

Mastering Beekeeping: Years Two And Three

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Quite frankly, if not done during the first season of keeping bees, the second and third year are the years that set the course for many beekeeper's success or failure. Once the first year is completed, beekeepers are either challenged to start over for a variety of reasons: package bee failure, queen failure, general colony neglect, ignorance of basic bee management practices, failure to recognize problems with queens, diseases and mites, and countless other issues. Or, through a combination of luck and good training and self-study they have managed to keep their colonies alive and are ready to grow their colony numbers or increase production through better management.

At the end of a beekeeper's third year, we would expect that he or she will have mastered all of these areas and perhaps dived into queen rearing, specialized honey and hive products, teaching beekeeping, equipment-bees-queen sales, and more – If they did not start some of these activities in their first season. It is always amazing to see inexperienced beekeepers jump into something others consider too technical and come out smelling of great success.

There are beekeepers that take the minimalist approach to doing

as little as possible with their bees during the first three years, so I need to say that it has been my experience that this is somewhat risky for their overall success in long-term beekeeping. Without a solid basis of knowledge, it is harder for beekeepers to sustain themselves over the years using their good luck as their primary asset.

It is often repeated that a second year beekeeper is the most dangerous beekeeper in the apiary and classroom because they have all the answers. Certainly those who were blessed with positive experiences and good luck with their bees are quite often adamant about their 'proficiency' as a beekeeper. They have often not learned the challenges of a difficult beekeeping year, of growing mite levels, and exposure to pesticides and the growing threat of disease infestation. While we do not want to minimize the importance of second year beekeepers as teachers of first year beekeepers – they are closest to the experience – they still require monitoring by more experienced beekeepers. Therein lies the conflict, finding a balance between learning and growing with bees versus a large area of inexperience.

What should a second and third year beekeeper be able to do?

Here are some of my thoughts of the many areas they should master during the first three years of keeping bees:

Bee Anatomy – Full knowledge of the parts of the bee, both internal structures and internal anatomy, coupled with a good understanding of what each part of the bee does in the life of the individual bee and colony function. They should be able to teach this to other beekeepers.

Floral Anatomy – They should be able to identify the parts of common flowers, how nectar and pollen are produced, the keys to pollination of key plants for their region, and be able to teach this to neighbors, growers and other beekeepers.

Bee Venom and Stings – More experienced beekeepers should be able to recognize a local reaction as compared to life threatening anaphylactic shock. The experience of these beekeepers is critical when working with both new and established beekeepers, as we all hear of those who have suffered a major scare following a bee sting. Second and third year beekeepers should always error on the side of caution, but be able to determine if a bag of ice is the best treatment, or when to phone 9-1-1 with a possible emergency.

The Beekeeper Annual Cycle –

Starting either in the later Summer or in January, a beekeeper should be able to review in some detail the key changes that take place during each month of the year in the area where they keep bees. They should be able to show how different seasons produce different results in pollen and nectar production, and how this impacts colony management. This cycle should be broken into several themes:



After a few years of beekeeping East Texas resident Mike Rappazzo became interested in queen rearing and growing his bee business. There are many new, highly charged beekeepers with a mixture of successes and failures – the second and third years often are the seasons that determine a long-term beekeeping career.

Population Cycle – Following the Winter/early Spring decline, beekeepers should be able to discuss the increase of brood and bee populations as the seasonal buildup leads to stronger hives and robust forager populations. In his writing Dr. Dewey Caron reminds beekeepers that the key to successful bee colony management is through proper bee population management, and all teachers and mentors need to remind their students of this.

Swarming Cycle – These beekeepers must attempt to master the Spring and late Summer/early Fall swarming cycles, adapted for the regional area where the beekeeper keeps bees. Methods of swarm prevention and swarm control should be strongly established within the beekeeper's skill set. Methods of swarm capture and management are suitable at this or an earlier level. While not all beekeepers should be able to perform colony removals – it requires non-beekeeping skills not all beekeepers possess – but the second and third year beekeeper should be able to work with a well-protected carpenter or another beekeeper to remove a colony using various techniques, and be able to tie up combs into empty frames or onto top bars (in frameless management systems).

Honey Cycle – Know when to super, when and how to harvest honey, and how to deal with honey processing-storage-bottling-sales. I am always amazed at the number of two to three year beekeepers who are overwhelmed when their colonies produce surplus honey and they do not know what to do with it. Excuse me, why did you start a dozen colonies of bees?

Disease Cycle – The use of the word cycle applies mostly to *Varroa* mites, as true diseases follow a more random pattern of infection based on contamination exposure. But chalkbrood and noseema are both known to follow certain highs and lows as influenced by the weather and seasonal influences. *Varroa* mites will increase in numbers as

related to levels of mite tolerance, mating accuracy, drone production and other factors stimulate mite development within colonies in an apiary. Depending upon the region where a beekeeper keeps bees, the mite population cycle may take a year or more to be fully expressed.

Disease, Pest and Pesticide Detection – Every third year beekeeper should be able to determine if a colony, or a sample from it, should be checked by a qualified laboratory, like USDA-Beltsville, for American foulbrood, European foulbrood, chalkbrood, noseema, tracheal mites, *Varroa* mites and pesticide damage. The best of all beekeepers will be able to do much of the recognition work at this stage, but all third year beekeepers should be able to determine if they should have a colony sample checked by qualified individuals or services.

American foulbrood – By this time a beekeeper should be able to inspect old beekeeping equipment to look for AFB scale left from a previous dead out from American foulbrood. The beekeeper should be able to perform a field exam for AFB killed larvae in the late larval stage by checking for a strong sour odor and ropiness.

***Varroa* mites** – Using a standard sampling method using powdered sugar, ether, or a full screened bottom board and powdered sugar, a third year beekeeper should be able to measure the mite level in each colony in a small apiary and compare that data from colony to colony and apiary to apiary. This should become a preliminary aspect of determining if the colony needs to be treated for mites, using any number of treatment options.

Miticide and chemical Use – Beekeepers should be able to read the label of any chemical and examine it for its risk to honey bees and other pollinators. Apiary pesticides should be carefully studied



Beekeepers in their second and third years often build their own equipment. This is a home-made extractor from Ed Simon's book Bee Equipment Essentials.

before being selected for use. The beekeeper must follow treatment procedures and safety concerns. If a residual strip or artifact remains after treatment, its correct removal and disposal should be followed. All efforts should be to provide safe application to the bees without causing bee mortality and contamination of honey and hive products.

Equipment and Terminology

– Take the glossary from a good beekeeping book and see if you can identify at least 80% of the terms and items of equipment listed there. Know the key leaders in the development of American beekeeping, and study global beekeeping development as well. Using that 80% standard, you should be able to identify most items in a commercial or sideline beekeeping operation, even those producing package bees or queens. Much of this will come with normal curiosity with bees and beekeeping.

What is Honey? – Does filtering convert honey into non-honey? Does heating at 160° do the same? This is a fuzzy, grey area for a lot of beekeepers, and all must know what the law and marketing rules say about putting Pure Honey on a jar, as compared to Funny Honey

or some other label. While there is a great deal of misinformation out there, get the facts and follow them. Is there a legal description of Raw Honey? More to the point, every beekeeper should be able to look at a container of honey and point out any mislabeled items, such as lack of weight, location of source and producer.

Comb Analysis – Third year beekeepers should be able to identify the content of each cell on each frame in a hive. This includes ALL stages of brood, stored nectar, stored honey (sealed and open), loose pollen, new bee bread, water and propolis-covered cells. The beekeeper should be able to rearrange a set of frames into the natural position that the bees would produce without beekeeper interference.

Other Hive Products and Handling – Third year beekeepers should be able to produce honey, pollen, beeswax and propolis. They should know the best practices to

use for the harvest, processing, storage and marketing of these products. Knowledge of labels, limits on claims of product properties and general legal issues concerning these products fits the third year level. They should have submitted at least one of these items of their own production in a local fair, honey judging event or have their product evaluated by a trained professional.

General Entomology – By third year, beekeepers should be able to identify common non *Apis* bees, wasps (including yellow jackets and hornets), flies and bee mimics typical to the area where the beekeeper operates. They should understand the system of naming insects, starting with a common name, and followed by the Latin name. They should be able to identify regional pollinators and stinging insects and their mimics by common name.

During the fourth and fifth year of keeping bees, most beekeepers perfect their skills, and be actively involved in honey and hive sales, pollination, and teaching new beekeepers. **BC**



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