



Field Guide to Beekeeping

Honey
Hive



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The Basic Startup Costs Associated With Keeping Bees



Beekeeping is not a free endeavor. Very few people inherit bees and all of the equipment needed to keep them. There are costs associated with becoming a beekeeper, and these costs can be unpredictable to, and perhaps unanticipated by, the new beekeeper. I sympathize with new beekeepers. They often jump right into an endeavor that is hard to understand and, worse still, hard to know where to start.

A good first step when getting into beekeeping is to contact an equipment manufacturer/provider to request a copy of their equipment catalog. Most equipment supply companies have online catalogs that can be browsed easily. Though these catalogs provide a useful way to learn the terms associated with beekeeping (they are, after all, a visual dictionary of all of the parts of our craft), they can be impossible for the new beekeeper to navigate. They are full of equipment, supplies, and choices. They are a veritable smorgasbord of confusion for the person who knows little about the craft they are beginning to embrace.

So, how does one know what equipment is needed to become a beekeeper and what are the startup costs associated with becoming a beekeeper? I get this two-part question a lot. Thus, I decided to write an article that can be used by new and seasoned beekeepers alike to understand what the basic costs are associated with getting started in beekeeping. I hope this article will provide the new beekeeper a blueprint for deciding how to move forward. I also hope that seasoned beekeepers can use this article when training/mentoring new beekeepers.

How many colonies should the beginner purchase?

It is important to know that I wrote this article with the true beginner in mind. The article does not reflect startup costs from bees, to honey house, to a full-size pollination business. Instead, I focus on the new beekeeper who wants to acquire one to three colonies. For the record, I tell all new beekeepers to begin with three colonies, this up from the two colonies I recommended for years.

Why start with more than one colony? First, starting with a single colony is a gamble because you never really know if the colony is doing well or if it is failing. This occurs because you have no other colonies to which you can compare the one. Is the colony succeeding or floundering? Is it producing a normal amount of honey for the area or under producing? Should it be bringing in pollen, raising brood, or shrinking in population? These questions are easier to answer if you have multiple colonies that you can compare to one another.

A second reason to start with multiple colonies concerns having the biological material needed to remedy a weak colony. What do I mean by this? Well, a known reality of beekeeping is that colonies falter, stumble, and otherwise succumb to stressors throughout the year. Knowing that this is happening is one thing, but being able to remedy the situation is another. Imagine that your one colony becomes hopelessly queenless and failed to make viable queen cells (something that happens enough that it cannot be considered an anomaly). What are

you going to do? Order a queen? Sure. That might work during spring or early summer, but what about if it happens in fall? Having a second, or third, colony allows you to give the queenless colony frames of eggs taken from otherwise healthy colonies. Beekeepers find themselves needing to exchange frames of bees, brood, pollen, and honey between colonies for a number of reasons. This cannot be done if you only have one colony.

Third: colonies die. This can be extremely upsetting to the new beekeeper, so-much-so that they become too discouraged to begin anew. Starting with two-to-three colonies makes a new beekeeper more likely to remain a beekeeper since they must continue to keep their remaining colonies alive. New beekeepers already are making a significant investment in the craft so they might as well set themselves up for success.

Finally, starting with more than one colony allows the new beekeeper to grow his or her operation, if so desired, because of this simple truth: bees make bees. Having a few colonies allows you to make a few more the next year, and a few more the next year still.

I understand that starting with three or more colonies can be cost prohibitive for many new beekeepers. However, I would not recommend starting with only one unless there simply are no other options.

Table of the startup costs associated with beekeeping

Having been asked the question “what is this going to cost me” over and over, I decided to develop a table that outlines the

Table 1. The approximate costs associated with becoming a beekeeper (prices as of March 2015). The table represents the costs of starting with one hive, but also includes calculations for starting with two or three hives. The table is explained in its entirety in the manuscript text.

Item	(A) Lowest Unit Cost	(B) Highest Unit Cost	(C) # Units Needed to Manage One Colony	Lowest Total (Column A × Column C)	Highest Total (Column B × Column C)
Personal Protective Equipment					
Bee Veil	\$11.00	\$28.95	1	\$11.00	\$28.95
Helmet for Veil	\$9.50	\$17.95	1	\$9.50	\$17.95
Bee Gloves	\$9.60	\$22.95	1 pair	\$9.60	\$22.95
Bee Suit	\$39.80	\$58.95	1	\$39.80	\$58.95
			Group Subtotal	\$69.90	\$128.80
Tools					
Smoker	\$22.95	\$44.00	1	\$22.95	\$44.00
Hive Tool	\$4.33	\$16.25	1	\$4.33	\$16.25
			Group Subtotal	\$27.28	\$60.25
Complete Hive					
Bottom Board	\$14.95	\$22.95	1	\$14.95	\$22.95
Deep Hive Body	\$14.95	\$18.85	1	\$14.95	\$18.85
Deep Frames	\$11.55	\$16.00	1 case of 10/case	\$11.55	\$16.00
Sheets of Deep, Plastic, Beeswax-Coated Foundation	\$11.60	\$14.00	1 case of 10/case	\$11.60	\$14.00
Queen Excluder	\$3.35	\$15.75	1	\$3.35	\$15.75
Medium Super	\$8.35	\$17.45	2	\$16.70	\$34.90
Medium Frames	\$11.55	\$16.00	2 cases of 10/case	\$23.10	\$32.00
Sheets of Medium, Plastic, Beeswax-Coated Foundation	\$11.50	\$12.50	2 cases of 10/case	\$23.00	\$25.00
Inner Cover	\$9.95	\$11.95	1	\$9.95	\$11.95
Telescoping Outer Cover	\$18.95	\$34.95	1	\$18.95	\$34.95
			Group Subtotal	\$148.10	\$226.35
Miscellaneous Equipment					
Hive Stand	\$2.44	\$79.95	1	\$2.44	\$79.95
Feeder	\$4.15	\$26.95	1	\$4.15	\$26.95
3 lb Package of Bees with Queen	\$81.00	\$110.00	1	\$81.00	\$110.00
Paint/glue/screws/nails for woodenware assembly	\$50.00	\$75.00	1	\$50.00	\$75.00
			Group Subtotal	\$137.59	\$291.90
Approximate total cost for starting with one colony.				\$382.87	\$707.30
*Approximate total cost for starting with two colonies.				\$618.56	\$1,150.55
*Approximate total cost for starting with three colonies.				\$854.25	\$1,593.80

The costs of the items highlighted in gray represent the costs associated with starting one complete hive. The grayed costs must be doubled or tripled to represent the costs of starting with two or three colonies respectively.

*Based on my calculations, it costs \$235.69 (lowest cost) to \$443.25 (highest cost) more than the base price of purchasing and managing one hive of bees for every new hive of bees added.

For example;

the approximate total cost for starting with four colonies = the base price range for starting with one colony (\$382.87 – lowest base price) + (3 × \$235.69 – the lowest cost to add one colony) -to- (\$707.30 – highest base price) + (3 × \$443.25 – the highest cost to add one colony)

Or: \$1,089.94 - \$2,037.05.

startup costs associated with keeping bees. In Table 1, I list only the costs associated with acquiring essential personal protective equipment, some basic tools, the “complete” hive, and some miscellaneous components, including bees. I do not include any costs associated with extracting and processing honey, running a pollination business, or becoming a nuc, queen, or package bee producer. I consider these costs to be outside the ordinary realm of costs necessary to become a beekeeper. Sure, the average beginning beekeeper will need access to honey extraction and processing equipment. However, this specialty equipment often can be accessed via one’s beekeeping mentor, through one’s local beekeeping club, or even through a beekeeper who lives nearby but to whom you otherwise have no tie. This type of equipment is not needed on the front end.

I am sure that there are items I inadvertently left out of the table. Hopefully these overlooked items will not otherwise prove necessary. It is important that new beekeepers shop around when considering what equipment to purchase. This ensures that they will get the most out of their investment. It also behooves the beginning beekeeper to work with their beekeeping mentor to identify reputable equipment manufacturers who sell quality items and stand by their workmanship.

Below, I provide a key for understanding Table 1. I discuss, in detail, each column and row, what they mean, and why they are important components of the overall startup costs. It is best not to try to interpret Table 1 before reading the information below; otherwise, one may make erroneous assumptions about the information provided in the table.

Column headings

Item – I list 4 categories of items that are needed on the “front end” of one’s beekeeping endeavor. They include (1) personal protective equipment, (2) tools, (3) complete hive, and (4) miscellaneous equipment and supplies.

(A) Lowest Unit Cost – I browsed the online catalogs for Dadant and Sons, Inc. (<http://www.dadant.com/catalog/index.php>), Mann Lake Ltd. (<http://www.mann-lakeltd.com/>), and Brushy Mountain Bee Farm (<http://www.brushymountainbeefarm.com/>) to price the items listed by row. Each company offers a range of similar items, priced by general quality. For example, most of the companies sell deep hive bodies that are select, commercial, or budget quality. Thus, the “lowest unit cost” reflects the lowest price I could find among the three companies for the item. In many instances, the cheapest unit was the budget grade material. Sometimes, the same item (like a plastic helmet) was priced differently by the three companies. Regardless, I recorded the lowest price for which I could find a given item in this column.

(B) Highest Unit Cost – Similar to “Lowest Unit Cost,” the highest unit cost reflects the highest price I saw charged for a particular item. In many cases, the highest



Figure 1 – Two styles of bee veils: (A) a square veil with a plastic helmet and (B) a hat/veil combo.

cost is assigned to select or higher quality equipment. In general, the items were priced similarly across the three equipment supply companies.

(C) # Units Needed to Manage One Colony – The table reflects the amount of equipment/supplies needed to purchase, assemble, and begin *one* hive of honey bees. Some groups of equipment/supplies will cost the same whether starting with one or 100 colonies. For example, you do not need twice as much personal protective equipment to manage two colonies than you do to manage one. However, starting with three colonies will triple the price of the “complete hive” and “miscellaneous equipment” otherwise shown in the table for one hive. Thus, the “# Units Needed” reflects how much of a given item it will take to create and manage one hive of bees.

Lowest Total – This was calculated by multiplying column A by column C. It reflects the lowest total cost for purchasing all of a given item needed to begin one colony of bees.

Highest Total - This was calculated by multiplying column B by column C. It reflects the highest total cost for purchasing all of a given item needed to begin one colony of bees.

Recording the lowest and highest costs for a given items provides the new beekeeper a reasonable range of prices that he or she can expect to see assigned to a needed item.

Row headings

Personal protective equipment

Bee Veil – For bee veils (Figure 1), I priced tie or zipper veils that must be used in conjunction with a helmet. This has been the industry standard for years. That said, it is increasingly common to purchase a hat/veil combo (Figure 1B), thus negating the need to purchase both separately, and saving you a little money in the process. I found hat/veil combos between \$18 – 40, making

them a little cheaper than purchasing both separately. However, I did not include that information in Table 1.

Helmet for Veil – The bee veils priced for inclusion in the table all require a helmet to be used effectively. Some helmets are sturdier than others and that usually is reflected in the price.

Bee Gloves – Bee gloves (Figure 2) come in a range of sizes, styles and quality. Regardless, even the most expensive pair is an economical addition to the personal protective equipment used.

Bee Suit – Bee suits (Figure 3) also come in a diverse range of sizes, styles, and quality. The cost of a suit is pretty reasonable. It is worth noting that the best quality suits usually come as suit/hat/veil combos and I did not include prices for those costs in the table. I note that the costs for suit/hat/veil combos ranges between \$69.95 and



Figure 2 – Bee gloves come in all sizes, from children to adult. They also are made to various qualities.



Figure 3 – Bee suit. This bee suit has a pre-attached veil. Photo – University of Florida

\$189.95. The cheaper options would replace your need to purchase helmet, veil, and suit separately. Furthermore, it would lower your overall budget for personal protective equipment. However, the most expensive combos cost more than the best suits, helmets, and veils purchased separately. Yet, they also tend to be a lot better quality than the items that are offered separately.

For more information on personal protective equipment, see:

Ellis, J. 2014. Field guide to beekeeping: personal protective equipment for the body. *American Bee Journal*, 154(4): 375-378.

Tools

Smoker – Smokers (Figure 4) come in a few sizes. I recommend purchasing the largest smoker you can afford. Many smokers



Figure 5 – Hive tools come in all shapes, sizes, colors, and prices.

come with protective grills that limit your ability to touch the body of the smoker when it is lit. I recommend paying extra for the grill. Quite frankly, a maximum cost of \$44 for a smoker is not much to pay when your safety and ability to calm the bees is important.

Hive Tool – The simplest, cheapest hive tools (Figure 5) are as effective as the most expensive ones. They are cheap enough to purchase two. People inevitably lose hive tools. You cannot have too many.

For more information on hive tools and smokers, see:

Ellis, J. 2014. Field guide to beekeeping: the hive tool and smoker. *American Bee Journal*, 154(5): 497 - 501.

Complete Hive

I would like to share a couple of notes about the complete hive before discussing each item separately. First, I am pricing what I consider a standard hive configuration for a Langstroth hive (Figure 6). From the bottom up, this means (1) a bottom board, (2) a deep hive body with 10 deep frames and accompanying foundation, (3) a queen excluder, (4) two medium supers and accompanying frames and foundation, (5) an inner cover, and (6) a telescoping cover. Some people use only two deep boxes as a standard hive while others use alternative configurations. It was impossible for me to account in the table for all possible hive configurations used by beekeepers. Consequently, I list a standard configuration knowing that interested individuals can change each item to match their beekeeping needs. Furthermore, the costs in Table 1 are for unassembled woodenware, whenever possible. Some items, such as bottom boards and inner covers, often are sold assembled. Some beekeepers determine that they can save money if they purchase assembled equipment that is painted already, when available. I share this to note that it usually is cheaper to purchase unassembled, unpainted equipment; but, it does cost one time to assemble the equipment on their own.

For more information on parts of the Langstroth hive and deciding which hive configuration is right for you, see:

Ellis, J. 2014. Field guide to beekeeping: the Langstroth hive. *American Bee Journal*, 154(3): 257- 260.

Ellis, J. 2014. Field guide to beekeeping: hive choice and configuration. *American Bee Journal*, 154(10): 1071 - 1076.

Bottom Board – There are two main styles of bottom boards one can use: screened bottom boards or solid bottom boards. The screened bottoms boards usually come assembled but are a little pricier. To me, they are worth the extra cost given the documented benefits of using them.

Deep Hive Body – For purposes of simplicity, I assumed a common hive configuration where one deep hive body is used as the brood chamber. Deep hive bodies typically come in multiple grade qualities, from budget (the cheapest) to select (the most expensive).



Figure 4 – Every beekeeper needs a smoker. This particular smoker has a grill that surrounds the smoker's body. The grill helps protect the beekeeper from burns.

Deep Frames – I assumed the beekeeper would use 10 deep frames per hive body. Many beekeepers find it more economical to purchase frames already assembled. The prices for frames listed in the table are for unassembled frames.



Figure 6 – The “complete” hive described in Table 1. There are many hive styles and configurations. In this article, I describe a hive composed of a bottom board (screened in the case of the hive in the photograph), deep brood box, queen excluder, two medium supers, an inner cover, and a telescoping outer cover. Look closely and you will notice the queen excluder is above the lowermost medium super. I moved it up to allow the bees and queen to cluster in the honey super during the winter months. Normally, I place the excluder between the deep brood box and lowermost medium super.



Figure 7 – Hive stands. (A) A hive stand composed of 4 cement blocks – two stacks of two blocks/stack – on which two, six foot, treated 4 × 4's rest. This is a budget hive stand. (B) The Ultimate Hive Stand represents a newer style of stand, one that was designed specifically as a hive stand and which comes with various features.

Sheets of Deep, Plastic, Beeswax-Coated Foundation – Foundation must be installed in the frames. There is a wide range of foundation types. The prices in the table represent the low and high costs associated with purchasing plastic foundation having a thin beeswax coating. Using any other foundation type could alter the overall costs of acquiring foundation.

Queen Excluder – Not all beekeepers use queen excluders but many do. There are three main types of queen excluders: metal, plastic, and wooden-bound excluders. The plastic variety tends to be the cheapest while the wooden-bound excluders usually are the most expensive. Those beekeepers not using excluders can omit this cost from their budget.

Medium Super – Colonies need enough space to store honey to consume. Typically, the average colony inhabiting a single deep hive body will need about one medium super's worth of honey to survive winter. I think beekeepers need to invest in a second medium super when they are making their initial colony purchase. Extra medium supers are useful to have in the event the first year colony grows strong enough to make surplus honey for the beekeeper. As for deep hive bodies, the price of the medium super varies by the grade of super purchased. It likely will be necessary to purchase additional medium supers for each colony for year two and beyond. However, usually only two mediums supers are needed per colony for the first year.

Medium Frames – Given my recommendation to begin with two medium supers, you will need 20 medium super frames to fill the supers, assuming 10 frames per super.

Sheets of Medium, Plastic, Beeswax-Coated Foundation – Foundation must be installed in the frames. There is a wide range of foundation types. The prices in the table represent the low and high costs associated with purchasing plastic foundation having a

thin beeswax coating. Using any other foundation type could alter the overall costs of acquiring foundation.

Inner Cover – The standard inner cover is cheap and often, though not always, comes assembled. They are needed if one is going to use a telescoping hive cover. They are not needed if one elects to go the cheaper route and use a migratory cover.

Telescoping Outer Cover – This cover, to me, is the most aesthetically pleasing type of cover, but it likely is not the most practical, especially for beekeepers who have lots of colonies that are moved frequently. The cost tends to be high compared to the migratory cover (cost of migratory cover not shown in table). All telescoping covers must be used in conjunction with inner covers, adding to the cost of owning/using telescoping covers. Regardless, many beginner beekeepers choose this cover option.

Miscellaneous Equipment

Hive Stand – All hives must rest on something. Hives should not sit directly on the ground. Interestingly enough, most equipment providers only sell one or two types of hive stands. Quite frankly, you can sit your hives on as little as two standard cement blocks that you can purchase from your local hardware store. In fact, the low stand price of \$2.44 in the table represents two cement blocks priced at Lowe's (\$1.22/block). The high stand price represents one of a couple of types of expertly designed hive stands available on the market. You can sit your colonies on just about anything in between.

Feeder – I did not want to list hive equipment/supplies that I considered to be unnecessary to the average beginner beekeeper. Consequently, it is important, in my opinion, that beekeepers purchase feeders to accompany every colony they have. Most hives have to be fed at some point, and this is especially true of hives started as packages.

3 lb Package of Bees with Queen – There are multiple ways to acquire bees and queens and I only focus on the costs associated with purchasing a package of bees as noted in Table 1. To generate the cost range for packages presented in the table, I conducted internet searches of 5+ companies across the U.S. that sell package bees and I report the range of 2015 prices that I found. The 3 lb package with a queen is the most common package size and type, though one can purchase 2 and 4 lb packages as well as queenless packages. Beginning beekeepers can acquire bees and queens in other ways and this would affect the overall costs associated with starting in beekeeping. For more information on acquiring bees and queens, see:



Figure 8 – Hive feeder. Nearly all hives need to be fed at some point. It is best to have a feeder ready the moment you start keeping bees. Both hives in this picture have an entrance feeder installed.

Ellis, J. 2015. Field guide to beekeeping: acquiring bees and queens. *American Bee Journal*, 155(1): 29-33.

Paint/glue/screws/nails for woodenware assembly – This is the only cost that I did not price directly but rather estimated the low and high costs for the collective group. Paint, glue, screws, and/or nails are needed to assemble frames, hive bodies, supers, inner covers, and outer covers. Generally speaking, it should not cost more than about \$50 – 75 to pay for these items and this should not vary too much whether you purchase one or three colonies.

For information on assembling woodenware and frames, see:

Ellis, J. 2014. Field guide to beekeeping: assembling wooden supers. *American Bee Journal*, 154(11): 1197 - 1202.

Ellis, J. 2014. Field guide to beekeeping: assembling wooden frames. *American Bee Journal*, 154(12): 1295 - 1300.

Throughout Table 1, I highlight group subtotals in yellow. These calculations reflect the cost of the items grouped by either personal protective equipment, tools, complete hive, or miscellaneous equipment. For example, it will cost a new beekeeper between \$69.90 and \$128.80 to purchase a new veil, helmet, bee suit, and gloves. To think of it another way, it will cost a beekeeper that much money to acquire all of the needed personal protective equipment. It will cost between \$148.10 and \$226.35 to purchase all of the components of a single, complete hive.

I provide three “starter” ranges at the bottom of table one. These starter ranges were calculated for starting with one to three colonies. I feel that it is best to start with at least two colonies. I recommend starting with three colonies if you can afford it. Consequently, I present the range of costs associated with starting with one, two, or three colonies. I note below how each of the prices was calculated.

1) Approximate total cost for starting with one colony – I simply summed the yellow-highlighted group subtotals for each group of items since the costs in Table 1 are based on starting with one colony.

2) Approximate total cost for starting with two colonies – I summed the yellow-highlighted group subtotals for personal protective equipment and tools and added that to the total for paint/glue/screws/nails for woodenware assembly. This total is “sum A”. I doubled the price associated with all of the items highlighted in gray (since, as reflected in Table 1, those are costs for only one colony) and added this to “sum A” to get the costs associated with starting with two colonies.

3) Approximate total cost for starting with three colonies – I summed the yellow-highlighted group subtotals for personal protective equipment and tools and added that to the total for paint/glue/screws/nails for woodenware assembly. This total is “sum A”. I tripled the price associated with all of the items highlighted in gray (since, as reflected in Table 1, those are costs for

only one colony) and added this to “sum A” to get the costs associated with starting with three colonies.

Important additional information about the calculations presented in Table 1:

- Many beekeeping equipment supply companies sell complete beginner kits that contain many of the items noted in Table 1. These kits usually are cheaper than purchasing the items separately as reflected in Table 1. However, the kits may come with unneeded items, meaning that you end up paying for superfluous equipment/supplies.

- The calculations in Table 1 do not include sales tax, shipping and handling fees, and setup time.

- I only researched costs of the items as assigned by three equipment supply companies noted earlier. The range of costs for each item may be greater if considerably more companies were surveyed.

- The table does not include any information related to colony treatments, honey extraction/processing equipment, etc. It is only meant to include costs associated with starting one to three hives. There are countless miscellaneous/sundry costs that may or may not be applicable to most beekeepers. In recognition of this, I purposefully ignored these costs as they tend to be more applicable to beekeepers who have been in the business 2+ years. Many costs, such as extraction equipment, can be shared by groups of beekeepers, thus minimizing the financial burden to the new beekeeper.

- I also do not include estimated costs for feeding bees as this can vary drastically by location.

- All costs in the Table 1 are for new equipment/supplies/bees. Many beginning beekeepers purchase used equipment, supplies, etc. as this often is a more economical option. For that reason, the total cost to become a beekeeper when purchasing new equipment/supplies, as shown in Table 1, likely is a little higher than that when starting with used equipment or when purchasing mature colonies from beekeepers.

I hope that the information provided in Table 1 will help aspiring beekeepers understand the costs and equipment needed to become a beekeeper. I also hope it will help you, the reader, when asked the question “how much does it cost to get started in beekeeping”.

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