Getting Started In Beekeeping

Introduction

About this guide

Beekeeping is a rich and rewarding experience and a worthwhile endeavor if you are looking to start as a hobbyist or even have aspirations of becoming a commercial beekeeper. This guide is designed to provide practical and insightful advice on the steps for getting started and having a successful first year which we hope will lead you to a lifetime pursuit in keeping bees.

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General Direction

Beekeeping has been practiced for centuries and it is probable that wherever you live there are bees being hosted in an apiary somewhere in your vicinity. As a rule the keeping of bees is not highly regulated or restricted at the municipal level but given that bees are stinging insects there are some municipalities that do impart restrictions or outright bans on keeping bees.

Before hosting bees be sure to know and follow applicable local and state laws. Also be sure to obtain any necessary permits if they are required.

If you are unfamiliar with your state or municipal laws we suggest you contact a local or state beekeeping association for guidance before you seek guidance with your municipality. They are often well versed in restrictions for the districts they serve and can provide assistance and information about keeping bees where you live. Speaking with fellow beekeepers first may prevent causing unwanted attention at the municipal level when officials are suddenly face with answering an inquiry about making a decision to allow hosting of stinging insects.

While beekeeping is safe when practiced correctly, misconceptions and conservative opinions could lead to negative consequences at the municipal level for allowing the keeping of bees and also possibly result in unwanted impacts to beekeeping operations already established.

We encourage you to do the right amount of diligence when it comes to ensuring you are going to comply with applicable laws, regulations and local ordinances.

In addition to compliance to applicable regulations beekeepers should be aware that state agencies often require registration of hives with the proper authorities and beekeepers should expect that agents of the state can and will inspect hives on private property. Inspectors will also likely require beehives with designs that allow the frames that the bees live on to be movable so they can be taken out for inspection. This is opposed to the notion that bees could be kept in hives such as a tree trunk that cannot be taken apart and inspected for disease and problems. Again we recommend that you contact your local beekeepers association for hive registration information.

New Jersey Guidance

The state of New jersey has a three statutes concerning the keeping of bees at the time of this writing. In addition to the statutes there is a mandatory requirement to register your bees with the New Jersey Department of Agriculture and we strongly advise you to adhere to the published guide provided by the state entitled Guidelines for Keeping Bees in Populated Areas. Resources for this information and more are available at the State of New Jersey Department of Agriculture website Bee Inspection program at the following web address: http://www.state.nj.us/agriculture/divisions/pi/prog/beeinspection.html

The Best Time to Get Started in Beekeeping

Late Winter is the Ideal Time to Get Started

New beekeepers will need bees to get started and the January/February months are the appropriate time to place an order for spring delivery. The availability of bees for springtime and more specifically properly mated quality queens is dictated by the arrival of suitable weather for the companies that supply the bees. The highest proliferation of major bee suppliers are in the warmer climate states of Georgia, California and Hawaii as they get an earlier start then many parts of the country. High demands on bee suppliers occur during the approach of spring because of the demand for bees in areas where winter is subsiding and beekeeping is starting up again. Even though warmer weather arrives earlier for the predominant areas where bees are sourced, the suppliers scramble each year to meet the demand. This is especially true given the recent popularity in beekeeping which has resulted in more people keeping bees.

Another reason to get your start in later winter is that it allows time for ordering and constructing equipment, preparing a site for bees to be hosted, and any other preparatory steps needed to get setup. Completing the preparation steps out of the way prior to the beekeeping season and subsequently getting bees setup at the onset of spring ensures that they have access to the best food and resources available to them through nature. A springtime start also gives a colony sufficient time to grow and mature which in turn will get them to a state where they can build enough bees and stores to successfully overwinter.

Time Investment & Expected Expenses

Initial Time Investment and Ongoing Expectations

How Much Time Will It Take?

The time investment for a new beekeeper will include a moderate amount of time in the beginning setting up your bee yard, obtaining and preparing your equipment, and getting things up and running. Once things settle in it will mean a period of once or twice a week oversight with more time investments required for harvesting honey, treatments or any other activities that require more than the typical health and wellbeing inspections.

To judge the moderate activity mentioned beehives shipped in the mail come unassembled and two hives can take a beginner about two weekends worth of time for assembly. The boxes and equipment can be assembled in a matter of hours if you are handy but you will want to take your time to become familiar with the parts and pieces and allow for the painting tasks that are part of the effort.

Preparing a site will differ for each situation. Later in the guide there will be information about where to set a bee yard for optimal exposure and that will dictate if you need to clear an area or just set the bees out on a spot that is ready to go.

Some equate keeping bees to housing simple livestock like chickens or taking care of a garden. This is a reasonable comparison as bees do require periodic checks and at certain times appropriate maintenance like any other live animal and therefore a moderate amount of interaction.

Noted Honey Bee magazine editor Kim Flottum has been quoted as saying the time required for keeping two hives in your backyard is to figure that " it will take more time than you need to properly care for your cat, but less time than needed to take good care of your dog."

The reasoning here is that if a cat has access to a food bowl and a litter box than it is likely that they can get by for a few days. Dogs on the other hand need to be fed each day and you'll have to take them outside. Once in a hive, bees need looking into every few days or once a week but you won't have to check on them every single day.

The initial build out of our hives may or may not require you to pick up your bees, it will depend up on the approach you employ. Installing package bees for two hives will usually take about an hour and one can expect to provide oversight on the first few weeks to ensure the colony is growing and to step in and provide more space in time when the hive boxes start to fill out and more space is required. The bees will require water and you'll have to feed them when they are starting out or at least until there is a nectar flow. After the nectar flow you'll also need to feed a new colony to assure they have what they need to grow to full strength.

Once established beekeepers can live by the guide that the beekeeping season starts in early spring and continues until just after the first frost. Most times the winter period requires very minimal interaction with the hives while they overwinter. If you are in a zone where bees will not have to overwinter then the season will run all year long with some dormant times when conditions are 40 to 45 degrees or lower.

One Time and Yearly Costs

One Time Costs

The bulk of onetime costs will typically center upon the purchase of equipment and personal gear. Common figures cited are around $250.00 for a hive plus the shipping costs to wherever you reside. Do note this cost often does not include the extra boxes that are needed for bees to store honey so the actual cost of a hive setup with honey boxes is really around $350.00.

Gear for personal protection is also an additional costs will vary depending upon what you opt to purchase. Some will only purchase a veil and go the long sleeve clothing route, others will want to have a full suit. Veils range from around $10 to $30 while a full suit can cost anywhere from $80 to $150 or more in the mainstream market. There are children and petite sizes too and they tend to run a little lower than the full adult sizes. A smoker, hive tool and other necessities are a must have and these will likely set you back another $50.

All told, the odds and ends will add up to somewhere around $450 to $550 equipment wise to get your first year up and running with one hive. We recommend that you start with two hives and if you follow the recommendation you can plan to budget another $250.00.

The purchase of bees is separate from the startup costs and is the next biggest expenditure. Bees are often purchased in either a package or by buying a nucleus hive configuration which is in essence a full hive in miniature. Packages are less expensive than the cost of a nucleus colony and depend upon the size of the package purchased and whether you pick them up or get them through the mail. They are often quoted around $75.00 to $85.00. Nucleus hives or Nucs as they are known, are more expensive but provide a more established colony to start with.

Other costs that have to be considered for keeping bees is the cost of harvesting honey. There are several methods that can allow a beekeeper to extract honey inexpensively but some nominal costs should be expected. If the beekeeper wishes, they can invest in an extractor which spins the honey out of the honeycomb. The prices for extractors vary widely and a basic model can go for over $400.00.

A typical approach in beekeeping circles is for an association to purchase an extractor and loan it to beekeepers who need it to share the costs. Sometimes a group of individuals will go in and purchase one machine and share it amongst the owners.

Compared to startup costs for other past times, beekeeping is a relatively inexpensive hobby once the initial investment is out of the way.

Yearly Costs

The yearly costs for beehives center on three areas. Feeding the bees, medicating the bees if needed, and equipment maintenance. In a perfect world bees will get by with what nature provides and there would be no need to supplement their diets.

There are however times where natural forage is not available and supplemental feed is necessary. This typically means buying bags of regular cane sugar from a supermarket or discount chain such as Costco or Sam's Club. Sugar is mixed with water and provided to the bees as a syrup or in a candy configuration. When times require it, you can often get by with expenditures of less than $50.00 a hive.

Bees may require medication or treatments to ensure the hive remains healthy. The varroa mite is a common pest that often has to be dealt with to keep the bees healthy. Expect to budget anywhere from $35 to $50.00 a year for treatments.

The third cost is about keeping your equipment in good working order. Hive equipment is fairly durable and often has a long shelf life and if well painted. The boxes will last several years before requiring replacement if well maintained. Sometimes through normal use equipment becomes damaged or lost and requires replacement. A nominal amount should be planned for each year.

How to get started

Attend a class

Attending a beginning beekeeping class is sound advice. Long standing bee classes are conducted with curriculum that is sound and delivered by senior beekeepers who have practical knowledge. Beginner classes can be hosted by state organizations, schools, local bee clubs, and even colleges.

Different beginner classes can range from a few hours, to one day, to a couple of days and even longer. There is a type of class in beekeeping referred to as a 'short course'. These short courses typify a class that was designed to be a comprehensive introduction for new beekeepers and are often a full introduction to all that you will need to manage your bees until you get established and can manage on your own.

Most beginner courses are offered in the early spring just prior to the beekeeping season. They are popular and fill up fast so the recommendation is if a course meets your needs do not delay in securing a registration.

Join an Association

Joining a local or regional bee club is a prudent step to getting started in the pursuit of keeping bees. Associations are a valuable source of information and provide a place where one can ask questions and learn from the experience of others. Most associations have seasoned beekeepers that share information within the club and cater to the success of new beekeepers. In addition to the members of the associations, it is a common practice for a associations to bring in speakers from academia, other bee clubs, state agencies and other sources to help support and educate the members.

Another strong reason to join an association is the interaction with other beekeepers who are new and learning at the same time you are. The networking and exchange/camaraderie with new beekeepers is strong.

Find a Mentor

As a new beekeeper it is normal to feel insecure and even experience anxiety when working with your bees the first few times and having a mentor can be an invaluable aid when getting started. If as a new beekeeper you can secure a mentor, then you'll have access to someone to call when times require a consultation.

It should be noted however that sometimes mentors are hard to come by. There is often competition for seasoned beekeepers time and one can't forget that they likely have their own operation to take care of. If you can find a mentor then all the better. If you cannot however joining an association is the next best thing. It is easier for a seasoned beekeeper to speak to a group at a planned meeting then to commit to one on one sessions with individual beekeepers.

It should be noted that some associations have specifically taken actions to put a mentoring program in place to aid new beekeepers and if you belong to one and they don't have one, consider suggesting this.

Location of the Bee Yard

Introduction

The location of where you will host your bees is an important aspect of beginning beekeeping. Two requirements stand out among many and they center upon placing your bees where they will not be a harm to others, and placing your bees where they will not be compromised by the environment around them.

Be A Good Neighbor

Whenever considering a bee yard one must ensure that the bees will not be a nuisance to others or a danger to the public. Special consideration should be given at all times and especially when keeping bees in populated areas. Setbacks from property borders, concern for neighbors who are adverse to bees, and knowledge of anyone who is subject to life threatening allergies when stung are important matters that cannot be ignored when choosing a bee yard. More specifically putting anyone in harm's way is just not an acceptable risk and the selection of a different location must be done. One should equally consider any potential harm to other living animals. Keep bee yards away from penned or chained livestock or pets if there is a potential risk of injury.

For the good of beekeeping, and for your own personal good, it is recommended that you manage your neighbors expectations. If you have a good relationship with your neighbors and the situation is right, make the appropriate communications as needed. If however you do not have a good relationship or have any doubts about how your bees will be received then you should take whatever measures necessary to get clearance before investing the time and energy to place your bees. Bad neighbor relationships rarely result in a good outcome and the bees will more than likely become an immediate source of contention.

There are alternatives that can solve some problems and may still allow you to keep bees on your property if conditions are not ideal. Constructing barriers so the bees fly up and over something is one example. Putting bees on a roof is another. On a roof the bees could be out of sight and out of mind as they fly higher than one would expect so no one is alarmed by bees coming and going. If you do have a situation where some problem needs to be solved as a result of bee placement seek advice from experienced beekeepers as they may be able to give you options that can resolve the issue at hand.

If you have a property that is an outright no go for keeping bees or something comes up that prevents you from hosting consider seeking a land use permission arrangement with another property owner. There are often farm properties, orchards, garden clubs or other opportunities that would allow you to host bees for a nominal cost or even for free.

New Jersey Guidance

As mentioned earlier in this guide, New Jersey publishes an information guidance on Keeping Bees in Populate Areas and residents of New Jersey should obtain the guide and adhere to its principles.

Picking A Location For Success

The location in which you place your equipment is important for the survival of the bees.

The right location will have protection from the elements, be near a water and food source, and in a location that provides proper protection from bears, skunks and other potential predators. A variety of plants in vicinity of the bee yard is desirable as it provides the best chance for nectar stores and pollen throughout the active seasons.

A site to keep bees should be level and in an area that dry. Wet areas could cause moisture problems for the bees and drier is better. On the topic of moisture, do consider flood zones and keep your bees away from any area that has the potential to flood. Avoid low spots in a yard where cold, damp air accumulates in winter. Consider on your property where the last place is for the snow to melt or the ground to firm up after a heavy rain and realize that this is not where you want to place your bees. Protection from wind, especially in winter is advisable. Wind breaks can be erected from hay bales or even planting some shrubs or small trees. Lastly hives should be placed for easy access and provide the beekeeper with the means to perform whatever maintenance is required during any season.

It is recommend that hives be placed in full sun if possible or light shade. Shade can sometimes foster pests such as small hive beetles, ants, and wax moths. Typically hives do best facing in a south-easterly direction or toward the morning sun as this warms up the hive and gets the bees active. It also dries out the hive from morning dew and moisture.

Bees will fly from the hive on 'cleansing flights' and surfaces under the flight path can be stained or damaged with spots as a result of the bees defecating. Hives should placed where bees are not flying over cars or other items that could be damaged. You also do not want the bees to be flying over sidewalks, walking paths, or any places were pedestrians are possible.

Revisiting the topic of water. Bees will find a water source and it is hard to break the habit if it happens to be your neighbors pool, birdbath, or kiddy pool. One should provide a water source prior to placement of bees. Bees will go to whatever water suits them and not necessarily to the water you put out. Every precaution should be made however to provide a water source palatable to the bees on your property and in close proximity to the hive so they expend less energy bring water to the hive. Bees do not like to get their feet wet so your water feature should have a place where they can stand and sip from a perch. Information is available on the internet for different ways to go about this.

Another contemplation for choosing a beekeeping location centers upon predators. If you live in an area where protection from bears or other predators is a consideration then a location near an electrical source would be ideal for a powered fence. It is not a hard requirement as solar options are available but a house power source is often recommended as a better way to keep fences operational.

The last item for coverage in this guide is foraging and the availability of nectar and pollen sources. Even in urban and suburban areas there are sources of forage for bees within their flight zones. It is generally said that bees can fly four to five miles out and in radius from the hive this provides a reasonable area for forage to be found. However there will be times where hive yards will be located at a place where

single crops dominate the land and forage could be a concern. Heavily farmed areas also could come with a pesticide concern and it is suggested that you review your area and consider an alternate placement if this is a product of your environment.

Setting Up The Hives In The Bee Yard

The advice in this section is personal preference but worth consideration. When choosing a spot for Bee Hives one should make every attempt to ensure that the bees can remain in that position for the foreseeable future. While there are ways to move a hive to another spot, it is not as simple as picking it up and moving it away. Bees emerging from the hive through biology orient themselves to that exact location and unless special measures are taken will often return to that location even if you've moved the hive only a few feet.

Another recommendation but this can be personal preference is to leave space between each hive so that one can walk around the hive and access it from all sides. In addition one might want to consider leaving enough space to get equipment in and around the hive boxes.

Hive components can get heavy when loaded with honey and when they are fully built out and contain bees. Some beekeepers prefer to build a platform to raise the bottom board off of the ground. This situates the top box of a conventional setup a little higher. The theory behind setting hives on a stand or platform is that they should be easier to lift and cause less stress on the back muscles and body. This is in contrast to picking them up from a bent over position. At minimum a hive stand or platform is recommended to get the hive up off the ground and to prevent putting the bottom board on dirt.

Equipment Insights

The Langstroth Hive

The predominant hive in use today in the united states is the Langstroth hive. Named after Reverend Lorenzo Langstroth, this hive had its genesis in the 1800s and is still in widespread use today. There are other form factors for hives such as top bars hives, national hives. For purposes of this guide, we recommend beekeepers start with Langstroth hives and once established try the other hives if that is desired. There is nothing indicating that one cannot start with a alternate type of hive but that will not be covered here.

Starter Kit Description

The Basic Hive and Honey Supers

A basic hive has a bottom, boxes that hold frames in the middle and covers that go on the top. The boxes that house the bees and contain the honey come in different heights but there are standardized dimensions for their exteriors. The internals vary from manufacturer to manufacturer and this is an important consideration and will be covered in the equipment Selection Insight area of this guide. Working from the bottom up, these are the common components of a Langstroth hive.

Hive Stand

A hive stand is an optional piece of equipment and sits under a bottom board. The purpose of this device is to get the hive up off the ground. These come in different designs, heights, and configurations. The reason they are optional is that some beekeepers will place hive bottom boards on cement blocks, hive platforms or other arrangements and make this piece of equipment redundant.

Bottom Board

A bottom board serves as the floor of the hive. It is longer in dimension then the hive box that sits upon it and provides a place for flying bees to land and walk into the hive. Bottom boards come in two common formats, solid and screened.

Screened bottom boards

Screened bottom boards are recommended over traditional wooden bottom boards as they are considered a form of integrated pest management. Integrated Pest Management or IPM is loosely defined as a means of managing bees without chemicals. Screened Bottom Boards allow mites in the hive to fall through to the ground and are in widespread use and becoming or already are a predominant base for a hive. Common designs of screened bottom boards come include an insert that allows the beekeeper to close off the screen for colder weather. The inserts slide into preconfigured slots on the bottom side of the screened bottom board and below the screen. Often these inserts are made of a thin corrugated plastic material and come with an imprint that allows the beekeeper to count falling mites for infestation assessment.

Solid bottom boards

Solid boards are the traditional bottom of a hive and provide a hard floor to the hive.

Hive Bodies

These wooden, or plastic, or even Styrofoam boxes hold the frames that the bees live on and where the bees store food in the colony. A common configuration for a standard hive is to have two deep boxes with medium or shallow boxes on top to store honey.

The term Hive bodies and hive boxes can be used interchangeably. Boxes come in different sizes and are often referred to by names such as deeps, mediums, and shallows. The difference of the boxes lies with the dimensions. The length and width of the boxes remains the same so they can be stacked on top of each other and match up but the heights differ for reasons of utility. Deep boxes are the tallest and are used for the bees to live in. This area is often referred to as the brood chamber. Deep boxes can also be used on top of the brood chamber for honey storage too. Medium and shallow boxes are shorter in height and most often placed on the top of the brood chamber for honey storage. Boxes placed on top of the brood chamber are referred to as supers; super, like superman, and not supper like sitting down at a meal.

When honey is stored in a bee box it can become quite heavy and a full deep can weigh upwards to ninety pounds. Because they are shorter in height medium and shallow boxes weigh less when fully loaded. Medium boxes loaded are said to be around sixty pounds while a shallow will come in at thirty to forty pounds.

It should be noted that for weight reasons, some beekeepers choose to use three medium sized boxes to make up the brood chamber instead of two deep boxes. The downside of this is it requires thirty frames inside and more equipment. For some beekeepers the tradeoff of weight against the cost is worthwhile.

Eight Frame Equipment

There is a option to purchase standard Langstroth equipment in boxes that have a narrower dimensions. These boxes hold eight conventional frames instead of ten. These entered into the picture for the same reason that shorter height boxes came about, they are smaller and lighter in weight. Some beekeepers also believe that using eight frames make more sense as sometimes bees do not fully build out a full ten frame box from side to side. The conventional route is to go with a ten frame configuration but for the sake of completeness we wanted to let you know of the eight frame option.

Frames and Foundation

Inner Cover

Above the brood boxes or honey supers if they are in use is the inner cover. This flat cover with sits on the hive boxes and is sealed by the bees with propolis and that results in an insulated cover. The inner cover has an oblong hole in the top that allows the bees to pass through and also allows air and moisture to circulate out of the top of the hive. One purpose of this device is provides a barrier to keep the bees from sealing the outer cover on the hive which telescopes down over the edges of the hive boxes. If no inner cover was used the top cover would be sealed to the box and the beekeeper would have a difficult time using a hive tool to remove it.

Telescoping Cover

This is the top cover of the hive. It is referred to as a telescoping cover because its sides hang down over the boxes it covers. The typical cover is covered by a metal sheathing that helps to protect it from the elements and also any weights that are placed on top of the hive to keep the cover from blowing off in high winds.

Feeding Devices - Hive Top Feeders, Inner Feeders, Boardman Feeders

Feeding bees is a necessity at times when nature does not provide forage in the form of nectar or pollen. Beekeepers feed a sugar and water solution to bees when required and there are many ways to deliver. Below are three of the most common used equipment devices to delivery sugar syrup.

Hive Top Feeders

Hive top feeders come in many configurations. The advantage of these devices is the ability to deliver large quantities of syrup without having to open the hive. They have limitations in cold weather as bees will not come to the top of the hive for the syrup but often times these are a good choice.

Inner Hive feeders

Inner hive feeders again come in many formats. These feeders resemble a frame in size and dimension and are employed inside the hive boxes and alongside the bees. To fill them you remove the cover of the hive and pour liquid inside. The feeders have a port in the top that allows filling and it also allows

access for the bees. These are inside of the hive and convenient for the bees. The downside is they do not hold as much syrup as a top feeder. It should be noted that these feeders are often referred to as 'division board feeders' and can be found in catalogs with that title.

Boardman Type Feeders

Commonly sold with beginning kits, Boardman feeders resemble and upside-down mason jar or mayonnaise jar. They are placed at the entrance of the hive and bees can come to the entrance for syrup. For feeding these have fallen out of favor as they have been deemed to cause bees from other hives to come to the entrance and then subsequently enter the foreign hive and rob it of its honey. Another downside is the small capacity requires refilling almost every day on an active hive. Instead of being used to feed sugar syrup, there are recommendations to use these for water. They still have the capacity problem but they do conveniently provide a near water source for the colony.

Inverted pails or jars

Another common feeding method is to take a pail or jar device and poke holes in its top cover. The holes are small enough to allow the syrup to drip through when the device is inverted over the bees. Commonly the pail or jar is inverted over the top cover and an empty box is placed around it to keep bees from outside of the hive from robbing.

Additional Equipment

There are additional pieces of equipment that are part of a hive kit.

Queen Excluders

Queen excluders are used between the brood chamber and the honey supers to prevent the queen from moving up to the top of the hive and producing bees in amongst the honey storage area. Beekeepers also used these for some advance beekeeping activities where they need to contain the queen or perform maintenance activities.

Section Comb Supers

Some beekeepers produce honey products that include honey comb in the package goods. Special boxes are available for creating comb honey but these are usually considered specialized pieces of equipment not something a beginner beekeeper needs.

Equipment Purchase Advice

Purchasing A Pre-Formatted Kit

Most of the major vendors sell beginner kits which will get you everything you need plus some things you likely will not need. Some beekeepers like to go this route as it is one click purchase on a website and the vendors often save you the trouble of figuring out what to buy. Sometimes these kits come with items that you will not use but they are bundled and you may not have a choice. Sometimes they'll even come with equipment that is not recommended, for example, we don't recommend solid plastic hive tops but on occasion you'll see that in the bundle. One last point, some vendors will allow you to upgrade and swap others expressly forbid it. Pre-Formatted kits are convenient and it is one way to go if

you are not confident in what you are going to buy in your beginner kit. Therefore it will be left to personal preference as to if you should go this way or not.

Recommendation to stay with One Manufacturer for Hive Equipment

While it is true that the outer dimensions of beehives have been standardize the internal construction between manufacturers varies. There is a concept in beekeeping called the bee space. Bees will always leave channels inside of the hive in the dimension of 5/16th of an inch. If a space between one surface and another is larger than that, than they may fill that space to their liking with honey comb or propolis.

Equipment manufactures produce frames differently from make to make. If you use a frame built from manufacturer A in a hive designed by manufacturer B it may not fit properly. A more practical example is the height difference for a frame. A frame in the top hive box will hang down over the frame that is directly below it in the bottom box. If you use one manufacturer the space from the bottom of the frame to the top of the one below it will be 5/16th. If you used a different manufacturers frame that distance could be 1 inch (for demonstration purposes). The bees could react to this by building wax from the bottom of the frame to the top of the one below it. As a beekeeper you will go to inspect that frame and will have a difficult time in removing it because it is connected to the one below it. ***The simple advice here is choose a manufacturer and stick with their equipment exclusively*** as it is almost a foregone conclusion that you will swap equipment between your hives over time.

Plastic Equipment

Manufactures often have lines of beekeeping equipment made from plastic. These are appealing, especially when considering frames inside the hive as they are extruded in one piece and require no construction. Going with plastic equipment is personal preference. Beekeepers commonly share that bees do not build out honeycomb on plastic frames as soon or as completely as they would on typical wax foundation.

In addition to bee acceptance other considerations include plastic exposure in the sun for outer boxes and moisture control. Warping has been reported for some brands and plastic does not allow for moisture evaporation in the way that wood substrates do. Pluses and minuses could be argued about the properties of plastic for use in hive construction and it is noted that great improvements have been found since the inception of plastic began. It is beekeeping preference but common wisdom is that beginner beekeepers stay with woodenware until they have some experience and can make their own appropriate assessment.

Ancillary Equipment

There are a handful of necessary and recommended pieces of equipment that a new beekeeper could consider.

Smoker

A smoker is an essential tool for working bees. Smokers are often similar in construction and features from one manufacturer to the next. The 4" x 7" size is the most common form factor and it is recommended to purchase one with a heat shield around it. This comes into play when you set it on the

ground, in your cart, and when it comes in contact with your clothes or other items. A beekeeper will use a smoker to introduce smoke into the hive for two purposes. Smoked bees exhibit a behavior in which they will engorge on honey in the hive in anticipation of having to leave. Some say this is a response analogous to a bee thinking that a forest fire could burn down their home and they may have to vacate the hive and they won't want to leave hungry if they are going to be in search of a new home for a few days. A more practical reason to smoke a hive is because it masks a scent that the bees give off when they are alarmed at your presence. Guard bees will release a pheromone chemical to rally bees to defend a hive when an intruder is present and the smoke masks the scent and the bees do not answer the call.

Hive Tool

Similar to a pry bar, the common hive tool has a flat end and a curved end. Its design allows the beekeeper to separate boxes glued together by the bees and to pry out frames with the leverage generated at the curved end. The shape and configuration of these tools do vary as some other form factors have been introduced into the market with hooks and other features. Most can get away with the conventional hive tool but again this is personal preference. Do consider one that is brightly colored as these are easily misplaced when set down or lost when dropped on the ground.

Other Equipment Options

There are other pieces of equipment that a beekeeper could purchase for hive management. While a smoker and hive tool are required, these are optional.

Bee Brush

A bee brush is probably the most common optional tool in a beekeepers kit. It is a long bristle brush designed to flick the bees off the face of a comb. It is often used during reconfigurations of hives when working with frame replacements or movements and also comes in handy for removing bees off honey frames during harvest collections.

Frame Grips

A frame grip is a device that slips between two frames and allows one to grasp the top bar of a frame for extraction. It allows the beekeeper to pull the frame up with a grip instead of prying it out with a hive tool. Some beekeepers like this method and other feel it is not a good way to go because it could cause a new beekeeper to crush bees when pulling frames. Crushed bees emit an alarm pheromone and cause the bees to come to defense of the colony. The frame grips can be awkward at times to work with but once you get used to using one it might become a preference to have one of these in your kit. It is not something that one has to have to start with.

Frame Holders

These devices are designed to hang from the sides of a hive box during inspections and it provides two prongs to hang combs that have been removed from the hive. The prongs prevent you from having to set the frames on the ground. These actually are handy to have and easy to use. New beekeepers often struggle with what to do with frames being pulled from a hive for inspection. It is not necessary for a new kit but for convenience sake, is something that is worth looking at.

Yard Cart, Bucket, or some type of Container

The last piece of equipment really isn't a beekeeping piece of equipment but is just as necessary as anything else. It is recommended that you secure something to help with equipment bring brought back and forth to the hives. A bucket or tool bag will work for general inspections. A yard cart or wheelbarrow type conveyance is probably needed when moving honey boxes and hive equipment in and out of your bee yard.

Personal Equipment

Equipment Selection Insight

Personal equipment is all about providing safety and comfort to the beekeeper. The recommendation for beekeepers is to wear a veil or head protection at all times when working bees. Getting stung anywhere on the head and especially on the face and neck could result in an allergic reaction and for a select few and acute allergic reaction. Any reactions in the vicinity of your airway are serious.

Choosing the amount of protection

Seasoned beekeepers who have a sensibility with managing bees can and do work bees with no protective gear at all. They are putting themselves at risk and do not set a good example in general but this is a personal choice. The recommendation for a new beekeeper is a veil at minimum.

The choice of how much protection to wear is often a factor of how much protection you want as a beekeeper and for comfort reasons. Beekeeping suits are not stingless but obviously are better than working the bees in a common t-shirt. Cost is another factor as bee suits cost money and it is absolutely acceptable to wear regular street clothes comprised of long sleeve shirts and long pants with a veil.

Beekeeping Suits & Jackets

Protective gear that you wear can come in the form of veils with extenders, jackets, and even full jumpsuits. For cost reasons many beekeepers start out with a simple veil and once invested in beekeeping move up to a jacket or suit. The equipment comes in all sizes and can be fitted for young children to large adults of varying shapes and sizes.

Veils with extenders

Veils with extenders can be described as a garment that has a partial bee suit that covers your upper chest and shoulders. They are intended to go under a garment and provide protection for your head and neck area.

Jackets

Jackets are usually half suits with some length to them and a gathering at the bottom that prevent bees from sneaking underneath. Almost all jackets feature a detachable veil as part of the package.

Coveralls / Jumpsuits

Full coveralls or jumpsuits slide over your clothes and afford the most protection for the beekeeper. Unlike jackets, coveralls are sold with or without an attached veil in some configurations and allow you to make the choice to use a separate veil instead.

Veils

Veils are available in two common configurations. Older style veils are made of a soft cloth with a netting that hangs down around the neck that allows it to be tied so bees cannot get up under it. The other configuration which is more common nowadays is a helmet type hat that has a netting component that slides down over it. The helmet hat has a brim that holds the netting away from your face and gives the veil shape.

Gloves

Gloves are another common piece of equipment for new beekeepers. These too come in many styles and materials. Gloves range from simple hand gloves that cover your hand to ones that will have cuffs that will go up to the elbow.

New beekeepers often like to envelop themselves and do the most that they can from being stung which is understandable. However seasoned beekeepers will recommend that the better option is not to use gloves. It gives the beekeeper more of a touch in the hive and more caution when working the bees. The sensibility will prevent pinching and crushing bees on the comb and protective gloves are clumsy. Pinched and crushed bees exude a chemical alarm that brings bees to defense and the loss of tactile feel is actually a disadvantage.

If new beekeepers are uncomfortable with the thought of being stung on the hands then gloves are a reasonable way to go for a sense of protection. Over time and with experience beekeepers can move to gloveless state.

Gloves for bees come in different weights and stiff thick gloves are probably not as suitable. Mid weight to light materials provide the best tradeoff on dexterity and protection. It is also common that beekeepers use gloves intended for other uses while working hives. Latex, Nitrile, and even Dishwashing gloves provide protection and some level of dexterity and are a good option.

There is another reason to wear gloves for beekeepers and that is that you will get propolis, wax, and other substances on your hands and it is sometimes difficult to get them clean. If you get propolis on your hands the best option is to use rubbing alcohol to get them clean. If you're using disposable gloves then your hands will not get dirty. Some beekeepers do not like the disposable aspect of this approach for environmental reasons. Another consideration with gloves is that they can transmit problems from one hive to another and cross contaminate. The use of gloves is personal preference and most beekeepers in the beginning will be well suited to purchase a medium to light pair of gloves until they develop a comfort inside the hive.

Extraction Equipment

All beekeepers enjoy the delight of freshly harvested honey. For a new beekeeper a common question is how do you take away the honey from the bees and get it into the jars. There are some equipment choices to help with the honey harvest and a few methods that can be employed.

Bee Removal Equipment

When it comes time to harvest honey the beekeeper will need to take honey frames from the hive and leave any bees behind. There are a handful of method that can be employed. Blowing the bees off the comb, making them leave through a special board but not letting them back in, and even fumes to drive them away are a few of the techniques.

Fume Board

Fume boards are a two piece device that consists of a box with a floor that is lined with felt and a chemical that emits fumes that the bees do not like. You squirt the felt with the chemical and put the box on top of the hive. The bees repel down into the lower boxes because they do not like the smell and you take the honey.

Escape Board

An escape board uses bee biology to empty the honey boxes. It is placed between the brood chamber and the honey boxes and due to its design bees can leave but they cannot return. It takes time for a honey box to empty but no chemicals are involved.

Blower

Bees can be blown off the comb with air. This is a method employed often by commercial beekeepers but it has become more popular with hobby beekeepers. Bee blowers work in the same principle as a leaf blower and because of their expense some beekeepers have modified their leaf blowers for the job. These devices are probably overkill for the hobbyist.

Removal of Honey from the Comb

Uncapping Forks

An uncapping form, or sometimes referred to as a capping scratcher, is a specialized piece of equipment. This tined fork works by inserting it underneath the capping of a honey comb and pulling it up to free the honey from the cell. It can be used also to scratch the comb open and allow the honey to pass out of the cell upon extraction.

Knives and Uncapping Knives

Regular household knives can be used in the harvesting of honey . Common kitchen knives and more explicitly a long bread knife works best for cutting capping off the face of honeycomb. Beekeeping supply houses sell specialized electric heat knives that are designed explicitly for the job. It knife heats up and melts the capping off as it is pressed through the comb face.

Extractors

Honey extractors are devices that are around the size of a conventional garbage can and contain an inner basket that you load frames of honey in. The top of the basket is loaded on a pivot and has a handle that spins the loaded frames and the centrifugal force causes the honey to be flung out of the cells. There are also versions that come with electric motors that turn the basket at a flip of the switch.

Extractors are one of the more expensive pieces of equipment and because of this beekeepers sometimes share one device amongst many. An club/association may own one and share it amongst their members. Sometimes several beekeepers will buy one and split the cost between themselves.

Miscellaneous Equipment - Buckets, filters, etc.

Part of the honey harvesting process requires the honey to be collected and filtered. One could use pots and pans from the house or buy buckets and containers sold specifically for the purpose. Cheesecloth could be employed to filter extracted honey or one could invest in a series of filter devices that filter honey to different degrees. Whatever your operation it is likely that some of these pieces will be needed to process harvested honey.

Alternatives to using equipment to harvest honey

Harvesting honey can be completed with a minimal amount of equipment and doesn't necessarily require bee removal products, uncapping forks and extractors. One could open a hive and shake and brush the bees off the comb. Comb filled with honey could be crushed and strained without extraction. The downside of this method is you do not return your honeycomb which took precious time to build for the bees to the hive but it is an alternative and does not require a significant investment in equipment other then something to strain with.

Bees

Obtaining Bees - Four Sources

There are four common ways for beekeepers to obtain bees - purchase a package, buy a nucleus hive, buying established hives, and hiving a swarm.

Buying Or Receiving Established Hives

One way to get started in beekeeping is to buy or accept established bees from someone who has existing colonies. Doing this comes with warning as a new beekeeper is not experienced enough to make some necessary assessments of the colony health and temperament among other things. Another shortcoming of this approach is skipping out on the immersion of starting new bees and understanding how to develop a colony from inception.

If one is set on going this route, and there are often monetary or other compelling reasons to proceed this way, then it is recommended that early on in the process that a state agent, or whatever official agency that does formal inspections in your area, be contacted and asked to inspect the colonies. In the state of New Jersey the agency that does inspections is the New Jersey Department of Agriculture. If you have purchased or obtained colonies that do have problems you do not want to impact any existing colonies in your area. Should a problem be found some colonies can be medicated to health while others will have to be destroyed and the equipment burned to prevent spread and further contamination.

Hiving a Swarm

This is a viable way to get started in beekeeping but is more of a serendipity approach. Having equipment ready and coming across a swarm is not entirely realistic for a new beekeeper. Swarms can be found in very difficult places to extract and the origin of the bees and their temperament is an unknown quantity. If you find yourself getting involved in beekeeping through the experience of encountering a swarm then carry on but for the new beekeeper starting it is not a practical consideration. Another aspect to keep in mind of a swarm is that you do not have any choices in the bees you start with.

Purchasing a Package

The predominant bees suppliers are located in the southern states of the US and in California because of their warmer climates. For the northern states, package orders are often placed in January and February to ensure delivery in early spring or pickup by local beekeepers.

Unbeknownst to many, bees can literally be ordered and delivered through the US mail or picked up at a local beekeeping supplier near you. Bees packages come in a box that is a combination of wood and screening and include a queen and a full complement of bees. The packages are sold by the pound with two and three pound configurations being the most common purchase.

Packages should be installed as soon as they arrive but bees should not be installed on frames that only have foundation if it is consistently below 55° when your bees are delivered. The reason this is true is that when it is cold the bees have to gather together on and inside the cells of the comb to stay warm or they will perish from the cold. This behavior is referred to as clustering. Most packages are installed on plain comb. If you have some comb to give them, they still may get into trouble as they'll need to break cluster to get any syrup that you'll feed them. In the cold they cannot do that and they will starve - even if there is food nearby. The good news is, most beekeeping suppliers will ship when it is warm and this is often not an issue.

Bee packages are relatively easy to install and there are numerous resources on the Internet that demonstrate the process and provide written or video instruction. The basic procedure is to prepare the hive, spray down the bees with a sugar water so they become preoccupied grooming and won't fly. You dump the bees in and put the queen cage in the hive so the bees can release her by consuming the candy plug that keeps her contained.

Packages are a great way to start with bees but literally mean starting from scratch and this method requires the longest time to get up and established. That being said it is the most common way for new beekeepers to start hives and highly recommended as you will get the most experience this way.

Pre placing orders in late winter ensure you get the bees with the characteristics that you want and that the beekeeping supply houses have an understanding of the demand. Bees can be ordered or found in the spring for beekeepers who were not aware that they needed to pre-order but one often has to go with whatever they can find. To resolve the unknown demand of new first ever springtime beekeepers some local beekeeping suppliers travel south in the spring and purchase spare packages to meet the

unmet demand. This is done at their risk but they often can sell the excess stock. Sometimes they sell it at a higher cost to recoup their costs and this should be expected.

It is important to point out again that new bees need to be fed, especially in the first weeks of existence or until the nectar flow. They need syrup and/or nectar to be able to produce wax to build new comb and without it they will not fill out the frames for the queen to lay eggs. Ask plenty of questions where you purchase your bees about how you should work with them - beekeeping suppliers have an obligation to provide support for the bees that they sell.

Purchasing a Nucleus Hive

Another way to obtain bees is to purchase a nucleus hive or better known in beekeeping circles as a "Nuc" (pronounced Nuke). A nucleus hive is a fully functioning hive in miniature. A common Nuc box is the same height but holds five frames instead of ten. It has a large quantity of bees on fully drawn out frames and includes a working queen brood, pollen and stored honey.

For this purchase you will bring your hive body to the supplier or they will bring a Nuc to you. The bees, five frames and all, will be transferred from the Nuc hive to your hive. When combined with five additional frames in your hive box the nucleus hive will rather quickly build into a full box if foraging is available. This will give you a quicker start then putting package bees on a hive.

Nucs are more expensive then a but give you a more established hive and that could lead to a honey crop in the first year if conditions are right. More on this will be covered in the expectations section of this guide.

Bee Types and Traits

Purchasing bees can be a complicated decision for experience beekeepers let alone ones that have never done it before. What strain or race to buy is complicated and often not very clear. In general bees purchase are referred to by race and Italian and Carniolian bees are the most common for sale. Additional races such as Caucasians, Russians, Buckfasts, and others are available but more specialized and niche bees vs. the widespread use of Italian/Carniolian bees. Certain races are said to have specific characteristics but bees are also described by their traits and this leads to more confusion.

Traits and Characteristics

Before getting into what race of bees to buy it is important to gain an understand of different traits and characteristics of bees that aid in the selection process.

Gentleness

Gentleness is a trait in bees that beekeepers will want, especially for keeping bees in populous areas. Beekeepers should not tolerate being buzzed and having bees in their face by guard bees upon arrival in the bee yard or when boxes are open in proper conditions. Aggressiveness is bread out of bees and reputable suppliers should provide bees that are gentle in nature and a pleasure to work with.

Ramp Up and Conservation of Stores

Beekeepers would prefer not to feed bees and have them survive on what nature provides. Bees of different races use food available to them in different ways. As a generalization it is said that some races use more food and burn more energy keeping the hive warm in cold conditions. Some races are known to scale down the number of bees in the hive when stores are scarce and they can get through a cold winter with less food then others.

Hygienic Traits and Colony Behaviors

Some bees naturally deal with problems within their hive. Often these traits are borne from breeding and evolution of the queen stock used to source bees at purchase. An example would be bees that recognize the varroa mite pest in the hive and take measures to manage it within the colony. Varroa mites are destructive to bee populations and vector viruses within the colony. Varroa sensitive hygienic bees (termed VSH in beekeeping circles) will detect that varroa is present within the larval cell and pull the damage larvae and mites out of the cell and discard them.

Some type of bees like to propolize everything in the hive. Propolis is a sticky gummy resin that the bees use for many purposes. They seal holes, the bind things together, that entomb with the product, and for beekeepers one of the less desirable traits is when they propolize the frames together and make frame removal for inspections difficult. Some bee races glue everything together and some don't use hardly any at all. Propolis has been noted to be a benefit to the bees and is a part of their immunity system but beekeepers mostly want honey and easy inspections so bees that make excess propolis as a characteristic are often not selected for ongoing populations.

Bee races

Italian

Italian bees are the most popular bee in the United States. They often are light yellowish in color with alternating brown and black stripes on the abdomen. They start hatching bees early in the spring and are known to produce a lot of bees all the way through to fall. They are popular due to their gentleness and prolific honey production. Italian bees are not as strong as some other races for fall and winter management. They tend to use more stores in the fall and winter and are not as hearty as other bees for overwintering but they are adequate and should not be forgone for this statement. These bees are the are the predominant type of bees and beekeepers use them with great success.

Carniolians

Darker in appearance then Italian bees, Carniolian bees are also a popular choice in the United States. Carniolians manage their bee supplies better then Italian bees and ramp down in the fall and grow quickly in the spring. Because of that they get through winter with less stores and are generally considered to be better at overwintering. The quick ramp up in the spring does come with the tendency to swarm in the spring which is the natural reproduction method for bees. These bees are gentle and do not tend to use excess propolis in the hive.

Caucasians

Not in common use in the United States, Caucasian bees are described as the gentlest of all bees but they have fallen out of favor as they are known to construct bridge comb between open spaces and liberally use propolis in the hive.

Others Bees You May Hear About

Russians

These bees are available to the public but are relatively new to the United States and not available for widespread use. Supplies are limited and not generally available to the common beekeeper. Bees were brought into the US for research and now are being used in some commercial and private bee yards but have not ramped to general commercial availability yet.

Buckfast, Hybrid, SMR

There are other programs out there that offer different bees with traits and characteristics by breeding. For the purpose of a beginner guide they will not be covered here. There are resources on the internet for additional research on bee choices other then the Italian and Carniolian races.

Recommendations

Even with the base information that is provided here there is still a question of how to proceed. The truth of the matter is most established beekeeping supply houses do a good job and especially some of those that have been doing it year after year. If you still have that uncertainty then it is likely that you have a local supplier that you can get hands on with. In fact local beekeeping suppliers are an important resource for beekeepers as you can often speak with someone who owns bees and can provide practical advice. They are in your locale and many beekeeping things are driven by your local conditions so having someone to consult with directly is a value add. As an aside, being involved in associations will also provide you with insight through networking on who to people like to do business with.

Concerning what type of bees to purchase, again the recommendation is to keep it simple. one might advertise Italian bees or Carniolian bees but the truth of the matter is most bees are a blend of races - mutts if you will - and getting fussy about it doesn't make much sense. Good beekeeping suppliers are passionate about putting out a good product. They select stock that makes the most sense and if they supplied bees that were not a good product, they would not be around for long. There are bad bees out there and one may have to try different suppliers until you find the product you want. Again, consulting some local beekeepers is probably a good way to go as they have done the homework for you and often can make recommendations of what has worked for them.

SAGE Advice and Setting Expectations

Beekeeping is fun and engaging - There are very few pursuits that are as educational as keeping bees. Working with bees is fascinating especially as you begin to understand the nuances that occur in the hive and the interactions inside the colony. Bees truly are amazing insects. In this section we will share some brief advice and set some expectations for you as a new beekeeper.

Start With Two Hives

- More than one, but not so many as to be overwhelmed.
    - It is good to have two hives so you can compare one against the other and tell if there are any difficulties. If one is not performing it will become evident if you have another to compare against.
    - Having two also increases the learning curve.

Manage your Bees

- You need to manage your bees effectively or you are doing a disservice.
    - Bee a beekeeper not a bee watcher. New beekeepers need time to get acclimated but one should not be afraid to get engaged in managing the colony - you have our permission. Beekeeping for the beginning years is a hands on endeavor and there is something new to be learned with each interaction.
    - There is something to said about over managing your bees but as a new beekeeper ignoring them is not the right way to go.
    - Get a sense for how they operate and develop a comfort in ascertaining if the colony is operating normal or requires some interaction other then routine inspections.
    - If you're new and you don't know how to control swarms then maybe it is a good idea not to have too many hives. This is shared because some new beekeepers become overzealous and it rarely works out well.
- Treatment of bees means taking care of ailments when necessary.
    - It is not recommended to medicate bees for the sake of keeping them healthy.
    - Medication, or better yet, integrated pest management without chemicals should be used only when it is needed.

Take your time.

- The sensibility of the bees requires you to work with a purpose but one should take their time when working in the hive. Bees do not respond well to banging around in the hive or quick movements.

Bees Survive by your activities in July and August, not November

- Getting your bees to survive overwinter is the goal of a first year beekeeper.
- Taking the time to keep the bees healthy in summer months will reward the beekeeper with healthy bees in the fall; healthy bees that will survive the winter.
- Even experienced beekeepers lose colonies. Conditions change from year to year and if you practice good hive management it is likely that your bees will survive but sometimes bees do not survive. For the first couple of years beekeepers could lose bees and have to purchase more.

Honey

- It is possible to get honey for the first year but there are times when honey has to be left to the bees for them to survive. Overwintering is the goal for year one and Honey is an expectation for the second year.

- The honey is amazing.

Marked Queens Are Easier To Work With.

- Marked queens are easier to find but truth be told you do not have to find the queen each time you do an inspection.
    - When you see eggs, or young larvae that is not capped, it is reasonable to assume that you have a queen in operation and you do not have to seek her out on every visit to check on her well being.
    - Along the same line, if the bees are bringing in pollen at the entrance chances are they have an operational colony as they are bringing back the food to feed the brood.

Bees Cannot Do Without Water

- Last but not least, it has been said in this guide previously but it bears repeating, every beekeeper must ensure that bees have a proper water source and preferably it is yours and not your neighbors.

Final Thoughts

Enjoying the Life of a Beekeeper

It is difficult to imagine a more fulfilling hobby or sideline as being a beekeeper. The fascination in managing bees is never ending and the reward is great. The colony collapse disorder has taken its toll on the population and each beekeeper like a worker in a colony does their part in bringing bees back to their rightful place in nature. Enjoy not only the beekeeping aspect but the interaction with other beekeepers who make up one of the more friendly communities you'll ever be involved in and share the same passion of an amazing insect that provides so much for us and for our earth. We wish you the best in your pursuits and thank you for taking the time to listen to our guide.

Bee well.