

Advanced Honey Production

BBE-Tech Apiary Services
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Should you be interested in becoming certified through BBE-Tech Apiary Services as a Honey Production Specialist (after obtaining the Apiarist Certification) the written exams will be focused primarily on the material presented in this study guide.

There are Four Main Categories of Focus When Producing Honey

- 1) Preparation
- 2) “Pulling” Honey
- 3) Bottling & Labeling
- 4) Marketing

This study guide will provide information relating to all four of these categories. If you are taking a Honey Production class offered by Tony Sandoval, you will have the advantage of being able to ask questions, verify information, clarify information and extrapolate ideas as they may apply to your specific apiarist endeavors.

If you downloaded this study guide from the BBE-Tech website, I hope that this provides you with information to help you be successful. You may arrange a private consulting/coaching session with Tony or arrange for a private class to be offered individually or for a group.

This class assumes that you have already had some familiarity, education and/or experience using a variety of honey extracting equipment. If you have not, you may want to consider a private coaching session with Tony to become familiarized with this type of equipment.

Producing honey on a hobbyist level is somewhat the same as in an apiarist situation except that the scale, scope and necessity is wider and greater. If the hobbyist does not get a good crop of honey, it's unfortunate. If the apiarist does not get a good crop, it's a loss of income. The goal of this guide is to provide you with useful information to assist you in the production of honey in a for-profit model. Hobbyists, don't fear, you aren't in over your heads, there is plenty of good information here to help you in your hobby production and who knows, may help you move into honey production on even a “part time” scale.

Table of Contents

There are Four Main Categories of Focus When Producing Honey.....	1
Preparation.....	3
Production Hives.....	3
The Colony:.....	3
The Hive:.....	3
Finally, the frames.....	3
Forage Source(s).....	4
Location, Location, Location.....	4
(Not) Organic Honey.....	4
Not All Plants Are Ideal.....	4
Working Hives To Prepare For The Season.....	5
“Pulling” Honey.....	5
Cut Comb Honey.....	6
Extracted Honey.....	7
Bottling & Labeling.....	8
Marketing.....	11
Who Buys Honey?.....	11
Honey Marketing Techniques.....	12
Fact Sheet.....	12
Honey; Types & Traits.....	12
Overall Honey Production Facts.....	13

Preparation

Preparing for honey production begins right at the beginning of the year, and with experience, forward thinking and good planning, you will soon find yourself preparing for the next season before the current season is half over.

Production Hives

Everything important for setting yourself up for the best possible harvest begins with healthy, strong production hives.

The Colony:

Healthy; Hives that have a young, virile, abundant and great egg laying pattern and well established local adaptation traits. Hives populations are numerous and in a stress-free environment. Bees that are low stress in their environment are excellent producers.

Strong; Hives that are strong are populous and active. They display excellent foraging traits and the ability to sustain a large population during the active season. They tend to over-winter well and build up early in the Spring. Hives are considered to be “Strong” when about 80% of the frames are covered with bees and brood coming into Spring. That is roughly 8 out of 10 frames in a conventional Langstroth hive system. In an 8 frame hive, that’s about 6.5 frames.

Keep in mind that each frame has two sides. So in the example of the 8 frame hive, a simple image would be to imagine bees on six full frames and on half or one side of a 7th.

The Hive:

In a conventional 10 frame Langstroth hive, there are more frames to contain honey, consequently bigger hive boxes make more honey. They also weigh much more than an 8 frame box full of honey. This is something very serious to consider when planning. Yes, you are in it to produce lots of honey but you won’t get much done if you hurt your back unnecessarily.

Also consider that a narrower 8 frame box is easier to handle and get a grip on. If that’s not an issue, no worries, but don’t take on too big of a load that is too difficult to handle or you’ll be making more repairs and replacements to equipment than is worth the extra time and expense.

Finally, the frames.

In any hive, 10 or 8 frame, you will have undoubtedly heard that by placing 1 less frame in the box nets more honey than if the full number were installed. For example, in a 10 frame hive box, many will only put in 9 frames instead of ten and get more honey on 9 frames than if all 10 had been installed.

This is true. HOWEVER. There's a catch. With bees, there usually is always a catch. If you are installing frames with no or new foundation in them, then go ahead and install all the frames, be that 10 or 8. You will most likely not achieve maximum production on new or no foundation. However, If you are using mostly drawn out frames that have only had the cappings removed from a previous harvest, then you put in only the 9 and the bees will go to town and give you more bang for the buck.

Forage Source(s)

Location, Location, Location

Where you have your hives located is going to have a huge impact on your honey production. Where are you going to place your hives? Are you going to move them to crops and locations as they bloom to get the most of the bloom?

Will you have them in a stationary location where they will take advantage of what is planted around them? What will be planted around them? Will there be varying blooms so that as one plants finishes blooming, another begins? Will there be planting of perennial or nearly perennial blooming plants to avoid periods of scarcity or dearth? These are critical questions that you have to have answers for.

Mobile honey production, following blooming crops like a band of gypsies, requires everything to be set up for mobile production or at least for easy transport to a stationary collection point.

(Not) Organic Honey

Let's be honest with ourselves. There is no such thing as "organic" honey. Scientifically speaking, beekeepers cannot guarantee that the nectar honey bees are bringing back to the hive to make honey from is from entirely organically grown plants. There is little we can do to keep bees exclusively within specific boundaries to collect nectar only from the plants within those boundaries unless they're on an island or some similar area that is well beyond 8 miles away from any other sources. Short of being on said island, we cannot train bees nor will they be constrained or even enticed to stay within certain bounds because we want them to.

Not All Plants Are Ideal

There are many plants which benefit more from bee pollination than they provide that is useful to the bees. They are not very good nectar sources so while someone may want your bees on their crops to help improve their harvest, your first concern is to ensure your harvest. Honey Crops are high nectar producers. Don't waste your investment, time and resources placing your bees on poor harvest source crops. In the end, all you will end up with are "burnt out bees" because they have to work much harder for less return. In the hot, hard days of Summer, the bees can use up all the nectar and honey they consume to make the foraging flights to bring back less honey than they consumed. This requires more trips and more stressed and overworked bees.

Working Hives To Prepare For The Season

Production hives are those best prepared to produce honey in large amounts. These are colonies that come out of Winter with strong populations and have not been allowed to swarm or otherwise dramatically decrease the colony worker population.

Artificial splits could be done at beginning of Spring to prevent Spring swarming due to large population but not so many bees removed so as to inhibit honey production. Splits into “Baby Nucs” is often successful to accomplishing this. Again, the strength of the colony will determine the size of the split(s). Some colonies, Especially Italians, are booming so big coming out of Winter that you can make one or more “full” splits from them. The point is to take enough bees to keep a true swarm from starting while keeping enough bees to have a strong field force from the beginning.

I talked about healthy colonies at the beginning. Healthy colonies start with great Queens. It’s not uncommon for Honey Production apiarists to re-queen colonies every year or every two years. Depending on where you are will determine the best time to re-queen the colony. Here in the Great Plains region, it is often done in the late Summer or early Fall while there are still a lot of drones around to mate with your own locally raised queens from your best proven stocks.

Pro-Tip – Entrances should be below honey supers but can be above brood boxes to encourage bees to store honey, have less “travel-stained comb. Travel stain is more of a problem for those making Cut Comb honey and selling wax cappings for candles.

Pro-Tip – Swap honey supers end0for0end when they are about 2/3 to ¾ full so as to encourage complete filling of frames if bees seem reluctant to fill frames completely.

Pro-Tip – Level hive instead of slight forward incline when adding honey supers to encourage bees to evenly fill frames.

Pro-Tip – Apiarists tend to use Queen excluders on Shallows to keep queen from laying in the frames. Sections and Ross Rounds deter the Queen due to design.

“Pulling” Honey

Cut Comb honey is always in demand though some think it takes more labor to produce. Having just a certain percentage of your honey pull be cut comb could be very lucrative in the right market.

Motorized extractors are definitely a worthwhile investment in producing large crops of honey. Hand crank extractors are fine for just a low level/hobbyist activity. You will extract more for less labor investment with a motorized extractor.

Higher quality extracted honey is often that which was left on the hive after capping. Under-super new boxes below capped boxes to let them “ripen most fully.

Heavy smoking to drive bees out of supers, fermentation, poor forage sources, too much chemical repellent to drive bees out all can negatively affect honey flavor.

Use of a Refractometer to determine moisture level, a Polariscopes to determine particulates and a Pfund Grader to determine color class of honey can be very valuable tools to the honey producing apiarist.

Light color honey tends to be milder with a lower mineral content.

Pasteurized honey is honey heated to 145° F for 30 minutes or more. Heated honey to kill bacteria and make honey flow easier only needs to be heated at no more than 100 to 110° F.

Cut Comb Honey

Three primary methods;

- Ross Rounds
- Section Boxes
- Shallow frame Cuts

Lowest cost to produce and easiest is Shallow Cuts

Easiest to Produce and market is Ross Rounds. Ross Rounds easier for bees than sections. Less labor by apiarist.

Most recognized presentation is Shallow cut or Sections

Higher prices tolerated on Cut Comb

Better, more “full” flavor in Cut Comb over extracted

Typically higher prices and lower availability to produce in volume reduces amount to keep in stock and in demand.



Extracted Honey

Crush & Strain vs Centrifugal force

Cheaper to produce in larger volume over CC.

Most common available bottled, most commonly recognized

Not as flavorful as CC but average buyer doesn't pay attention to difference.

Presentation makes it more marketable

Designer labels sell better over generic labels

Specialty bottles improve marketability

Specialty labels and bottles increase production costs

Extracting equip costs \$\$\$ up front, increases in value over multiple uses.

"Simple" methods equip costs less up front, labor costs high every time.

Heating honey can kill natural yeasts which can lead to fermentation. Note that heating will also decrease rate of crystallization and lower flavor and any nutritional qualities of honey.

Pro-Tip: Fill bottles so that honey runs down inner sides, not poured directly into middle. Less air trapped in honey. "Froth" is an indication of air trapped in the honey container. Use a settling tank and skim the honey before filling jars or containers from settling tank to remove air. Don't drop honey in containers or have a long distance while pouring to minimize trapping air.

Pro-Tip : Oval glass jars allow more light to pass through and improve presentation.

Pro-Tip : Try to only extract from fully filled and capped frames. Partial frames should be kept in a warm, dry, area with air flow to dehydrate the honey properly before extracting.

Pro-Tip: Have a "Hot Room" in your honey house to keep honey at a lower viscosity and easier to flow while being prepared and bottled.

Pro-Tip: Start the centrifugal extractor slowly then build u to rapid spinning. This helps with load balancing and preventing honey house accidents.

Bottling & Labeling

Honey Labeling From the National Honey Board Website



One of the most important decisions that a food marketer has to make is what to put on the label of a food product. It needs to appeal to the consumer and stand out from other food packages on the shelf. There are also legal considerations. And let's face it, when it comes to labeling a honey jar, there's limited space.

Basic Labeling Requirements

LABELS MUST COMMUNICATE THE FOLLOWING:

The "Common" Name of the Product

The word "honey" must be visible on the label. The name of a plant or blossom may be used if it is the primary floral source for the honey. Honey must be labeled with its common or usual name on the front of your package. (i.e. "Honey" or "Clover Honey")

Net Weight

The net weight of your product (excluding packaging), both in pounds/ounces and in metric weight (g) must be included in the lower third of your front label panel in easy-to-read type. (i.e. Net Wt. 16 oz. (454 g)) When determining net weight, use the government conversion factor of 1 ounce (oz) = 28.3495 grams or 1 pound (lb.) = 453.592 grams. Round after making

the calculation – not before. Use no more than three digits after the decimal point on the package. One may round down the final weight to avoid overstating the contents. When rounding, use typical mathematical rounding rules.

Ingredients

Single ingredient products (such as honey) do not have to name that single ingredient when already used in the common or usual name on the front panel. However, if there are ingredients other than honey, you must list them in an ingredient statement. Some exceptions are spices, flavorings and incidental additives (additives which have no functional role and with minimal presence in the finished product) which have special rules.

The type size for ingredient listings must be no less than 1/16th inch as measured by the small letter "o" or by the large letter "O" if all caps are used in the declaration. There are exemptions that allow smaller type sizes for small packages.



Contact Information

The label must let consumers know who put the product on the market and how to contact that person. The name and the address of the manufacturer, packer or distributor of a packaged food product are required to appear on the label of the packaged food. This information, sometimes referred to as the "signature line," must appear on the front label panel or the information panel. If space permits, include full address and telephone number. The information must be in a type size that is at least 1/16th inch tall.

In Nebraska, most honey sales done "belly to belly" such as at a farmer's market, one to one, etc.. does not require special kitchen or licensing. County health depts such as Douglas County, Nebraska where I am do ask that a sign be placed on the sales table if at a flea market or Farmers Market stating the product is not prepared in a licensed kitchen.

In the case of bulk sales and selling honey on store shelves through vendors, the story changes up a bit. For example, In Nebraska, particularly Douglas County where I am, honey sellers are supposed to process through a licensed commercial kitchen. There are a few particulars and it really pays to contact the Health Department directly as they can walk each producer through the specifics as they apply to each individual situation.

In general though, the licensed kitchen is almost always encouraged to be your own, not rented or leased unless no one else is using it for their own purposes. Of course, there is a permit/license required to get the kitchen in question inspectable and passing said inspections. For a commercial seller, I want to think the permit cost is somewhere currently in the area of about \$385.00/year. Obviously those numbers can change so always check with the Health dept or whichever city, county or state dept oversees such permits.

One thing to keep in mind is that part of the kitchen issue is not just preparing the honey to be bottled there, whether you heat it, pasteurize or sell it raw, is storage of the food product. The honey you harvest and bottle **MUST** be stored in the licensed kitchen area. This applies to honey sold in bulk such as 1, 3 or 5 gallon containers, etc... as well as the barrels or other containers holding the pre-filtered/bottled honey.

Honey businesses with gross sales over \$500,000 are required to include a nutrition label on containers.

Containers of honey weighing more than four (4) lbs may show weight in pounds and kilograms only. 1 to 4 lbs must show pounds & ounces and grams. Less than one (1) lb may only be shown in ounces.

The “Infant Warning Sticker” regarding Infant Botulism is not required by law. Many sellers still include it on the containers especially if their honey has been heated or pasteurized for sales on store shelves.

There are seven honey color designations; Water White, Extra White, White, Extra Light Amber, Light Amber, Amber and Dark Amber. The National Honey Board has an official definition of honey which is; “Honey is the nectar and sweet deposits from plants as gathered, modified and stored in the honey comb of honey bees.”



Marketing

Ingredient source. Usually purchases by the pail (1,3 or 5 gal) Pay wholesale

- Bakeries
- Restaurants
- Mead Makers
- Honey Packers. Usually by the 55 gal drum. Pay minimum per pound
 - Sioux Bee
- Pricing
 - Retail - cost + what the market will bear 50 to 200% over cost on avg
 - Wholesale- cost plus 25 to 50%
 - Packers - Industry minimums, fluctuates on larger markets.”Usually” \$1.50/lb or less

Who Buys Honey?

1. Average Joes
 1. A typical buyer who happens to use honey but isn’t particularly picky or make distinctions.
 2. Isn’t well educated in honey qualities or particularly interested. Honey is honey.
2. Niche Buyers
 1. Looking for something uncommon or fulfills a certain expectation.
 2. Specialty presentation has high appeal
 3. Love “The Story”
3. “Old School”
 1. Remembers eating honey as a staple from childhood.
 2. More often than not will take raw extracted but frequently desires Cut Comb

Honey Marketing Techniques

Incentivise: BOGO, _____

Motivate: Bee healthier, _____

Educate: Honey facts, _____

Presentation: Obs hive, _____

Communicate: Social media, _____

Inclusion/ownership: Tell stories, _____

Fact Sheet

The following information is essentially import things to keep in mind and know about honey, harvesting it, packaging it and marketing it.

Honey; Types & Traits

- ✓ Honey will ferment if allowed to build moisture at or above ~17% Properly “cured in the comb” honey is preferred or best practices suggest heating it.
- ✓ Fructose is the predominant sugar in most American honey
- ✓ Honey quality is mostly affected by heat and moisture content. Heat takes away the most unique flavor qualities and breaks down levulose (fructose) sugar. Darker honeys are more susceptible to heat.
- ✓ Honey will rapidly crystallize at 57° F
- ✓ Crystallization occurs around particulate matter (pollen granules, etc...) in Honey, the more it is filtered and heated (particulates are strained out and/or melted), the less rapidly honey will crystallize.
- ✓ Average pH level of honey is 3.9
- ✓ Honey is hygroscopic. It absorbs moisture from moist air/contacts and loses moisture to dry air/contacts
- ✓ The faster honey granulates, the smaller and finer the crystals. This produces ideal creamed honey.
- ✓ Ross Rounds contain approx. 8 oz of honey

- ✓ Cut Comb honey is best protected from wax moths and other pests by freezing them for at least 24 hours.
- ✓ Honey yeasts do not grow below 50° F. Honey stored below that will not ferment.
- ✓ Honey is an acid medium. Preventing many forms of bacterial growth
- ✓ Honey contains naturally occurring (organic) hydrogen peroxide. It protects from certain molds, bacteria and fungi.
- ✓ All honeys will darken and lose flavor in warm storage. Heat degrades honey, store it cool and dry.

Overall Honey Production Facts

- ✓ Most common ways to sell honey are; extracted, Cut Comb, Sections, Creamed/whipped(finely crystallized), “chunk”.
- ✓ “Raw” honey is honey that has not been filtered or has only undergone limited straining or heated above 95° F.
- ✓ Creamed honey does not need to be refrigerated but will re-liquify if kept in warm temps for extended periods of time. Liquified creamed honey can’t be creamed again without starting the cream process all over again.
- ✓ Per capita annual consumption of honey is generally about 1 lb per person in the U.S.

