



Beekeeping - Getting Started

Reasons to NOT get bees

- You **will** get stung
- Expense (see below for an example budget)
- Requires a time commitment, especially when the weather is good
- Physical
- Messy
- Migratory hives
- Disappointment - despite best, most knowledgeable efforts, hive sometimes perish

Reasons to get bees

There are many great reasons to consider becoming a beekeeper, including:

- Pollinators
- Help honeybees
- Honey
- Sustainability
- Interesting hobby
- Connect with the environment
- Interesting
- Challenging
- Bragging rights - it's a pretty cool hobby

Becoming a Beekeeper

If you wish to have bees on your property, but are not sure you want to commit to tending them yourself, please reach out to GBA and see if anyone in the club would like to manage a hive for you.

So, you want to become a beekeeper:

- Bees are typically delivered in the spring, usually April. If you are getting a “package”, you **must** install it as soon as you get it, so your hive needs to be ready, you have the required equipment (particularly a suit!), and your brain has some basic information.
- If you’re getting a “nuc”, you have a little more wiggle room on the hive, but you will still need a **suit** and tools. Best to install the nuc in your hive ASAP.

See below for necessary hive and equipment purchases. There’s a budget you should take a look at.

What do I need

BEFORE you get your bees, you’re going to need some gear, and do some setup. The following is a list of MUST-HAVES, and a few optional items. BEFORE you get your bees, you need to have all of the required equipment, be familiar with its operation and setup, and set up your empty hive.

Protection

Always wear a bee suit!!

- Bee suit (integrated jacket & veil, or integrated veil and overalls).
- Gloves. Disposable nitrile or dishwashing gloves work well.
- Pant leg belt (or duct tape).

Tools

- Hive tool - they’re inexpensive, so you might get a spare too.
- Smoker.
- Smoker fuel - you can use dried leaves, or you can buy burlap or other smoker fuels.

Be very careful starting and using your smoker. **Do not start a wildfire!** If it’s a windy day, best not to work on your bees.

Hive

Please see [here](#) for an overview of a typical beehive.

We recommend starting with a [Langstroth hive](#) - by far the most common type of hive.

The minimum to get started:

- Hive stand - highly recommended - it is best to get the hive up off the ground. Make sure your hive is very close to level - a tipped hive will have problems.
- Bottom board - either a solid or “screened” bottom board. You can always change it later.
- Deep hive body (see below about 8 vs 10 frame bodies).
- Frames for the deep body - 9 1/8" black waxed.

- Cover - telescoping cover w/ inner cover recommended, but “migratory cover” ok too. Make sure it matches your body (number of frames)!

Other

- **Water source.** Your bees need water. Don’t make them go to your neighbor’s swimming pool for water.

Nice to Haves

- Propane torch to start the smoker. Much quicker and easier than a match or lighter.
- Feeder, syrup and pollen patties.
- Notebook and pen.
- Camera / phone.
- Mint candy / gum - your breath (CO2) can agitate the bees. **DO NOT** eat bananas around your bees, or have any banana smell or material on your person when near your bees. It has a chemical compound similar to bee alarm pheromone, and **will** agitate your bees to sting you.

Hives

References

Overview:

- [Hive Parts Overview](#)
- [Beehives](#)
- [Langstroth Hives](#) - the most commonly used hive type

These links to BetterBee have some good information about hive details.

- [Kits](#) - options.
- [Terminology](#) - parts, materials and construction

Sizes

[Langstroth hives](#) are nice, rectangular boxes, and so folks have started making them in various widths and depths. The length is **always** the same - the length of a standard frame.

See [BetterBee](#) for more details.

The lower box(es) in your hive is where the queen spends her time, and where the brood will be found. You may choose to make sure she stays down there, not venturing into your honey supers, by using a queen excluder - a wire grid device that allows worker bees to pass through, but not the larger queen.

Once all the flowers start blooming in spring, the bees will rapidly start storing honey. You will need to provide them additional room by stacking “honey supers” onto the hive. These are typically medium sized bodies and frames.

Width

Hives come in either 8 frame or 10 frame widths. You need to commit to a size when you order your first hive body, as you will need to stack additional hive bodies on top of your first body. You cannot stack an 8 frame body on top of a 10 frame body.

10 frame bodies are more standard, but they are also heavier. You may need to lift an entire body, so an 8 frame body will be easier on your back. You may be challenged to find coordinating equipment (covers, excluders, bottom boards, etc) for 8 frame boxes.

Depth

“Deeps”, “mediums”, and “shallows”. See the [BetterBee](#) notes. Traditionally beekeepers tended to use “deeps” for the bottom brood bodies, and “mediums” for the honey “supers”.

- Deeps - used for brood chambers, 9-5/8" tall.
- Mediums - can be used for brood and honey supers - 6-5/8" tall.
- Shallows - not commonly used, but a good option to minimize weight - 5-3/8" tall.

Frames

Each hive body will be filled with frames.

Important note: DO NOT leave out frames - your bees will very quickly fill that void with random comb. It will be a mess and very disruptive to the hive to clean up.

The easiest way to get started is assembled, pre-waxed frames, such as: [deep](#) or [medium](#).

Covers

There are two types of covers:

- Telescoping - see [BetterBee](#). These are **always** used in conjunction with an inner cover. The metal covered covers are preferable - very durable and prevents warping in the winter rains.
- Migratory - simpler and cheaper, but probably not best in the winter - tend to warp and possibly leak.

Bottom Board

The bottom board, as its name implies, is at the bottom of the hive.

Solid, simple bottom boards are a good option to start with... KISS right? Some folks like [screened bottom boards](#). If in doubt, go with a simple solid bottom board.

Purchasing

The quickest and easiest way to get started is to purchase fully assembled hives and frames. If you're particularly handy or wish to save a few bucks, you can consider purchasing unassembled hives. If assembling your hive, it helps to have some 90-degree corner clamps.

Prep

- Unless you get a pre-painted hive, leave time in your schedule to give your hive body a coat of paint. Choose whatever color you wish. Lighter colors are preferable - dark colors could get very hot in the summer.
- **Have a water source for the bees.** You don't want them going across the street to your neighbor's kiddie pool. Just like any animal, your bees need water.
- BEFORE you get your bees, have your hive body installed on your hive stands.

Hive Stand

Use a hive stand!

- You do not want your bottom board resting on the ground. Pests and ants will have easy access, and your bottom board will quickly deteriorate.
- For the height of the hive stand, think about your back. If you have a hive stand about 16" tall, you won't be stooping over to work on your hives as much.
- Hive bodies, particularly honey supers, are heavy. You may want to lift an entire super at times. Consider the height, and think about using 8 frame bodies rather than 10 frame.
- The hive stand and hive should be level.

Location

- The *ideal* location gets morning sun, with the front of the hive facing southeast or south.
- See [here](#) for more information.

Before Working On Your Hives

- Make sure you are very comfortable with your PPE, your bee suit. Do some trials. After putting it on, have a partner or friend verify there are no gaps or openings. There is nothing worse than noticing a bee on the *inside* of your veil when you are halfway through working on your hives.
- Seal your pants legs.
- Your bee suit will probably have elastic loops at the arm cuffs - you can loop these over some of your fingers to make sure the sleeves stay down, covering your tender flesh, as you work.
- Heavier nitrile gloves work well, like [these](#). Longer sleeve disposable nitrile gloves may also be found at [Grainger](#).

Purchasing Equipment

Sam's Downtown Feed

[Sam's Downtown Feed and Pet Supply](#) in downtown San Jose.

They have been very supportive of our club, and are a great, local vendor to support.

- [Yelp](#)

- Phone: (408) 287-9090

BetterBee

- [Website](#). Their site has lots of useful information.
- Phone: (800) 632-3379.
- Address: 8 Meader Road, Greenwich, NY

Dadant

- [Website](#)
- Phone (Fresno office): (877) 432-3268.
- Fresno location: 3914 N Winery Ave, Fresno, CA.

Mann Lake

- [Website](#)
- [Contact Us](#).
- Phone (Woodland): 866-880-7678.
- Woodland location: 500 Santa Anita Dr, Woodland, CA.

Shopping Lists

The following are sample “getting started” shopping lists with links to various vendors. Please check with GBA regarding starter packages available at Sam’s Downtown Feed in San Jose.

Two of the major vendors have facilities within a couple of hours drive time - Mann Lake has a store in Woodland (near Sacramento), and Dadant has a store in Fresno.

The prices quoted are retail, from their websites, as of Feb 22, 2021.

Beginner Kits

Following are links to beginners kits from several manufacturers. Some kits may require assembly (light carpentry skills; corner clamps help), or you can get fully assembled kits. Kits are generally unfinished, so allocate some time in your bee deployment schedule to throw on a coat of paint. Also note shipping cost of assembled vs. unassembled kits may be different.

Kits generally include hive bodies, frames, covers, smoker, veil, hive tool, etc.

Supplier Link	Cost
Dadant 10 Frame Beginner Kit - Unassembled	\$206
Dadant 8 Frame Beginner Kit - Unassembled	\$235
Betterbee 10 Frame Beginner Kit - Assembled	\$208
Betterbee 10 Frame Beginner Kit - Unassembled	\$202

[Mann Lake - 10 Frame Basic Starter Kit - Assembled and Painted, free shipping](#) \$240

Items Not Included

- Hive stand - you can purchase a hive stand, or just use some cinder blocks. Remember to keep your hive level!
- Water source

Working With Your Bees

Bees are hardwired to dislike and attack bears and other furry creatures that tend to raid their hives for honey. So, don't dress like a bear:

- Wear light or white colored clothing. **Do not** wear dark clothing, **including sunglasses**, around your bees.
- Furry / fuzzy dark clothing is even worse.
- If you have long hair, tie it up. Bees will get tangled in it, greatly increasing your chance of getting stung.

When you open your hive, you are upsetting and stressing your bees. Before opening the hive, pause for a moment and rehearse what you're about to do:

- Have all the necessary tools and gear organized nearby.
- Try to minimize the time you have the hive open.
- If you are taking things apart (frames and/or hive bodies), where are you going to put the pieces?
- Go slow, and try not to bang or knock things about. Remove frames slowly, straight up.

When Stung

You will get stung.

If you start feeling physically ill or unsteady, get help! Get away from the hives and find someone to sit with you for a bit. If you start having any severe reactions, call 911!

Honey bees communicate with each other through smells (pheromones). When a bee stings, it releases a pheromone that messages its hive-mates: "there is a problem, and you should rally and defend the hive". So, to not get stung repeatedly, you should:

- Mask or eliminate the alarm pheromone smell ASAP - step back from the hive and smoke the area around the sting with your smoker, or rub some dirt on the area - anything to eliminate that odor (smells like bananas).
- Remove the stinger ASAP. Do not pinch it and pull it out - doing so tends to push all the venom into your body. It is much better to scrape it out with a credit card or something similar (hive tool might work, but be careful of its sharp edge).

If you are careful, and wear the proper PPE around your hives, you shouldn't get stung often, but don't assume you will avoid it completely. If your hive is in your garden, wear light colored clothing and a veil when gardening.

Schedule

As Soon as Possible

- Check your local regulations regarding backyard bee hives.
- Talk to your neighbors!! It's scary and tough, but it's important to get your neighbors on board in advance.
- Read beginner books.
- Take our classes.
- Get your hive ready - fully assembled and painted.
- Locate and set up your hive on the hive stand. Bees need water - think about where they will drink. If you provide a good water source, they won't be inclined to fly over to your neighbor's pool or fountain.
- Study/rehearse the bee installation method (package or nuc).

Feb-Mar

- Get ready.
- Get all your stuff, and place your hive on your sturdy, level hive stand.
- Test drive your gear and the smoker.
- Arrange for a mentor if you want help with installing your bees.
- Order your package / nuc(s).

April

- Get package / nuc and install in the hive.
- Start feeding.

May

- Hive inspections

Later

- Adding more room using "supers".
- Harvesting honey.

Things That Can Go Wrong

As with farming or raising livestock, there are pests and diseases that can affect your hive's health. Researchers are learning more about bee health every day. Please invest some time in studying about bee health and treatment options. **Always** follow approved treatment techniques for you and your bees health and safety.

Ants

Hives attract ants, particularly if you are feeding your bees syrup. Solutions:

- Use hive stands that have physical barriers like grease cups.
- Terro ant bait - non toxic to humans and bees can't get into the bait stations.

Mites

You **will** have Varroa mites. A large mite population is very detrimental to bee larvae. There are many different options for controlling mites, with varying levels of effort and toxicity.

Not Treating

Some folks choose to not treat, leaving the bees to manage on their own and develop resistance through natural selection. Perhaps a noble goal in the long run, but odds are your hive will be severely impacted by growing mite infestation, leading it to develop other diseases, and spreading mites and other pathogens to other bees in the neighborhood. If you choose not to treat, you might want to at least monitor the mite levels using periodic bee washes or sugar shakes, and keep an eye out for signs of other issues (deformed wings, dead gooey, stinky larva, etc). And use mechanical treatment techniques, such as [drone comb removal](#).

Treatments

The following is a list of some of the common treatments. For your health and safety, it is critical that you follow approved application methods and use proper PPE - e.g. for OAV, you will need to wear a chemical vapor respirator, eye and hand protection, etc.

As with any pest control, it is best to use the minimal amount of multiple control methods to minimize development of resistance. Do a Google search for "IPM" or "Integrated Pest Management" for more info.

Oxalic Acid

Oxalic acid is a naturally occurring acid, found in small amounts in rhubarb, spinach and other veggies and plants. **It is TOXIC** in larger amounts, and must be used properly. It is an effective tool in your arsenal for Varroa mite control, and is widely used. The most common application techniques are:

- Vaporization ("OAV") - a small amount of OA is vaporized inside the hive. There are various devices used, ranging in price from under \$100 to over \$1000.
- Drip - a solution of OA is dribbled on the frames inside the hive.
- [Extended Release](#)

References:

- Do a Google search for "Oxalic Acid Bees".
- [OA Overview](#)
- [Randy Oliver](#) - he has carefully studied various techniques for OA application.

Formic Acid

[Formic Pro](#) is a Formic Acid treatment. One advantage is that it can be applied to hives with honey supers - it is considered safe to not affect the honey. However, it has very strict temperature requirements which are difficult to meet in our area. It will harm your bees if the temperatures rise above the recommendations. Wear chemical PPE when handling it.

Most suppliers carry it (Dadant, Mann Lake, etc).

References:

- [Formic Pro](#)
- [Comparison of Oxalic Acid to Formic Acid](#)
- [BetterBee](#)

Apivar

Apivar is generally regarded as a safe, easy to use treatment option for Varroa Mites.

- It must not be used when honey supers are present according to the USDA.
- Best times are early spring before flowers start to bloom and nectar starts to be plentiful, and in the fall after you've harvested your honey supers.
- The Apivar strips need to be inside your hives for at least 42 days... so if you're treating in the spring, treat in *early* spring.

Apiguard & Hopguard

Apiguard and Hopguard use high concentrations of naturally occurring phenols - chemical compounds that tend to have a very strong smell. Apiguard uses the phenol found in the herb thyme, and Hopguard uses the phenols from hops.

- Most beekeepers would say neither should be used with honey supers, as the very strong smell will taint your honey - particularly Apiguard.
- Apiguard may make your queen temporarily stop laying, so it is not recommended in spring.
- Hopguard: application is recommended when there's lower brood count (fall/winter).
- Apiguard: application is recommended in the summer or fall. There are ambient temperature requirements.

More Info:

- [Apiguard - Dadant](#)
- [Apiguard FAQ - Dadant](#)
- [BetaTec - Hopguard II and 3](#)
- [Hopguard 3](#)

Diseases

- [Diseases](#)

Resources

- [Scientific Beekeeping](#) - Randy Oliver's site. This is a very good, pragmatic resource for issues relevant to our climate and locale. He is up in Grass Valley, CA.
- [California Master Beekeeper Program](#) - through UC Davis.
- [UC Davis Honey and Pollination Center](#)
- [Cornell](#)
- [Dadant list of resources](#)
- [Honey Bee Health Coalition](#)

Suppliers

- [Dadant](#)
- [Mann Lake](#)
- [Betterbee](#)
- [Sam's Downtown Feed & Supply](#) - good locally owned source to check.

Books

- "The Beekeepers Handbook, 4th Edition", by Dianna Sammataro and Alphonse Avitabile.
- "Homegrown Honey Bees, An Absolute Beginner's Guide", by Aletha Morrison.
- Beekeeper's Handbook - *Sammataro & Avitabile*
- First Lessons in Beekeeping - *Keith Delaplane*
- Coastal Beekeeping in California - *Jeremy Rose*
- California Bees & Blooms: A Guide for Gardeners and Naturalist - *Frankie, Thorp, Coville & Ertter*
- The Hive and the Honey Bee - *Dadant*
- ABC and XYZ of Bee Culture - *Root*
- [Beekeeping for Beginners.](#)
- [The Beekeeper's Bible: Bees, Honey, Recipes & Other Home Uses](#)
- [Beekeeping Dummies books on Amazon.](#)

Associations

- [Gilroy Beekeepers Association](#)
- [Santa Clara Bee Guild](#)
- [San Mateo Bee Guild](#)
- [Monterey Bay Beekeepers](#)
- [Santa Cruz Beekeepers Guild](#)
- [California State Beekeepers Association](#)
- [Western Apicultural Society](#)

Magazines

- [American Bee Journal.](#)
- [Bee Culture.](#)

Videos

- [Getting Started in Beekeeping - Stewart's Beekeeping Basics.](#)

Where To Get Advice

- [Gilroy Beekeepers Association](#) (“GBA”).
- [GBA Facebook Group](#)

City Regulations

Please check your local apiary regulations before acquiring any hives.

- [Morgan Hill](#)
- [Gilroy](#)
- [Santa Clara County](#)
- More information can be found [here](#) on the GBA website.

Notes

- This document is written for beekeeping in South Santa Clara County, California. There are dates and resources specific to this area.
- This document references your “hive” (singular), but there are many good reasons to start with two hives.

Recommendations

- Start with 2 hives.
- Be prepared. Have your hives and gear ready for receiving your first bees.
- Join GBA.
- Reach out to members for help and advice. Some will be willing to come check out your hives with you.

Vocabulary

Sources:

- “The Beekeepers Handbook, 4th Edition”, by Dianna Sammataro and Alphonse Avitabile.
- “Homegrown Honey Bees, An Absolute Beginners Guide”, by Aletha Morrison.

Both are highly recommended.

Absconding - When bees abandon a hive, typically due to some unfavorable condition, and ride off into the sunset.

Alarm Odor - When a bee stings, she releases an odor called an alarm pheromone to alert others to the danger. This alarm pheromone smells like bananas and attracts other bees to come to the defense of the hive.

Apiary - The location of your hives, AKA "bee-yard".

Bee Escape - A device that allows bees to only pass in one direction, used to remove bees out of a honey super.

Bee Suit - Coveralls, usually white, that fit over normal clothing, with or without an attached veil.

Bottom Board - The floor of a beehive.

Brood - Immature stages of the bees that have not yet emerged from their cells (eggs, larvae and pupae).

Brood Nest - The area of the hive used for rearing brood. Honey cells are generally capped with a golden, pale yellow wax. Brood cells will have a darker, orangey-brown cap. The cells also tend to be a darker brown color; honey storage cells are a lighter yellow.

Burr Comb - Comb that's somewhere you don't want it to be.

Capped Brood - Larval cells that have been capped over with a brown covering. Once the cells are capped, the larvae spin their cocoons and turn into pupae, the third stage of complete metamorphosis.

Cell - The hexagonal unit compartment of a comb.

Cleansing Flight - Yes, bees need to poop too.

Deep - A hive body that holds standard, full-depth frames. The usual depth is between 9 1/2" to 9 5/8".

Division Board - A thin vertical board of the same dimensions as a frame; also called a dummy or follower board. Used to reduce the size of the brood chamber, or to fill gaps in a hive body.

Division Board Feeder - A plastic or wood container, hung inside the hive and filled with syrup to feed the bees.

Drawn Comb - Honeycombs having the cell walls fully built up by the bees from the original foundation.

Drone - The male bees.

Entrance Reducer - A piece of wood notched with different size holes to regulate the size of the hive entrance. Reducers help prevent mice from entering the hive, as well as help with robbing attacks.

Extractor - A centrifuge device used to extract honey from frames.

Feeders - Various types of devices and containers for feeding bees sugar syrup.

__ Field Bees or Foragers__ - Worker bees, usually at least 16 days old, that work in the field to collect pollen, nectar (or rob honey from other hives), honeydew, water and propolis.

Frame - Four pieces of wood or a preformed piece of plastic that form a rectangle, designed to hold a plastic or wax foundation comb. The top bar is longer than the bottom bar so that it rests in the recess on the top of the hive body.

Hive - A home for bees provided by humans, that is, a hive box.

Hive Body - A box, usually wood, that creates the side of a Langstroth hive. The top bar of the frames rest on a recess in the top of the front and rear sides of the box. A complete hive has one or more frame filled hive bodies, resting on a bottom board, and covered with a migratory or telescoping cover.

Hive Stand - A structure that serves as the base support for a hive. Such a stand keeps the bottom board off the damp ground.

Hive Stand - A structure that serves as the base support for your hives. Hives can weigh well over 100 lbs. each, so the hive stand needs to be sturdy. You do not want to rest your bottom board right on the ground.

Hive Tool - A metal device with a curved scraping surface at one end and a flat blade at the other. Used to separate hive furniture (bodies, frames) when inspecting bees. Also used to scrape excess comb ("burr comb") from frames, and to remove frames from the hive body.

Honey Bound - Describes a colony that has run out of adequate brood nest space due to cells filled with honey.

Honey-flow - Loosely, a time of year when there is a plentiful supply of nectar that bees can collect. Its signs include fresh, white wax and combs filled with liquid. It is a time when bees produce and store surplus honey.

Inner Cover - A lightweight cover with an oblong hole in its center; used under a standard telescoping outer cover on a bee hive.

Larva (pl. Larvae) - The second stage in the development of an insect, such as the honey bee, that has complete metamorphosis. It is comparable to the caterpillar stage of a moth or butterfly.

Medium - A hive body that holds medium-depth frames. The usual depth is 6 5/8".

Migratory Beekeeping - The moving of bee colonies from one locality to another during a single season to pollinate different crops or to take advantage of more than one honey-flow.

Nurse Bees - Young worker bees with fully functional food glands whose duty is to feed larvae and the queen and to perform particular hive duties. Generally nurse bees are 3 to 10 days old.

Orientation Flights - The training flights of young bees, usually by large numbers at a time. Orienting bees can be observed hovering in front of the hive.

Outer Cover - The top cover that fits over a hive to protect it from the weather. The two most common covers are migratory and telescoping.

Package - A special wire-screened, wood framed shipping box containing a quantity of bees (2-5 lb.), with or without a queen.

Pheromone - A chemical substance that is released externally by one insect or animal and stimulates a response in other insects (or animals) of the same species.

Pollen Baskets - A flattened depression surrounded by curved spines located on the outside of the tibiae of the bees third set of legs. It is used to carry pollen gathered from flowers back to the hive where the pollen pellets are deposited into cells and packed together as the bees ram their heads against the pellets. This same basket is also used by bees to collect and transport propolis back to the hive.

Pollen Patty - A cake or patty made of pollen pellets and sugar syrup. These patties are fed to stimulate brood rearing.

Pollen Substitute - A food material used to substitute wholly for pollen in the bees' diet; commonly made from soy flour and other products.

Pupa (pl. Pupae) - The third stage in the development of an insect that is encapsulated in a cocoon. In this stage, the organs of the larva are replaced by those that will be used as an adult.

Queen Cage - A small box made of wire screen and wood or plastic, used in shipping queens or introducing a new queen to colony.

Queen Cell - A special elongated cell suspended vertically from honeycomb and resembling a peanut shell in which a queen bee is being raised. It is usually an inch or more in length when fully developed and capped.

Queen Cup - A cup-shaped cell produced by bees and suspended vertically from the honey comb that may eventually develop into a queen cell. These cups can also be obtained commercially or produced by individuals using a wax mold. Commercial cups are made either of beeswax or plastic. These cups become queen cells when a queen deposits an egg in them or when a queen breeder transfers a young larva in the cup. These cups are also suspended in a vertical position.

Queen Excluder - A device made of wire, wood and wire, plastic or punched plastic, having openings of about 0.16" to 0.17". This permits workers to pass through, but excludes queens and drones. It is used to confine the queen to a specific part of the hive, usually the brood chamber.

Rabbit - A narrow ledge cut into the top ends of hive bodies on which the frames hang. Some rabbits are cut so that resting frames will be at the right bee space to the top of the box; others are lower, requiring a metal strip to correct the bee space.

Robbing - Applied to bees stealing honey/nectar from other colonies.

Shallow Super - A hive body that holds shallow depth frames. The usual depth is 5 3/4".

Smoker - A metal container with attached bellows that burns organic fuels to generate smoke; used to control the defensive behavior of bees during routine colony inspections or honey extraction.

Splitting - Making two or more colonies out of one.

Sting - An organ of defense of workers and queen bees. It is an egg-laying device (or ovipositor), modified to form a piercing shaft, through which painful organic venom is delivered.

Super - A piece of hive furniture in which bees store surplus honey; so called because it is placed over or above the brood chamber.

Systemic Reaction - A reaction from a bee sting(s) that can be life-threatening and require immediate medical attention. Such a reaction is far more serious than stings that elicit pain at the site of the sting, and symptoms include: urticaria (hives), throat tightness, difficulty breathing, and a drop in blood pressure. An EpiPen is often used when someone has a systemic reaction, followed by a trip to the hospital.

Top Bar - The top, horizontal part of a frame, not to be confused with "top-bar hives".

Unsealed Brood or Open Brood - Immature or larval bees not yet capped over with wax; the term can include cells containing eggs.

Varroa destructor - The scientific name for the Varroa mite, a destructive parasitic mite (eight legs), that feeds on brood but is carried by adult bees.

Wax Moth - The common name for *Galleria mellonella*, a moth whose larvae eat comb, pollen and bee pupae.

Worker Bee - A female bee whose organs for reproduction are only partially developed. Workers are responsible for carrying on all the routine tasks of a bee colony.