

EQUIPMENT LIST FOR BEGINNING BEEKEEPERS

Original prepared by Tom Chester in 2000. This version February 2015

This list is based upon the Langstroth hive, by far the most common design used by commercial beekeepers as well as serious side-liners and hobbyists. There are other designs, for example top bar and Warre hives. While these have their (vocal) supporters, particularly on the internet, I highly recommend that a beginner start with Langstroth hives to learn the basics. The large majority of books on beekeeping are based on Langstroth hives. Further, despite claims to the contrary, Langstroth hives are easier for the beginner to manipulate.

A. HIVE COMPONENTS

A typical Langstroth beehive comprises (from bottom to top)

- hive stand to support the entire hive
- bottom board upon which the remainder of the hive rests and through which the bees typically enter and leave
- one or more boxes (called brood chambers) that serve as a place where bees are raised from egg to adult
- one or more boxes (called honey supers) that serve as a place for bees to store excess honey that the beekeeper can take
- cover or top.

Following is a list of equipment needed for each hive. For additional hives, multiply these numbers by 2, 4, 10, etc.

Hive stand

There is no real need to buy a hive stand from a catalog. Those often don't work as well as one the beekeeper assembles, and the wooden ones tend to rot. You can buy materials for a hive stand locally and assemble your own. The stand can be made of pressure treated wood, concrete blocks, bricks, used pallets—anything to keep the hive off the ground.

Bottom board

There are several alternatives. A simple bottom board is made of pine or cedar and has a solid bottom. Screened bottom boards are increasingly popular as one way to help control or estimate Varroa mite populations in the hive. Some bottom boards are quite elaborate, but simpler is better at first until you learn the basics and develop your own beekeeping philosophy.

Brood chambers

Following is a common arrangement for brood chambers, which uses two deep boxes holding ten frames for each hive. There are other options available. See notes below

- 2 deep hive bodies, 9 5/8" (also called deeps)
- 20 frames, deep, 9 1/8" - (The type of frame depends on the type of foundation you use, e.g., wired wax requires a wedge top bar, plastic a grooved top bar)
- 20 sheets of deep foundation (Either wax-coated plastic, crimp wire, or unwired brood. Avoid Duragilt.)

Honey supers

Most beekeepers in this area use medium boxes, also called Westerns, as honey supers, the boxes where bees store their excess honey. Two supers per hive should be adequate. Some hives won't produce enough honey to require two supers, while others will produce more honey than two supers can hold. Two supers per colony is a good average. For more information, see notes below, particularly regarding 8-frame versus 10-frame equipment.

- 2 supers, medium, 6 5/8"
- 20 frames, medium (as with the deeps, the type of frame you get depends on the type of foundation you use)
- 20 sheets of medium foundation (If you plan to extract honey from the comb, use either wax-coated plastic or crimpwire. Avoid Duragilt. If you want to make cut-comb honey, use thin cut-comb foundation.)

Notes on brood boxes and honey supers

1. You can use 8-frame equipment instead of 10-frame. The boxes are narrower and therefore lighter in weight. In that case, you will only need eight frames and eight sheets of foundation for each box. Either 8-frame or 10-frame equipment work well, so you can choose either. Do not mix them, however.
2. Rather than deeps for hive bodies you can use mediums (Westerns). In that case, you probably should have three mediums instead of two deeps. Similarly, instead of medium supers, you might use deeps (9 5/8"). Medium boxes are lighter than deeps, particularly when full of honey (60 pounds instead of 90) and are therefore easier to handle. Using exclusively mediums or deeps offers the advantage of standardization of equipment: the beekeeper has only one size super for brood and honey.
3. Extra deep or medium boxes are handy to have around for use in covering feeders.
4. Bee supply companies sell shallow boxes (5 11/16") that some people use as honey supers. These are lighter and therefore easier to handle than mediums, but they hold less honey for about the same investment in time and money to assemble the equipment.
5. You can order frames with foundation already assembled, either as one-piece plastic frames with foundation or as wooden frames with plastic foundation.
6. Some advocate not using foundation in frames so that the bees will make their own comb. While that strategy is certainly possible, it increases the chances of problems and can make hive manipulation more difficult.

Cover or top

There are two options. The more elaborate and expensive is a telescoping top and inner cover. Alternatively, and less expensively, you could use a migratory top, which is a flat wood cover. Most commercial beekeepers use migratory tops. If you use a telescoping top you will need an inner cover as well; otherwise the bees will glue the top to the hive with propolis making it extremely difficult to remove.

Avoid the “garden style” telescoping top that has a peaked roof because you cannot lay it flat on the ground and use it to set supers or brood boxes on.

Items needed to assemble woodenware

- Nails for hive bodies and supers – 7 penny box, galvanized, which you can buy locally. This is an unusual size but the bigger hardware stores carry them. If you can’t get 7 penny galvanized box, 6 penny will do fine. Some beekeepers screw their bee boxes together. Others use staples.
- Nails for frames – You will need nails if you buy unassembled frames.
 - Regular frame nails – You should buy these from a beekeeping supply because they are an unusual size. Some beekeepers, however, prefer to use locally-purchased galvanized nails of about the same size. Other beekeepers with the proper equipment use staples to assemble frames.
 - Small frame nails – You'll need these for the wedges if you get frames with a wedge top bar.
 - You can also use crown staples to assemble frames if you have the pneumatic equipment.
- Good quality wood glue – use on all wooden components.

Considerations for wax foundation

Note that if you choose wax foundation, pre-assembled frames with foundation generally are not available from the beekeeping supply companies. Also frames with wax foundation are more difficult and take longer to assemble than frames with plastic foundation.

If you decide on wax foundation instead of plastic, you'll need to provide extra support for the foundation either by installing special pins or tinned wire.

- Support pins: These are available from the bee supply catalogs. You'll need eight pins for each deep frame and four for each shallow. No other equipment is needed to install them. In honey supers wiring seems to work better than support pins because the supers are subject to centrifugal stresses in the extractor. (Some folks say that bobby pins can be substituted for support pins)
- Support wire: This is tinned wire that is stretched across the length of the frame in four passes and then embedded into the wax of the foundation. The wire supports the wax foundation during extraction. Metal grommets are inserted in the holes in the end bars to prevent the wire from cutting into the wood when it is stretched tight.
- The following equipment is needed to install the wires:
- 2 spur embedders (These are spur shaped wheels mounted in handles so they roll. You heat them in water and roll them over each cross wire to melt it slightly into the wax foundation. If you use two you can alternate them for each wire, so that the one not being used will be re-heated in the warm water.)
 - 1 one-pound roll of tinned wire (You should acquire this from a beekeeping supply company because wire in the hardware store is not tinned.)
 - 1 package of metal grommets and punch (You should also acquire this from a beekeeping supply company).
- Using a wiring jig to hold the frames while you wire them makes the process much easier. It is simple to make from a small piece of plywood and scrap lumber or borrow one from an experienced beekeeper.

Miscellaneous Equipment

- Queen excluder – wire-bound is best. You probably won't need one the first year. Most beekeepers use them and swear by them, but some avoid them and swear at them.
- Feeder – It will be necessary to feed your bees sugar water when you get started and at other times during the year. There are several options for feeders: division board feeders that fit in the hive in place of a frame or two, top feeders that sit on top of the hive, and Boardman feeders that fit in the hive entrance. Also, you can make your own feeder from a large jar with holes punched in the lid. This works fine, as does a gallon Zip Lock baggie filled with sugar syrup, laid across the top bars or a queen excluder, and small slits cut into the top.
- Several 5-pound bags of sugar – You will need to feed your bees to encourage them to produce wax for comb building.
- Paint for the exterior of the hives – Buy locally. Color doesn't matter.

Additional notes on equipment

Ruhl, Dadant, Mann Lake, and other suppliers also sell boxes, foundation, frames, and often nails, as a package. Suppliers commonly sell “beginner kits” that contain a veil, smoker, hive tool, and other equipment in addition to hive components. Before ordering or purchasing one of these, talk to an experienced beekeeper to make sure it would be appropriate for you.

It will likely take longer than you think to select, order, and receive hive components and to get them assembled and hive boxes painted. Plan accordingly to avoid not being ready when your bees arrive.

B. BEES AND QUEEN

For each hive, you'll need either a package of bees with a queen, or a nucleus hive (nuc) and queen. If you get a package, order three pounds. Nucs typically comprise four or five deep frames of bees. The packages and nucs are usually supplied with a queen. Someone in your bee club can help you find a supplier of bees.

Note, if you decide to use medium (Western) boxes for the brood chamber or you have a top bar or Warre hive, you will not be able to use a nuc that is made up of deep frames. In that case you will need to start with a package of bees.

Races and other characteristics of bees

The most common races of bees are Carniolan and Italian. You can also get bees with certain characteristics such as hygienic behavior or suppressed mite reproduction (SMR), now known as varroa sensitive hygiene (VSH). Don't worry about race or a particular characteristic at this stage. For a beginner, the most important thing is to gain knowledge about bees and experience working with them. After you have kept bees for a few years, you might want to try a different race or a particular characteristic, but right now none of that matters much.

C. MEDICATION

Regardless of the number of hives, you probably will need a way to control mites in your hive. There are several possibilities, each with proponents and nay-sayers: drone brood frames, powdered sugar, oxalic acid, thymol, formic acid, etc. Also, a few beekeepers treat their hives with antibiotic as a

prophylactic against American foul brood. With regard to medication, talk to several experienced beekeepers and make up your own mind. This is a complicated topic with a variety of approaches and often strong opinions.

D. PERSONAL EQUIPMENT

Regardless of the number of hives, you probably need only one each of the following:

- Small (7") smoker with heat shield – For just a handful of hives a small smoker is more than sufficient. Get a good one like a Maxant or Dadant and not a cheap knock-off like some suppliers sell.
- 10-inch hive tool, standard or Maxant hooked-end version – You might purchase two because they are easy to misplace.
- Veil and helmet, or a hatless veil – If more than one person will be working with your hive(s) at a time, each will need a veil.
- Pair of gloves – If you order bee gloves, be sure to get the ones with leather or rubber hands and not the ones made only from cotton. The latter cannot be washed because washing removes the sizing which affords protection from bee stings. You can also get by temporarily with rubber kitchen gloves.
- Bee suit (optional) – A bee suit is not necessary unless you really want one. You can also use regular coveralls with a veil.
- EpiPen – The EpiPen is available only by prescription. Consult with your doctor about getting a prescription for one (or two) before you start beekeeping.
- Notebook and pen – Keeping records of your hive(s) will help you learn more quickly. A small notebook that you can take with you to the hives works best.
- Bee brush (optional) – You can also just use a small, leafy branch, a goose feather, or even your finger
- Frame lifter (optional) – Some beekeepers use them, most don't. If you plan on wearing gloves while you work your bees, you will need a frame lifter.
- Container to hold your smoker and tools – A 5-gallon bucket and lid is ideal for this. Whatever you use should have a tight lid if you intend to transport your smoker in a closed car. Here are some other items for your gear box:
 - Smoker fuel (burlap, pine needles, wood shavings, etc., plus newspaper for tinder)
 - Matches or lighter (a long-stemmed charcoal lighter works great for this.)
 - Spray bottle with water (for clean-up)
 - Bottle of rubbing alcohol (to clean propolis from your hands)
 - Rags
 - Lumber crayon to make notes on the top of your hive

E. EXTRACTING EQUIPMENT

Don't buy anything now. After keeping bees for a year or two and talking to other beekeepers, you'll know better what you prefer. Also there may be an opportunity to share extracting equipment with other beekeepers.

F. BOOKS AND MAGAZINES

It would be very difficult for a hobbyist to succeed in beekeeping without reading extensively about bee behavior and biology, and about techniques for keeping them. Here are a list of some basic books and magazines. You don't need to acquire all of them, but all are worth reading.

Overview

- A Book of Bees, 1988 - Sue Hubbell, Houghton Mifflin Company, Boston
- The Beekeeper's Handbook, Fourth Edition, 2011 - Diana Sammataro and Alphonse Avitabile, Cornell University Press
- Honey Bee Biology and Beekeeping, 2013 - Dewey M. Caron, Wicwas Press, Cheshire, CT
- The Magic School Bus Inside a Beehive, 1996 - Joanna Cole, Scholastic Press, New York

Getting started

- Beekeeping Basics - Penn State University
- Backyard Beekeeper, 3rd Edition - Kim Flottam, A.I. Root Company, Medina, OH 44256
- First Lessons in Beekeeping, 2007 - Keith Delaplane, Dadant and Sons, Hamilton, IL
- Beekeeping for Dummies, Second Edition, 2014 - Howland Blackiston, Hungry Minds, Inc.
- How to Keep Bees and Sell Honey, 13th Edition - Walter T. Kelley (13th Edition edited by Doris Pharris), Walter T. Kelley Company, Clarkson, TN

Other reference

The first two are probably not worth the expense to acquire initially, the third is a small pamphlet focusing on California

- The Hive and the Honeybee, Revised Edition, 1992 - Joe M. Graham, Editor, Dadant and Sons, Hamilton, IL
- ABC and XYZ of Bee Culture, 40th Edition, 2007 - A.I. Root Company, Medina, OH 44256
- Beekeeping in California, Publication 21422, 1987 - Cooperative Extension, University of California, Division of Agriculture and Natural Resources, Oakland, CA.

Hive management – Intermediate topics

- The How-To-Do-It Book of Beekeeping, Fifth Edition, 1998 - Richard Taylor, Linden Books (out of print)
- "Essentials" books from Wicwas Press

Magazines

- *Bee Culture*, published by Editor, A.I. Root Company, Medina, OH 44256
- *American Bee Journal*, published by Dadant and Sons, Hamilton, IL