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COST OF PRODUCING HONEY IN OREGON

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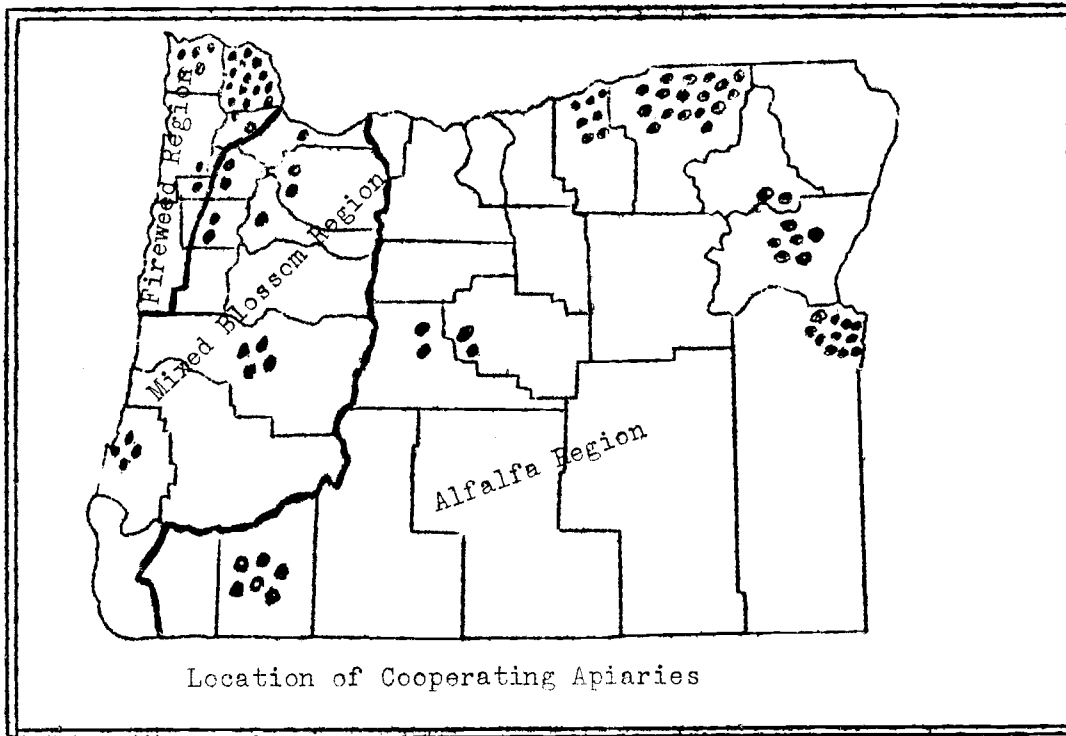


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## THE SITUATION

Over the four years 1928-1931 there was an average of 4,700,000 colonies of bees in the United States with an average annual production of 94,000 tons of honey, according to unofficial estimates published by the Honey Market News Service of the United States Bureau of Agricultural Economics. Although beekeeping is practiced in every state, there are few localities where it may be said to be concentrated. The leading states in honey production are California, Iowa, Wisconsin, Michigan, Illinois, New York, and Texas. No state produces more than approximately 8% of the Nation's total.

The bulk of the honey produced in the United States is also consumed here. There is some in-shipment of honey, chiefly from Hawaii and Porto Rico, and some out-shipment, principally to Germany and the United Kingdom. The average yearly net exports from 1928 to 1931 were 2,106 tons, or 2.2% of the estimated United States crop.

Oregon is not a leading honey-producing state, but does have a substantial honey industry. It is estimated that in the four years under discussion there were 64,375 colonies in the state, which averaged yearly 1,200 tons of honey, valued at \$200,000. This production amounts to 1.3% of the total United States crop. There are 28 states producing more and 19 states producing less honey than Oregon.

At present the bulk of the Oregon-produced honey is consumed within the state. Market outlets are chiefly by private sale from producer to jobber, grocer, or consumer. Until recently most beekeepers were able to find a ready market for their honey at a price satisfactory to all concerned. At present, however, a different situation prevails. Owing to the depressed conditions generally, honey is finding slow sale at prices satisfactory to the producer. Honey is being shipped in from outside points to compete with home-produced honey, and much complaint about price cutting is heard from producers. Furthermore, even among themselves, local beekeepers seem to find it necessary continually to underbid each other in order to move their honey. This condition of keen competition is now spreading throughout the honey markets of the state, where formerly little real competition was manifest.

The keen competition for markets and the resultant low prices bring this question to the mind of many beekeepers--"Are we keeping bees for pleasure and profit or only for pleasure?" Most beekeepers can not afford to operate bee yards for pleasure only, but must maintain their profits or else discontinue business. Apparently the only way in which to do this is to reduce production costs. It is believed that the future of the apiaries operated by many of our Oregon beekeepers is directly dependent on the cost at which these beekeepers can produce honey.

Little information on honey-production costs has heretofore been available. At the request of the Oregon State Beekeepers' Association, the Oregon Agricultural Experiment Station and the Pacific Coast Bee Culture Field Laboratory, located at Davis, California, have commenced a cooperative study of this phase of honey production.

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PURPOSE OF THE STUDY

The objectives of this study are:

1. To determine the cost of producing honey in Oregon.
2. To determine the major and minor factors responsible for variations in the cost of producing honey.
3. To determine and recommend adjustments that will reduce the cost of producing honey.

METHOD AND SCOPE OF THE STUDY

This study, which is to cover two seasons' production, is being conducted by the survey method. The report deals with some of the chief points of interest developed from the first year's work on this project. All material presented in this report is preliminary in character and is subject to revision.

Cooperators for this study were selected almost entirely from apiarists operating 50 or more colonies of bees, for the primary purpose was to supply facts concerning commercial honey production rather than production largely for home consumption and local sale.

A total of 93 apiarists operating 17,803 colonies of bees, cooperated in this study during 1931, which probably represents 45% of all the colonies in Oregon. Each cooperator gave a record of production costs and management practices for his bee enterprise for the year 1931. Of these cooperators 85 were engaged chiefly in extracted-honey production and 8 were primarily comb-honey producers. About 40% of the extracted-honey producers also produced small quantities of comb or chunk honey, while the other 60% extracted their entire honey crop. All but one of the 8 comb-honey producers also produced some extracted honey.

Oregon has three distinct sets of important honey flora; namely, the clover-alfalfa flora of eastern Oregon and the Rogue River Valley of southern Oregon, the fireweed of northwestern Oregon, and the clover-vetch-mixed blossom flora of the Willamette and Umpqua Valleys and areas in southern Oregon lying outside the Rogue River Valley. These regions, as well as the number and distribution of records in each, are indicated on the map shown on the cover page of this report, and hereafter will be referred to as the alfalfa, fireweed, and mixed-blossom regions.

The regional distribution of cooperating beekeepers, the total number of colonies included in their apiaries, and the total quantities of honey produced by these colonies are shown in Table 1.

Table 1. REGIONAL DISTRIBUTION OF HONEY-COST RECORDS, 1931 CROP

Region	Cooperators		Colonies of bees		Total honey produced*		Average no. of colonies per bee-keeper	Yield of extracted honey per colony (pounds)**
	Number	% of total	Number	% of total	Pounds	% of total		
Alfalfa-clover	53	57	13,179	74	838,971	76	249	68
Fireweed	17	18	3,373	19	209,563	19	198	63
Clover-vetch-mixed blossom	23	25	1,251	7	50,873	5	54	44
Total or average	93	100	17,803	100	1,099,407	100	191	65

See footnotes next page.

\* Includes both extracted and comb honey produced by all 93 apiaries.

\*\*Includes only the 85 apiaries producing extracted honey as a major product. These yields were obtained by dividing the equivalent in extracted honey of the total quantity of comb and extracted honey produced, by the total number of colonies in these apiaries. See Table 3.

### THE BEE-ENTERPRISE INVESTMENT

For apiaries producing extracted honey, the capital invested in the bee enterprise averaged \$2,014 per operator and \$10.47 per colony (Table 2). For comb-honey production this investment was only \$8.01 per colony. The difference was due chiefly to the smaller investment for hives and parts, combs, and harvesting equipment for the comb-honey apiaries. As only eight comb-honey apiaries are included in this study, the average for this group is not so conclusive as is the average for the extracted-honey group.

Table 2. CAPITAL INVESTED IN THE BEE ENTERPRISE, 1931\*

Investment item	Apiaries producing extracted honey			Apiaries producing comb honey. Average per colony
	Average per operator	Average per colony	Per cent of total	
Bees	\$531	\$2.76	26.4%	\$2.68
Hives and parts	670	3.48	33.2	2.52
Combs	474	2.47	23.6	.83
Miscellaneous equipment and supplies	112	.58	5.5	.48
Harvest equipment	102	.53	5.1	.16
Buildings	114	.59	5.6	.82
Apiary sites	11	.06	.6	.52
<b>TOTAL INVESTMENT</b>	<b>\$2,014</b>	<b>\$10.47</b>	<b>100.0</b>	<b>\$8.01</b>

\* The values shown in this table, with the exception of bees and apiary sites, represent the present depreciated values of these items.

The major portion of the bee-enterprise investment is devoted to providing the bees and giving them a place to rear brood and store honey. Of the total investment of \$10.47 per colony, 26.4% is for the investment in the bees. Another 33.2% is for the investment in hives and parts, which includes top and bottom boards, all hive bodies, and frames. The combs (exclusive of the frames which contain them) account for 23.6% of the total investment. The sum of these three items makes up 83.2% or slightly over four-fifths of the total bee-enterprise investment.

Trucks and autos used in the bee enterprise have not been included in the capital investment in this study, but have been charged to the bees in the operating expense. If these two items were included in the bee-equipment investment, as they might properly be under some conditions, the average investment would be increased slightly.

The values shown in Table 2, with the exception of bees and apiary sites, represent the present depreciated value of these items, rather than the value of this equipment if purchased now.

The comb investment per colony represents an average of 31 drawn combs and includes those in the brood nest as well as other drawn combs that may be on hand. When first drawn, these combs were valued at 16¢ each for deep super combs and at 13-1/3¢ each for shallow extracting combs. Because of the greater age, the present depreciated value is 7.7¢ for deep super combs as compared to 8¢ for shallow extracting combs. The average age of the deep super combs is 4.3 years and the average age of the shallow super combs is 3.9 years.

Hive bodies are the chief item of the hives-and-parts investment. If two shallow extracting supers are considered as equal to one deep super, there was the equivalent of 3.2 deep supers per colony in addition to one hive body allowed for the brood nest. When purchased new by the beekeepers, the deep supers cost on the average 46 1/2¢ and shallow supers 31¢. The present depreciated value averaged 27 1/2¢ for deep supers and 20¢ for shallow supers, indicating that from 35 to 40% of the useful life of these supers is already past.

#### REGIONAL INVESTMENT

The investment per colony by regions is as follows:

Alfalfa region	\$ 9.55
Mixed-blossom region	11.20
Fireweed region	13.48

The low investment in the alfalfa region is due chiefly to the fact that the average number of colonies handled per operator was greater than in either the mixed-blossom region or the fireweed region. These larger units permitted a lower investment per colony because (1) some items of equipment such as honey houses, extractors, steam boilers, motors, and so forth, cost about the same whether 100 or 200 colonies were handled; and (2) by buying such equipment as top and bottom boards, hive bodies, frames, and so forth, in good-sized lots the beekeepers were able to buy at somewhat lower prices.

The higher investment in the fireweed region as compared with that in the mixed-blossom region appears to be due chiefly to the facts that (1) more equipment is used per colony and (2) the beekeepers place a higher estimate on the value of drawn combs. Because the fireweed flow is frequently short, but heavy, it is probable that more supers and combs are needed than in the mixed-blossom region. Combs are valued more highly in the fireweed region because minor flows prior to the main flow are not heavy enough to cause much comb building, while the main flow is so short that any delay for comb building may cause a heavy loss of surplus honey.

#### THE COST OF PRODUCING EXTRACTED HONEY

The net cost of producing extracted honey averaged \$3.89 per colony and 6.4¢ per pound of honey. (Table 3) The gross cost averaged \$4.71 per colony and 7.8¢ per pound of honey, but in addition to the honey, certain by-products (Table 4) were also produced, and the value of these must be credited before the net cost of the honey can be ascertained. Both the gross and net costs, as presented, are for honey extracted, canned in 60-pound cans, and cased in 2-can cases. Of the total gross production cost, 36.3% is for labor, 11.5% is for materials and supplies, 20.0% is for miscellaneous items, 21.2% is for depreciation, and 11.0% is for interest.

Each apiarist operated an average of 192 colonies and each colony produced at the average rate of 65 pounds of surplus extracted honey in addition to the regular winter stores. In computing this yield, each pound of comb or chunk honey

was counted as the equivalent of 2 pounds of extracted honey, but in computing the cost per pound only honey actually extracted was considered, as the value of the comb and chunk honey produced is included in the by-product credits.

Table 3. COST OF PRODUCING EXTRACTED HONEY, 1931 CROP

Averages for 85 apiarists, operating 16,348 colonies and producing 995,797 pounds of extracted honey. Average number of colonies per operator, 192. Average rate of production per colony, 65 pounds.\*

Cost item	Average cost per colony	Average cost per pound**	Percentage of total cost
<b>Labor:</b>			
Hired and contract	\$ 0.22	0.3¢	4.7%
Operator and family	1.49	2.5	31.6
TOTAL	1.71	2.8	36.3
<b>Materials and supplies:</b>			
60-pound cans and cases	.37	.5	7.9
Bee feed (honey and sugar)	.04	.1	.9
Section boxes and foundation	.04	.1	.8
Power and fuel	.04	.1	.8
Other material and supplies	.05	.1	1.1
TOTAL	.54	.9	11.5
<b>Miscellaneous:</b>			
Use of auto or truck	.52	.9	11.1
Taxes	.09	.2	1.9
Apiary rent	.10	.2	2.1
Bees and queens purchased	.14	.2	3.0
Rent of bees	.07	.1	1.5
Other miscellaneous expense	.02	--	.4
TOTAL	.94	1.6	20.0
<b>Depreciation:</b>			
Hives and parts	.34	.5	7.2
Combs	.53	.8	11.3
Miscellaneous equipment	.04	.1	.8
Harvest equipment and supplies	.05	.1	1.1
Buildings	.04	.1	.8
TOTAL	1.00	1.6	21.2
TOTAL OPERATING COST	4.19	6.9	89.0
<b>Interest (at 5%)</b>			
Bees	.14	.2	3.0
Hives and parts	.17	.3	3.6
Combs	.12	.2	2.5
Miscellaneous equipment, supplies, harvest equipment, buildings, and apiary sites	.09	.2	1.9
TOTAL	.52	.9	11.0
TOTAL GROSS COST	4.71	7.8	100.0
Credit for by-products	.82	1.4	17.4
TOTAL NET COST	\$3.89	6.4¢	82.6%

\* In addition to the extracted honey, small quantities of comb and chunk honey were also produced, making a total production equivalent to 1,065,447 pounds of extracted honey, where each pound of comb or chunk honey is counted as the equivalent of two pounds of extracted honey.

\*\* The average cost per pound was computed by dividing the cost per colony by the quantity of honey that was actually extracted, which averaged 61 pounds per colony. Comb and chunk honey was credited to the gross cost as a by-product.

LABOR

The cost of labor was slightly more than one-third of the total gross cost. An average of 4.8 hours per colony was required for the entire year's work incident to honey production. Practically all of the labor is performed by the operator or members of his family, as but few operate on a scale sufficiently large to require additional hired help. When labor is hired, it is usually for extracting or for shop work such as repairing equipment and putting in foundation. Competent labor to assist with or carry on manipulation of the bees is difficult to procure in most places. The average wage paid hired labor was 27.8¢ per hour, and the labor of the operator and his family was valued at 36.8¢ per hour.

MATERIALS AND SUPPLIES

The chief cost for supplies was for cans and cases. Most of the cans were purchased new, as good second-hand cans suitable for marketing honey were hard to obtain in most sections. Cases were usually purchased from local lumber mills.

Feeding was practiced in one-third of these apiaries. Half of the beekeepers who practiced feeding used honey and the other half used sugar sirup.

Expense for section boxes and foundation occurred only where comb honey was produced as a side line. Although many beekeepers consider brood-comb foundation an operating expense, it is properly a capital investment since it is drawn out into comb and used for several seasons. In this cost summary, expense for brood-comb foundation is included in the charge for comb depreciation.

Electricity for lights and motors, kerosene and gasoline for stoves, lights, and engines, and wood or coal for steam boilers and heating stoves are included in the charge for power and fuel.

Paint, nails, lumber, lye, cellophane, and so forth, constitute the other materials and supplies.

MISCELLANEOUS COSTS

The charge for auto and truck use was 11.1% of the gross cost of honey production, or almost 1 cent per pound of honey. Of the apiarists cooperating, 85% used either trucks or cars and trailers in carrying on their honey enterprise. About half used trucks and half cars and trailers. Extensive beekeeping requires the use of out-yards to keep the bee population and the nectar supply in balance, and whenever out-yards are used transportation of men and equipment is a considerable item. On the average there were 4.3 yards per operator, averaging 44 colonies per yard, but ranging in size from 8 to 270 colonies. By using a smaller number of well-selected locations carrying a fairly large number of colonies, some beekeepers may be able to reduce this item of truck and car cost.

Taxes covered the taxes paid not only on the bee colonies themselves but also on buildings used for the bees and on any apiary sites that are owned.

About one-fourth of the operators purchased package bees, swarms, or colonies to make up losses and provide increase. Queens were purchased by 21% of the beekeepers.

Of the locations used by these operators, 59% were rented. The rent for three-fourths of these locations was paid in honey, the average rent being 85 pounds



of honey per yard. Bees rented or operated on a share basis were usually operated on 50-50 basis.

#### DEPRECIATION

Over a period of years bee equipment wears out and must be replaced. A portion of this wear should be charged to the bees each year. In this study the cost for this item was slightly over one-fifth of the total gross cost. All depreciation was computed according to the beekeeper's estimate as to the average life of each piece of equipment. The largest item of depreciation was for combs (without frames) and the second largest was for hives and parts (top and bottom boards, hive bodies, and frames). The estimated rate of depreciation on combs was 10.8%. According to the pounds of brood-comb foundation actually used, there was a replacement of approximately 11.6% if the brood-comb foundation averaged 8 sheets to the pound, or a replacement of 10.8% if this foundation averaged only 7-1/2 sheets to the pound.

#### OPERATING COST

The sum of all items of cost except interest has been designated as operating cost. Cost can therefore be readily computed with or without the charge for interest.

#### INTEREST

Interest at 5% on the bee-enterprise investment amounts to 11% of the gross production cost. This rate of return represents what the bee-enterprise capital could normally be expected to earn if invested in sound investments.

#### BY-PRODUCT CREDITS

In addition to the honey produced, these apiarists also received other income from the bees to the amount of 82¢ per colony (Table 4). This income has been deducted from the gross cost in order to obtain the net cost of honey.

Table 4. VALUE OF BY-PRODUCTS OF EXTRACTED HONEY, 1931 CROP

Item	Average per colony	Average per pound of honey	Percentage of total
Pollination	\$0.15	.3¢	18.3%
Wax	.17	.3	20.7
Bee appreciation	.15	.3	18.3
Comb and chunk honey	.33	.5	40.3
Queens and package bees	.02	--	2.4
<b>TOTAL</b>	<b>\$ .82</b>	<b>1.4¢</b>	<b>100.0%</b>

About 14% of the apiarists rented out their bees for pollinating purposes on fruit or alsike clover. This practice is most prevalent in the mixed-blossom and fireweed regions.

Wax from cappings and combs that are melted is not usually sold, but is sent to a manufacturer to be made into comb foundation. However, this wax was valued and credited at the price it would bring on the market.

Bee appreciation represents the amount by which the average fall count of 1931 exceeded the fall count of 1930. In other words, the increases made through package bees bought, colonies and swarms bought, swarms saved, and divisions, more than offset the losses from such causes as winter loss, foulbrood, queenless colonies, and so forth, by an average of 15¢ per colony. There was an actual loss through the year of 20.8% of the colonies. Of this loss, 40.5% was from winter loss, 30.3% from colonies lost by American foulbrood, 3% from spray poison, and the remainder from miscellaneous causes such as theft, queenlessness, flood, bears, and skunks. The replacement of this loss and the slight increase above this loss shown as bee appreciation was made 60% by division, 20% by swarms caught, and 20% by bees purchased.

In addition to the extracted honey there was an average of 2.1 pounds of comb and chunk honey produced per colony, which was sold for 33¢.

Only four apiarists sold queens. Except for one operator, these were sold to neighboring beekeepers. One operator only sold package bees.

#### REGIONAL COSTS

The cost of producing extracted honey in the different regions is as follows:

<u>Region</u>	<u>Per Colony</u>	<u>Per Pound (Cents)</u>
Alfalfa	\$3.86	6.2¢
Fireweed	4.31	6.9
Mixed-blossom	3.08	7.8

The average cost per pound is computed by dividing the net cost per colony by the number of pounds of extracted honey actually extracted, which averaged 62 pounds per colony for the alfalfa region, 62 pounds for the fireweed region, and 39 pounds for the mixed-blossom region.

The cost per pound in the alfalfa region is lower than in the other two regions chiefly because of better honey yields (Table 1). Aside from differences in investment, which have already been discussed, there do not appear to be any major differences in costs per colony in the various regions that are not directly associated with the differences in yield.

#### THE COST OF PRODUCING COMB HONEY

The net cost of producing comb honey averaged \$4.70 per colony, or \$2.60 per 24-section case (Table 5). Of the gross cost, 51.6% was for labor, 17.6% for materials and supplies, 15.2% for miscellaneous expense, 9.2% for depreciation, and 6.4% for interest.

Table 5. COST OF PRODUCING COMB HONEY, 1931 CROP

Averages for 8 apiarists operating 1,455 colonies, producing 2,628 cases of comb honey. Average number of colonies per operator, 182. Average rate of production,  $2\frac{1}{4}$  cases per colony.\*

Cost item	Average cost per colony	Average cost per case **	Percentage of total cost
Labor:			
Hired and contract labor	\$ .18	\$ .09	2.9%
Operator and family labor	3.02	1.68	48.7
TOTAL	3.20	1.77	51.6
Materials and supplies:			
Section boxes and foundation	.60	.36	9.7
Section shipping cases	.18	.10	2.9
Other materials and supplies	.31	.14	5.0
TOTAL	1.09	.60	17.6
Miscellaneous:			
Use of auto and truck	.47	.29	7.6
Bees and queens purchased	.36	.19	5.8
Other miscellaneous expense	.11	.05	1.8
TOTAL	.94	.53	15.2
TOTAL DEPRECIATION	.57	.31	9.2
TOTAL OPERATING COST	5.80	3.21	93.6
TOTAL INTEREST	.40	.22	6.4
TOTAL GROSS COST	6.20	3.43	100.0
Credit for by-products	1.50	.83	24.2
TOTAL NET COST	\$4.70	\$2.60	75.8%

\* In addition to the 2628 cases of comb honey, some extracted honey was also produced. When this extracted honey is reduced to its equivalent in comb honey by counting each pound of extracted honey as equivalent to one-half pound of comb honey the total production averages  $2\frac{1}{4}$  cases per colony. Each case contained 24 sections of 12 ounces each.

\*\* The average cost per case was computed by dividing the net cost per colony by the number of cases of comb honey actually produced, which averaged 1.8 cases per colony.

Both the gross and the net costs per colony were higher for comb honey than for extracted honey. Labor and supplies cost more and depreciation and interest less per colony for comb honey than for extracted honey, whereas miscellaneous costs happened to be identical.

Inasmuch as only eight comb-honey apiaries are included in this study, the costs shown for comb honey, although indicative, are not nearly so conclusive as are the costs for extracted honey where a large number of records are included.

#### CASH AND NON-CASH COSTS OF PRODUCING EXTRACTED HONEY

Only a small portion of the cost of producing extracted honey is cash or out-of-pocket cost. Of the gross cost only \$1.54 per colony, or 2.5¢ per pound,

was paid out in cash, the remainder representing such items as operator and family labor for which no cash was paid, honey used for bee feed or paid for rent of yards or bees, depreciation, and interest (Table 6).

Table 6. CASH AND NON-CASH COSTS OF PRODUCING EXTRACTED HONEY, 1931 CROP

Cost item	Cash Cost		Non-cash Cost	
	Per colony	Per pound (cents)	Per colony	Per pound (cents)
Labor:				
Hired and contract	\$ .22	.3¢	--	
Operator and family	--	--	\$1.49	2.5¢
TOTAL	\$ .22	.3¢	\$1.49	2.5¢
Total materials and supplies	.51	.8	.03	.1
Total miscellaneous	.81	1.4	.13	.2
Total depreciation	--	--	1.00	1.6
Total interest	--	--	.52	.9
TOTAL GROSS COST	\$1.54	2.5¢	\$3.17	5.3¢
Credit for by-products	.67	1.1	.15	.3
TOTAL NET COST	\$ .87	1.4¢	\$3.02	5.0¢

It is true, of course, that any such allocation of costs is somewhat arbitrary, for apiarists must earn some wages from their bees in order to meet living expenses; each year they must buy some new equipment, and some may have borrowed money on their bees for which they must pay cash interest. The cash cost shown in Table 6 probably represents the minimum cash outlay that apiarists must make.

In computing the net cash cost, all by-products except bee appreciation were considered as cash credits.

Stated in percentages, only 22.4% of the cost of producing extracted honey is cash outlay and 77.6% is non-cash. Unfortunately many apiarists, if they think of production cost at all, consider only the cash cost. This may explain why some honey producers are always willing to cut prices slightly to get a sale. The mere fact that a few dollars are left over cash expense after the honey crop has been sold does not mean that the sale price exceeds or even equals the total production cost.

#### VARIATION IN COST OF EXTRACTED HONEY

As already indicated, considerable variation was found in the cost of extracted honey in the three producing regions. This variation was much less, however, than the variation in cost in different apiaries located within the same region. In each region apiaries were found with very low costs and others with very high costs. The amount and extent of these variations is indicated in Table 7, where the costs for all extracted-honey apiaries have been grouped according to the net cost of production. The extreme range in cost was from 2.7¢ to 41¢ per pound.

Table 7. VARIATIONS IN THE COST OF PRODUCING EXTRACTED HONEY, 1931 CROP

Cost per pound	Number of records	Average cost per pound	Total number of colonies	Percentage of total colonies	Cumulative percentage of total colonies
Under 4¢	6	3.1¢	1,461	9.0%	9.0%
4 to 5¢	12	4.5	2,732	16.7	25.7
5 to 6¢	9	5.2	1,766	10.8	36.5
6 to 7¢	12	6.6	3,275	20.1	56.6
7 to 8¢	12	7.4	2,145	13.1	69.7
8 to 10¢	15	8.9	1,900	11.6	81.3
10 to 20¢	14	13.2	2,572	15.7	97.0
20¢ and over	5	27.4	497	3.0	100.0
TOTAL OR AVERAGE	85	6.4¢*	16,348	100.0%	--

\* This figure is the weighted or true average net cost of production as shown in Table 3.

#### RELATION BETWEEN COSTS AND PRICES

The prevailing honey price for 1931 was less than the average cost of production. During 1931 the price for carlots of top-grade clover and alfalfa honey f.o.b. shipping point was approximately 5¢ per pound. Wholesale lots of fireweed and mixed-blossom honey were somewhat higher, since most of these sales are made in Portland and the price there, in general, is equal to the price at eastern Oregon points plus freight. Many beekeepers received a higher price than indicated, by canning in small containers and peddling, but this higher price is a reward for marketing effort and in many cases is largely offset by labor and other expense incident to marketing.

Even though the prevailing price and the average cost bear an unfavorable relationship, it is encouraging to note from Table 7 that ~~some~~ beekeepers were still producing at a cost equal to or less than this low price. Approximately 25% of the colonies covered in this study were producing honey at a cost of 5¢ per pound or less. One-fourth of the beekeepers were still operating at a profit in 1931--with the lowest prices known for many years. With normal prices, these producers would make excellent profits. In 1932, however, prices became still lower.

Unfortunately there is a dark side to almost every picture, and honey production is no exception. As shown by Table 7, approximately 18% of the colonies were producing honey at a cost of 10¢ per pound or over. Even in prosperous years carlots of honey sold f.o.b. shipping point do not bring a price as high as this.

#### THE EFFECT OF YIELD PER COLONY ON PRODUCTION COST

Two of the major objectives of this study are to ascertain why such wide cost variations occur and to recommend adjustments that will enable high-cost producers to lower their costs. As yet the study has not progressed far enough either to determine the major causes of these variations or to justify general recommendations as to the best methods of lowering costs. Only one factor, yield, which is an outstanding factor responsible for cost variation in the production of every agricultural product, will be discussed at this time.

Yield per colony has a decided effect on production cost. Such costs as interest, depreciation, taxes, apiary rent, and so forth are largely constant regardless of the honey crop harvested. As the crop per colony increases, there are more pounds with which to absorb these costs, and hence they become less and less per pound.

Table 8. THE EFFECT OF YIELD ON THE COST OF PRODUCTION OF EXTRACTED HONEY, 1931 CROP

Yield per colony	Number of records	Average yield per colony (pounds)	Cost per colony	Cost per pound (cents)
Below 30 pounds	16	22	\$2.68	13.3¢
30 to 60 pounds	28	45	3.57	8.7
60 to 90 pounds	25	72	4.06	6.1
90 pounds and over	16	115	4.99	4.5
TOTAL OR AVERAGE*	85	65	\$3.89	6.4¢

\* These averages represent the weighted or true average yield and costs, as shown in Table 3.

The effect of yield on the 1931 Oregon honey costs is shown by Table 8. Of the total apiarists cooperating, 16 had yields of less than half a can, averaging 22 pounds per colony. This group had an average cost of 13.3¢ for each pound of honey produced. Another group of 16 cooperators had yields of one and one-half cans or more per colony. The average production for this high-yield crop was 115 pounds of honey per colony, and their average production cost was but 4.5¢ per pound. Is it any wonder that beekeepers are jubilant when they harvest a good yield?

Good yields, while associated with low costs, are not a guarantee of low costs. Sometimes so much is spent in obtaining a good yield that the benefits of this yield are largely or entirely offset. This may happen if bees are moved from one honey flow to another at considerable expense, and the honey obtained does not pay for the labor and other expense of moving. Again, a beekeeper may increase his yield per colony by dividing his colonies into several small yards scattered over a large area, but unless the increase is enough to offset the extra labor and travel cost, this method of increasing yield will also fail to pay.

#### INDIVIDUAL COST REPORT

At the end of this report is a table designed to supply each cooperating apiarist with a confidential statement of his individual costs. This table is filled out in ink only on the copy of this report returned to the beekeeper cooperating.

It is recognized, of course, that all high-cost producers can not become low-cost producers merely by making a few changes in their management practices, nor will the same adjustment yield the same results for every beekeeper. However, it is believed that a careful study of their individual costs should indicate to many high-cost producers some needed adjustments in their apiaries that will enable them to lower their production costs.

OREGON EXPERIMENT STATION AND  
U. S. DEPARTMENT OF AGRICULTURE COOPERATING

Honey Production Cost Study.

CONFIDENTIAL INDIVIDUAL COST REPORT FOR 1931 HONEY CROP

Apiary of \_\_\_\_\_

Address \_\_\_\_\_

Cost item	Cost per colony for various yields				Your farm
	Below 30 pounds	30 to 60 pounds	60 to 90 pounds	90 pounds and over	
<b>Labor:</b>					
Preharvest man labor	\$1.14	\$.93	\$1.30	\$1.39	
Harvest man labor	.29	.41	.51	.90	
TOTAL	1.43	1.34	1.81	2.29	
<b>Materials and supplies:</b>					
60-pound cans and cases	.13	.24	.40	.68	
Other materials and supplies	.18	.18	.17	.18	
TOTAL	.31	.42	.57	.86	
<b>Miscellaneous:</b>					
Use of auto and truck	.22	.44	.63	.68	
Taxes	.08	.09	.10	.07	
Apiary rent	.08	.05	.12	.12	
Bees and queens purchased	.18	.17	.07	.20	
Other miscellaneous expense	.18	.18	.32	.20	
TOTAL	.74	.93	1.24	1.27	
Total depreciation	.81	1.10	.95	1.09	
Total interest	.46	.58	.48	.55	
TOTAL GROSS COST	3.75	4.37	5.05	6.06	
Credit for by-products	1.07	.81	.99	1.07	
TOTAL NET COST	2.68	3.56	4.06	4.99	
Average yield per colony	22 lbs.	45 lbs.	72 lbs.	112 lbs.	
TOTAL NET COST PER LB.	13.3¢	8.7¢	6.1¢	4.5¢	
CASH COST PER LB.	1.5¢	1.5¢	1.2¢	1.4¢	

Compare your costs, item by item, with the costs for the group of apiaries with similar yields, as indicated by the red mark under the average yield for this group.