	0	3.2	2.9	0					
		0	0	1.2	0	0					
breakage/cracking	5	1	1	3	3	1					9
		11.1	11.1	33.3	33.3	11.1					5.5
		7.7	7.1	4.8	8.8	2.4					
		0	0	1.8	1.8	0					
ease of cleaning	6	0	0	3	1	0					4
		0	0	75.0	25.0	0					2.4
		0	0	4.8	2.9	0					
		0	0	1.8	0	0					
durability	7	2	2	5	1	0					10
		20.0	20.0	50.0	10.0	0					6.1
		15.4	14.3	7.9	2.9	0					
		1.2	1.2	3.0	0	0					
rot and insect proof	8	0	1	0	0	0					1
		0	100.0	0	0	0					0.6
		0	7.1	0	0	0					
		0	0	0	0	0					
COLUMN TOTAL		13	14	63	34	41					165
		7.9	8.5	38.2	20.6	24.8					100.0

CHI SQUARE = 48.43867 WITH 12 DEGREES OF FREEDOM, SIGNIFICANCE = .1407

EXHIBIT 7.16
CROSSTABULATION OF QUESTION 10 WITH QUESTION 15

		Q15 (number of bee hives)								
		COUNT								
		ROW PCT	1-25	26-100	101-200	201-500	501-1000	over 1000	ROW TOTAL	
		COL PCT								
		TOT PCT	1	2	3	4	5	6		
Q10			1	2	3	4	5	6		
Other responses	0		76	48	26	19	13	40	201	
			34.2	21.6	11.7	8.6	5.9	18.0	70.5	
			74.5	70.6	72.2	65.5	59.1	69.0		
			24.1	15.2	8.3	6.0	4.1	12.7		
warpage	1		14	13	6	5	4	4	40	
			30.4	28.3	13.8	10.9	8.7	8.7	14.6	
			13.7	19.1	16.7	17.2	18.2	6.9		
			4.4	4.1	1.9	1.6	1.3	1.3		
moisture condensation	2		3	2	4	1	1	2	13	
			20.0	10.0	30.0	10.0	10.0	20.0	3.2	
			2.0	1.5	4.3	3.4	4.5	3.4		
			.6	.3	1.0	.3	.3	.6		
slippery	3		2	0	1	3	0	3	9	
			14.3	0	0	42.9	0	42.9	2.2	
			1.0	0	0	10.3	0	5.2		
			.3	0	0	1.0	0	1.0		
ease of assembly	4		3	1	0	2	0	0	6	
			100.0	0	0	0	0	0	1.0	
			2.9	0	0	0	0	0		
			1.0	0	0	0	0	0		
breakage/cracking	5		3	1	1	1	1	8	15	
			10.0	10.0	10.0	0	10.0	60.0	3.2	
			1.0	1.5	2.0	0	4.5	10.3		
			.3	.3	.3	0	.3	1.9		
ease of cleaning	6		1	2	0	0	0	1	4	
			25.0	50.0	0	0	0	25.0	1.3	
			1.0	2.9	0	0	0	1.7		
			.3	.6	0	0	0	.3		
durability	7		6	5	1	1	3	2	19	
			30.4	27.3	0	0	27.3	9.1	3.5	
			3.9	4.4	0	0	13.6	1.7		
			1.3	1.0	0	0	1.0	.3		
rot and insect proof	9		1	0	0	1	0	1	3	
			0	0	0	50.0	0	50.0	.0	
			0	0	0	3.4	0	1.7		
			0	0	0	.3	0	.3		
COLUMN TOTAL			104	72	39	33	22	62	319	
			32.4	21.6	11.4	9.2	7.8	18.4	100.0	
RAW CHI SQUARE =			60.52177 WITH 40 DEGREES OF FREEDOM, SIGNIFICANCE =						.0190	

RAW CHI SQUARE = 60.52177 WITH 40 DEGREES OF FREEDOM, SIGNIFICANCE = .2196

EXHIBIT 7.17

CROSS-TABULATION OF QUESTION 11 WITH QUESTION 15

		Q15 (number of bee hives)										ROW TOTAL
(intentions to buy plastic products)		1-25	26-100	101-200	201-500	500-1000	over 1000					
Q11	ROW PCT	1	2	3	4	5	6				ROW TOTAL	
	TOT PCT	1	2	3	4	5	6					
Definitely yes	1	5	2	2	1	1	1	1	1	1	13	
	30.5	15.4	15.4	15.4	7.7	7.7	15.4	15.4	15.4	15.4	7.9	
	12.5	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	1.2	
Moderately yes	2	5	4	1	1	2	1	1	1	1	14	
	35.7	20.6	20.6	7.1	14.3	14.3	7.1	7.1	7.1	7.1	8.5	
	12.5	11.8	11.8	4.0	10.0	10.0	4.0	4.0	4.0	4.0	2.7	
Neutral	3	3	2	1	1	1	1	1	1	1	6	
	15.1	15.1	15.1	6	6	6	6	6	6	6	16	
	23.0	23.0	23.0	9.5	11.1	11.1	6.3	6.3	6.3	6.3	38.4	
Moderately no	4	9	4	1	1	1	1	1	1	1	33	
	37.5	44.1	44.1	28.6	35.0	35.0	33.3	33.3	33.3	33.3	28.1	
	9.1	9.1	9.1	3.7	4.3	4.3	2.4	2.4	2.4	2.4	9.8	
Definitely no	5	7	9	5	7	3	3	3	3	3	41	
	17.1	22.0	22.0	12.2	17.1	9.1	9.1	9.1	9.1	9.1	25.0	
	17.5	26.5	26.5	23.0	35.0	25.0	25.0	25.0	25.0	25.0	6.1	
COLUMNS TOTAL		48	34	21	20	12	37				180.8	
TOTAL		24.4	20.7	12.0	12.2	7.3	22.6				100.0	

RAW CHI SQUARE = 11.28541 WITH 20 DEGREES OF FREEDOM. SIGNIFICANCE = .9305

RAW CHI SQUARE = 11.28541 WITH 20 DEGREES OF FREEDOM, SIGNIFICANCE = .9305

EXHIBIT 7.18

CROSSTABULATION OF QUESTION 12 WITH QUESTION 13

Q13 (Expect to pay for plastic hives)												ROW TOTAL	
		COUNT		I much less		somewhat same		somewhat more		much more			
		ROW PCT	COL PCT	1	2	3	4	5	6	7	8		
(if plastic bee hive is good, will they try it)													
Q12													
Definitely yes	1	1	1	2	1	0	1	23	1	18	1	52	
		1	3.0	15.4	1	4.2	1	34.6	1	1.9	1	28.7	
		1	14.3	27.6	1	27.1	1	36.8	1	33.3	1		
		1	1.1	4.4	1	12.7	1	9.9	1	.6	1		
Moderately yes	2	1	4	1	5	1	22	1	12	1	1	44	
		1	9.1	11.4	1	50.0	1	27.3	1	2.3	1	24.3	
		1	28.6	17.2	1	25.9	1	24.0	1	33.3	1		
		1	2.2	2.0	1	12.2	1	6.6	1	.6	1		
Neutral	3	1	2	1	11	1	23	1	8	1	0	44	
		1	4.5	1	25.0	1	52.3	1	16.2	1	0	24.3	
		1	14.3	1	37.9	1	27.1	1	16.0	1	0		
		1	1.1	1	6.1	1	12.7	1	4.4	1	0		
Moderately no	4	1	0	1	3	1	6	1	6	1	1	16	
		1	0	1	10.0	1	37.5	1	37.5	1	6.3	8.0	
		1	0	1	10.3	1	7.1	1	12.0	1	33.3		
		1	0	1	1.7	1	3.3	1	3.3	1	.6		
Definitely no	5	1	6	1	2	1	11	1	6	1	0	25	
		1	24.0	1	8.0	1	44.0	1	24.0	1	0	13.0	
		1	42.9	1	6.9	1	12.9	1	12.0	1	0		
		1	3.3	1	1.1	1	6.1	1	3.3	1	0		
COLUMN TOTAL		14	29	85	50	3	181					101	
		7.7	16.0	47.0	27.6	1.7	100.0					100.0	

RAW CHI SQUARE = 22.50268 WITH 16 DEGREES OF FREEDOM, SIGNIFICANCE = .1277

EXHIBIT 7.19

CROSSTABULATION OF QUESTION 12 WITH QUESTION 15

		Q15 (number of bee hives)						ROW TOTAL
		1-25	26-100	101-200	201-500	501-1000	over 1000	
(if plastic bee hive is good will they try it)	Q12	COUNT		ROW PCT		COL PCT		ROW TOTAL
		1	2	3	4	5	6	
Definitely yes	1	23	6	5	5	3	13	55
		41.8	10.9	9.1	9.1	5.5	23.6	29.3
		37.1	14.6	22.7	33.3	25.0	36.1	
		12.2	3.2	2.7	2.7	1.6	6.9	
Moderately yes	2	11	11	8	2	2	11	45
		24.4	24.4	17.8	4.4	4.4	24.4	23.9
		17.7	26.8	36.4	13.3	16.7	30.6	
		5.9	5.9	4.3	1.1	1.1	5.9	
Neutral	3	18	12	6	2	2	4	44
		40.9	27.3	13.6	4.5	4.5	9.1	23.4
		29.0	29.3	27.3	13.3	16.7	11.1	
		9.6	6.4	3.2	1.1	1.1	2.1	
Moderately no	4	3	4	2	2	3	2	16
		10.8	25.0	12.5	12.5	18.0	12.5	8.5
		4.8	9.8	9.1	13.3	25.0	5.6	
		1.6	2.1	1.1	1.1	1.6	1.1	
Definitely no	5	7	8	1	4	2	6	28
		25.0	28.6	3.6	14.3	7.1	21.4	14.9
		11.3	19.5	4.5	26.7	16.7	16.7	
		3.7	4.3	5.1	2.1	1.1	3.2	
COLUMN TOTAL		62	41	22	15	12	36	188
TOTAL		33.0	21.8	11.7	8.0	6.4	19.1	100.0
RAW CHI SQUARE =		24.21762 WITH 20 DEGREES OF FREEDOM. SIGNIFICANCE =						.2330

EXHIBIT 7.20
CROSSTABULATION OF QUESTION 14 WITH QUESTION 16

(what state do you live)	COUNT ROW PCT COL PCT TOT PCT	Q16 (dealer used the most)										ROW TOTAL
		others	Kelley	Dadant	Root	Hubbard	Miller	Superbee	Stewart	Leahy	Wards	
		1	2	3	4	5	6	7	8	9	10	
Q14												
Alabama	1	0	1	0	0	0	0	0	0	0	0	1
		0	100.0	0	0	0	0	0	0	0	0	.3
		0	1	0	0	0	0	0	0	0	0	
		0	1	0	0	0	0	0	0	0	0	
		0	1	0	0	0	0	0	0	0	0	
Arizona	3	3	3	3	0	0	0	3	0	0	0	12
		25.0	25.0	25.0	0	0	0	25.0	0	0	0	3.0
		0.7	3.0	2.1	0	0	0	100.0	0	0	0	
		0.9	3.9	2.9	0	0	0	100.0	0	0	0	
		0	0	0	0	0	0	0	0	0	0	
Arkansas	4	1	1	2	0	0	0	0	0	0	0	4
		25.0	25.0	50.0	0	0	0	0	0	0	0	1.3
		3.2	1.0	1.8	0	0	0	0	0	0	0	
		3.3	1.3	2.6	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	0	
California	5	2	0	1	0	0	1	0	0	0	0	4
		50.0	0	25.0	0	0	25.0	0	0	0	0	1.3
		6.5	0	3.1	0	0	100.0	0	0	0	0	
		6.6	0	3.3	0	0	100.0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	0	
Colorado	6	0	0	2	0	0	0	0	0	0	0	2
		0	0	66.7	0	0	0	33.3	0	0	0	.9
		0	0	1.4	0	0	0	100.0	0	0	0	
		0	0	1.6	0	0	0	100.0	0	0	0	
		0	0	0	0	0	0	0	0	0	0	
Florida	9	0	2	2	0	0	0	0	0	0	0	4
		0	50.0	50.0	0	0	0	0	0	0	0	1.3
		0	2.0	1.4	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	0	
Georgia	10	1	0	1	0	0	0	0	0	0	0	2
		50.0	0	50.0	0	0	0	0	0	0	0	.6
		3.2	0	1.7	0	0	0	0	0	0	0	
		3.3	0	1.8	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	0	
Idaho	12	0	1	0	0	0	0	0	0	0	0	1
		0	100.0	0	0	0	0	0	0	0	0	.3
		0	1.0	0	0	0	0	0	0	0	0	
		0	1.3	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	0	
COLUMN TOTAL		31	101	144	25	2.5	1.3	1	3	2	1	317
		9.6	31.9	45.4	7.9	.8	.3	.3	.9	.6	.3	100.0

EXHIBIT 7.20 (continued)

		Q16 (dealer most used)										ROW TOTAL
COUNT	ROW PCT	other	Kelley	Dadant	Root	Hubbard	Miller	Superbee	Stewart	Leahy	Wards	
COL PCT	TOT PCT											
Q14	13	0	1	1	2	3	4	5	6	7	8	15
Illinois		0	1	1	1	1	0	0	0	0	0	4.7
		0	20.0	71.1	6.7	0	0	0	0	0	0	
		0	3.0	7.6	4.0	0	0	0	0	0	0	
		0	0	3.5	3.3	0	0	0	0	0	0	
Indiana	14	13	71	36	10	5	0	0	0	0	0	135
		9.6	52.6	26.7	7.4	3.7	0	0	0	0	0	42.6
		41.0	78.3	25.0	40.0	62.5	0	0	0	0	0	
		4.1	22.4	11.4	3.2	1.6	0	0	0	0	0	
Iowa	15	0	3	20	2	0	0	0	0	0	0	25
		0	12.0	80.0	6.0	0	0	0	0	0	0	7.9
		0	3.0	13.0	6.0	0	0	0	0	0	0	
		0	0.9	6.3	0.6	0	0	0	0	0	0	
Kansas	16	0	0	5	0	0	0	0	0	0	0	5
		0	0	100.0	0	0	0	0	0	0	0	1.6
		0	0	3.5	0	0	0	0	0	0	0	
		0	0	1.6	0	0	0	0	0	0	0	
Kentucky	17	0	1	0	0	0	0	0	0	0	0	1
		0	100.0	0	0	0	0	0	0	0	0	1.3
		0	1.0	0	0	0	0	0	0	0	0	
		0	3.3	0	0	0	0	0	0	0	0	
Massachusetts	21	0	0	0	0	1	0	0	0	0	0	1
		0	0	0	0	100.0	0	0	0	0	0	1.3
		0	0	0	0	4.0	0	0	0	0	0	
		0	0	0	0	3.3	0	0	0	0	0	
Michigan	22	1	0	2	1	2	0	0	0	0	0	4
		16.7	0	33.3	16.7	33.3	0	0	0	0	0	1.9
		3.2	0	1.0	4.0	25.0	0	0	0	0	0	
		3.3	0	6.6	3.3	6.6	0	0	0	0	0	
Minnesota	23	0	0	3	0	0	0	0	0	0	0	5
		0	0	60.0	0	0	0	0	0	0	0	1.6
		0	0	2.1	0	0	0	0	0	0	0	
		0	0	0.9	0	0	0	0	0	0	0	
COLUMN TOTAL		31	101	144	25	2.5	1.3	1	3	2	1	317
(continued)		9.6	31.9	45.4	7.9	2.5	1.3	1	3	2	1	100.0

EXHIBIT 7.20 (continued)

Q16 (dealer most used)													
COUNT	others	Kelley	Dadant	Root	Hubbard	Miller	Superbee	Stewart	Leahy	Wards	ROM		
ROW PCT											TOTAL		
COL PCT													
TOT PCT													
Q16	0	1	1	2	3	4	5	6	7	8	9		
Mississippi	33.3	33.3	33.3	1	0	0	0	0	0	0	0	3	
	3.2	1.0	7.7	0	0	0	0	0	0	0	0	.9	
	.3	.3	.3	0	0	0	0	0	0	0	0	0	
Montana	35.3	33.3	33.3	1	0	0	0	0	0	0	0	3	
	3.2	1.0	7.7	0	0	0	0	0	0	0	0	.9	
	.3	.3	.3	0	0	0	0	0	0	0	0	0	
Nebraska	0	0	7	2	2	0	0	0	0	0	0	0	
	0	0	77.0	22.2	0	0	0	0	0	0	0	2.8	
	0	0	0.9	0.0	0	0	0	0	0	0	0	0	
	0	0	2.2	.6	0	0	0	0	0	0	0	0	
Nevada	50.0	50.0	0	0	0	0	0	0	0	0	0	2	
	3.2	1.0	0	0	0	0	0	0	0	0	0	.6	
	.3	.3	0	0	0	0	0	0	0	0	0	0	
New Jersey	0	0	0	1	1	0	0	0	0	0	0	1	
	0	0	0	100.0	0	0	0	0	0	0	0	.3	
	0	0	0	4.0	0	0	0	0	0	0	0	0	
	0	0	0	.3	0	0	0	0	0	0	0	0	
New Mexico	0	1	3	0	0	0	0	0	0	0	0	4	
	0	25.0	75.0	0	0	0	0	0	0	0	0	1.3	
	0	1.0	2.1	0	0	0	0	0	0	0	0	0	
	0	.3	.9	0	0	0	0	0	0	0	0	0	
New York	14.3	0	57.1	28.6	2	0	0	0	0	0	0	7	
	3.2	0	2.8	0.6	0	0	0	0	0	0	0	2.2	
	.3	0	1.3	.6	0	0	0	0	0	0	0	0	
North Carolina	0	0	1	0	0	0	0	0	0	0	0	3	
	0	0	100.0	0	0	0	0	0	0	0	0	.9	
	0	0	2.1	0	0	0	0	0	0	0	0	0	
	0	0	.9	0	0	0	0	0	0	0	0	0	
COLUMN TOTAL	31	101	144	25	2.5	.3	.3	.3	.3	.3	.3	317	
TOTAL	9.6	31.6	45.4	7.9	2.5	.3	.3	.3	.3	.3	.3	100.0	

(CONTINUED)

EXHIBIT 7.20 (continued)

Q14 (dealer most used)													ROW TOTAL
COUNT	others	Kelley	Dadant	Root	Hubbard	Miller	Superbee	Stewart	Leahy	Wards			
ROW PCT													
COL PCT													
TOT PCT													
Q14													
Washington	46	0	1	2	3	4	5	6	7	8	9	1	
		0	0	1	0	0	0	0	0	0	0	1	
		0	0	100.0	0	0	0	0	0	0	0	1	
		0	0	0	0	0	0	0	0	0	0	1	
		0	0	0	0	0	0	0	0	0	0	1	
		0	0	0	0	0	0	0	0	0	0	1	
		0	0	0	0	0	0	0	0	0	0	1	
West Virginia	47	0	1	0	0	0	0	0	0	0	0	1	
		0	100.0	0	0	0	0	0	0	0	0	1	
		0	0	0	0	0	0	0	0	0	0	1	
		0	0	0	0	0	0	0	0	0	0	1	
		0	0	0	0	0	0	0	0	0	0	1	
		0	0	0	0	0	0	0	0	0	0	1	
Wisconsin	48	2	0	5	0	0	0	0	0	0	0	7	
		28.6	0	71.4	0	0	0	0	0	0	0	2.2	
		0	0	0	0	0	0	0	0	0	0	1	
		0	0	0	0	0	0	0	0	0	0	1	
		0	0	0	0	0	0	0	0	0	0	1	
		0	0	0	0	0	0	0	0	0	0	1	
Wyoming	49	0	0	2	0	0	0	0	0	0	0	2	
		0	0	100.0	0	0	0	0	0	0	0	0.6	
		0	0	0	0	0	0	0	0	0	0	1	
		0	0	0	0	0	0	0	0	0	0	1	
		0	0	0	0	0	0	0	0	0	0	1	
		0	0	0	0	0	0	0	0	0	0	1	
Missouri	50	0	2	2	0	0	0	0	0	0	0	4	
		0	50.0	50.0	0	0	0	0	0	0	0	1.3	
		0	0	0	0	0	0	0	0	0	0	1	
		0	0	0	0	0	0	0	0	0	0	1	
		0	0	0	0	0	0	0	0	0	0	1	
		0	0	0	0	0	0	0	0	0	0	1	
COLUMN TOTAL		31	191	144	25	0	1	3	2	1	1	317	
TOTAL		9.8	31.9	45.4	7.9	2.5	.3	.9	.6	.3	.1	100.0	

RAW CHI SQUARE = 650.54105 WITH 324 DEGREES OF FREEDOM, SIGNIFICANCE = .0000

RAM CHI SQUARE = 656.54105 WITH 324 DEGREES OF FREEDOM, SIGNIFICANCE = .0000

EXHIBIT 7.20 (continued)

CROSSTABULATION OF QUESTION 16 BY REGION

Region	COUNT ROW PCI COL PCI TOT PCI	Q16 (Dealer used the most)										Wards TOTAL
		Others	Kelley	Dadant	Root	Hubbard	Miller	Superbee	Stewart	Leahy		
		0	1	1	2	3	4	5	6	7	8	
Q14	1	7	7	13	0	0	0	1	1	3	0	9
		21.9	21.9	40.6	0	0	0	3.1	3.1	9.4	0	32
		22.6	6.9	9.0	0	0	0	100.0	100.0	100.0	0	100.1
		2.2	2.2	4.1	0	0	0	.3	.3	.9	0	0
SOUTH	2	5	12	22	3	3	0	0	0	0	0	42
		11.9	20.6	52.4	7.1	7.1	0	0	0	0	0	13.2
		16.1	11.9	15.3	12.0	12.0	0	0	0	0	0	0
		1.6	3.0	6.9	.9	.9	0	0	0	0	0	0
MIDWEST	3	18	80	104	18	18	0	0	0	2	1	231
		7.0	34.6	45.0	7.0	3.5	0	0	0	100.0	100.0	72.9
		58.1	79.2	72.2	72.0	100.0	0	0	0	100.0	100.0	0
		5.7	25.2	32.6	5.7	2.5	0	0	0	.6	.3	0
EAST	4	1	2	5	4	0	0	0	0	0	0	12
		0.3	10.7	41.7	33.3	0	0	0	0	0	0	3.0
		3.2	2.0	3.5	16.0	0	0	0	0	0	0	0
		.3	.6	1.6	1.3	0	0	0	0	0	0	0
COLUMNS		31	101	144	25	0	1	1	3	2	1	317
TOTAL		9.8	31.9	45.4	7.9	2.5	.3	.3	.9	.6	.3	100.0

RAW CHI SQUARE = 76.2482 WITH 27 DEGREES OF FREEDOM, SIGNIFICANCE = .0000

EXHIBIT 7.21
CROSSTABULATION OF QUESTION 15 WITH QUESTION 16

Q16 (dealer most used)													ROW TOTAL	
(number of wives)	COUNT COL PCT TOT PCT	Q15	others	Kelley	Dadant	Root	Hubbard	Miller	Superbee	Stewart	Leahy	Wards		
1-25	1	102	10	49	26	13	2	0	0	1	0	1	9	102
			9.8	48.0	25.5	12.7	2.0	0	0	1.0	0	1.0	1.0	32.4
			32.3	48.5	18.2	52.0	28.6	0	0	33.3	0	100.0		102
			3.2	15.6	6.3	6.1	.6	0	0	.3	0	.3		32.4
26-100	2	68	6	28	27	5	2	0	0	0	0	0	0	68
			8.0	41.2	39.7	7.4	2.9	0	0	0	0	0	0	21.6
			19.4	27.7	18.9	20.0	28.6	0	0	0	0	0	0	68
			1.9	8.0	8.6	1.6	.6	0	0	0	0	0	0	21.6
101-200	3	36	3	8	20	5	0	0	0	1	0	0	0	36
			8.3	22.2	55.6	13.9	0	0	0	0	0	0	0	11.4
			9.7	7.9	18.0	28.0	0	0	0	0	0	0	0	36
			1.0	2.5	6.3	1.6	0	0	0	0	0	0	0	11.4
201-500	4	29	1	9	16	1	2	0	0	0	0	0	0	29
			3.4	31.0	55.2	3.4	6.9	0	0	0	0	0	0	9.2
			3.2	8.9	11.2	4.0	28.6	0	0	0	0	0	0	29
			.3	2.9	5.1	.3	.6	0	0	0	0	0	0	9.2
501-1000	5	22	4	4	11	1	0	0	0	0	2	0	0	22
			18.2	16.2	50.0	4.5	0	0	0	0	9.1	0	0	7.0
			12.9	4.0	7.7	4.0	0	0	0	0	100.0	0	0	22
			1.3	1.3	3.5	.3	0	0	0	0	.6	0	0	7.0
over 1000	6	50	7	3	43	0	1	1	1	2	0	0	0	50
			12.1	5.2	74.1	0	1.7	1.7	1.7	3.4	0	0	0	16.4
			22.4	3.0	30.1	0	18.3	100.0	100.0	66.7	0	0	0	50
			2.2	1.0	13.7	0	.3	.3	.3	.6	0	0	0	16.4
COLUMN TOTAL			31	191	143	25	7	1	1	3	2	.3	1	315
			9.0	32.1	45.4	7.9	2.2	.3	.3	1.0	.6	.3	.3	109.8

RAW CHI SQUARE = 107.57936 WITH 45 DEGREES OF FREEDOM, SIGNIFICANCE = .0000

EXHIBIT 8
ANALYSIS OF VARIANCE OF INTENTIONS TO BUY

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARE	F	SIGNIF OF F
MAIN EFFECTS					
Q1 How long have you been keeping bees	92,764	10	9,276	2,756	.003
Q15 Number of hives	34,975	5	6,995	2,078	.068
	50,294	5	10,059	2,989	.012
2-WAY INTERACTIONS					
Q1 Q15	101,643	16	6,353	1,888	.021
	101,643	16	6,353	1,888	.021
EXPLAINED	194,407	26	7,477	2,222	.001
RESIDUAL	955,831	284	3,366		
TOTAL	1,150,238	310	3,710		

310 CASES WERE PROCESSED.
7 CASES (2.2 PCT) WERE MISSING.

EXHIBIT 9
REGRESSION ON INTENTIONS TO
BUY

CORRELATION COEFFICIENTS.

A VALUE OF 99.99999 IS PRINTED
IF A COEFFICIENT CANNOT BE COMPUTED.

Q1	.91677		
Q3	.14310	.90596	
Q13	.00373	.00056	.06802
Q15	.28542	.29969	.15867
			.10627
Q11	Q1	Q3	Q13

VARIABLE(S) ENTERED ON STEP NUMBER 2.: Q3

MULTIPLE R	.23466	ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F	SIGNIFICANCE
R SQUARE	.05507	REGRESSION	2.	64.96312	32.48156	9.17846	.000
ADJUSTED R SQUARE	.04907	RESIDUAL	315.	1114.75072	3.53869		
STD DEVIATION	1.86119	COEFF OF VARIABILITY	194.8 PCT				

VARIABLES IN THE EQUATION				VARIABLES NOT IN THE EQUATION			
VARIABLE	B	STD ERROR B	F SIGNIFICANCE	VARIABLE	PARTIAL TOLERANCE	F SIGNIFICANCE	
Q15	.19151479	.56399906E-01	11.530456	Q1	-.02190	.98861	.15064662
Q3	.24568704	.11661436	4.2903223	Q13	.05794	.98594	1.0578025
(CONSTANT)	.01110894	.26589941	9.3070369				.305
			.002				

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