



# Culinary Beekeeping for the Executive Chef

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# Culinary Beekeeping for the Executive Chef

Discover the benefits of Beekeeping for chefs beyond harvesting local, affordable honey.

Today's topics:

- +The necessity of pollination.
- +The difference between a hive and a colony.
- +The Queen and her court.
- +The life of a bee and the dangers it faces.
- +Basic in's and out's of getting started.
- +Equipment needed to maintain a hive.
- +Managerial best practices.
- +The harvest and how to make it happen.

*Question and Answer time*



# Culinary Beekeeping for the Executive Chef

The necessity of pollination.

*If the bee disappeared off the surface of the globe than man would only have four more years of life left. No more bees, no more plants, no more animals, no more man.*

*Albert Einstein*



# Culinary Beekeeping for the Executive Chef

- Here is a list of foods that rely on the pollination from the honey bee:

Apples, Mangos, Rambutan, Kiwi Fruit, Plums, Peaches, Nectarines, Guava, Rose Hips, Pomegranites ,Pears, Black and Red Currants, Alfalfa, Okra, Strawberries, Onions, Cashews, Cactus, Prickly Pear, Apricots, Allspice, Avocados, Passion Fruit, Lima Beans, Kidney Beans, Adzuki Beans, Green Beans, Orchid Plants, Custard Apples, Cherries, Celery, Coffee, Walnut, Cotton, Lychee, Flax, Acerola – used in Vitamin C supplements, Macadamia Nuts, Sunflower Oil, Goa beans, Lemons, Buckwheat, Figs, Fennel, Limes, Quince, Carrots, Persimmons, Palm Oil, Loquat, Durian, Cucumber, Hazelnut, Cantaloupe, Tangelos, Coriander, Caraway, Chestnut, Watermelon, Star Apples, Coconut, Tangerines, Boysenberries, Starfruit, Brazil Nuts, Beets, Mustard Seed, Rapeseed, Broccoli, Cauliflower, Cabbage, Brussels Sprouts, Bok Choy (Chinese Cabbage), Turnips, Congo Beans, Sword beans, Chili peppers, red peppers, bell peppers, green peppers, Papaya, Safflower, Sesame, Eggplant, Raspberries, Elderberries, Blackberries, Clover, Tamarind ,Cocoa, Black Eyed Peas, Vanilla, Cranberries, Tomatoes, Grapes and many more!

# Culinary Beekeeping for the Executive Chef

## Col\*o\*ny Col\*lapse Dis\*or\*der *noun*

The sudden mass disappearance of the majority of the worker bees in a colony. The causes of this phenomenon are unclear, though many possible causes or contributory factors include; disease, pathogens, pesticides and changes in habitat.

*In the last ten years 40% of Bee colonies in the USA suffered from Colony Collapse Disorder (CCD)*

# The difference between a hive and a colony:

- Wessman's apiary : *Apiary = collection of Bee Hives.*



# The difference between a hive and a colony:

A colony represents the Queen and her court with the responsibility of developing eggs, larva, and pupae.



# The Queen and her court

- There is only one Queen to a hive and she is a female that has mated.





# The Queen and her court

In order for a female to become a Queen the process starts before birth. A female is laid into a Queen cell (Queen cup) where is is fed a diet of Royal jelly.

Once hatched and the Queen has no sisters to fight off or another Queen to challenge her, she must go on a mating flight. The Queen produces a pheromone that attracts her court and will defend her scent and ward off others.

Upon returning to the hive, the mated Queen spends the rest of her life being fed and laying eggs to maintain the colony.

## *The Mating Flight of the Queen*

- Within the first few weeks of life and a diet of royal jelly the queen must make a series of mating flights.
- A strong Queen will take up to twenty mates during this process.
- The Queen also mates at up to 300 ft. and stores all of the sperm in an organ, the spermatheca.
- She can control this organ releasing the sperm with an egg to produce a female, sperm less eggs become male, or Drones.

A strong Queen makes great Brood  
(*Babies*)



## The life of a the true Romantic, the Drone

- Drones have but one purpose in life and that is mate with a Queen, they do not even have a stinger.
- Slightly larger than the female worker bee and have two distinct large eyes that touch on top of their head.
- Sadly once the Drone mates he *DIES*.

# The life of a the true Romantic, the Drone



# The Powerhouse of the Colony

## The Female worker Bee

- Day 1 -9 from egg to larva
- Day 10-20 Pupation
- Day 21 Hatching born to a new world
- Days 21-23 Clean you room and clean the house
- Day 23-33 Feed the family
- Day 34 Build out comb
- Day 40 its you first flight; Forage, gather, protect and perish. *A Worker Bee can live up to 60 days in proper conditions.*

# The Stages of Egg to Larva.



# The Life of a Bee and The Dangers it Faces.

- The amazing bee, fully grown at birth it immediately gets to work. Never being told what to do, how to use a potty- School? We don't need no stinking school!
- The peaceful Honey Bee is never looking for a fight. Take care, if provoked it will defend it's honor to the death. A bee forfeits life with a sting.
- Take caution Honey Bee as danger awaits every corner of your life.



# The Dangers to the Honey Bee:

- This list of predators to the Honey Bee is quite extensive but here are a few:
- Illness *Honey Bees can get sick (Wing disorder, Chronic Bee Paralysis, Nosema Disease, Foul Brood etc.)*
- Skunks, Bears, Birds, Spiders, Insects, (Dragonfly & Yellowjacket), Reptiles, small mammals, Pesticides and most importantly Man.
- Your biggest concerns as a beginning Beekeeper are:
  - The Varroa Mite
  - The hive beetle (*Athina Tumida*)

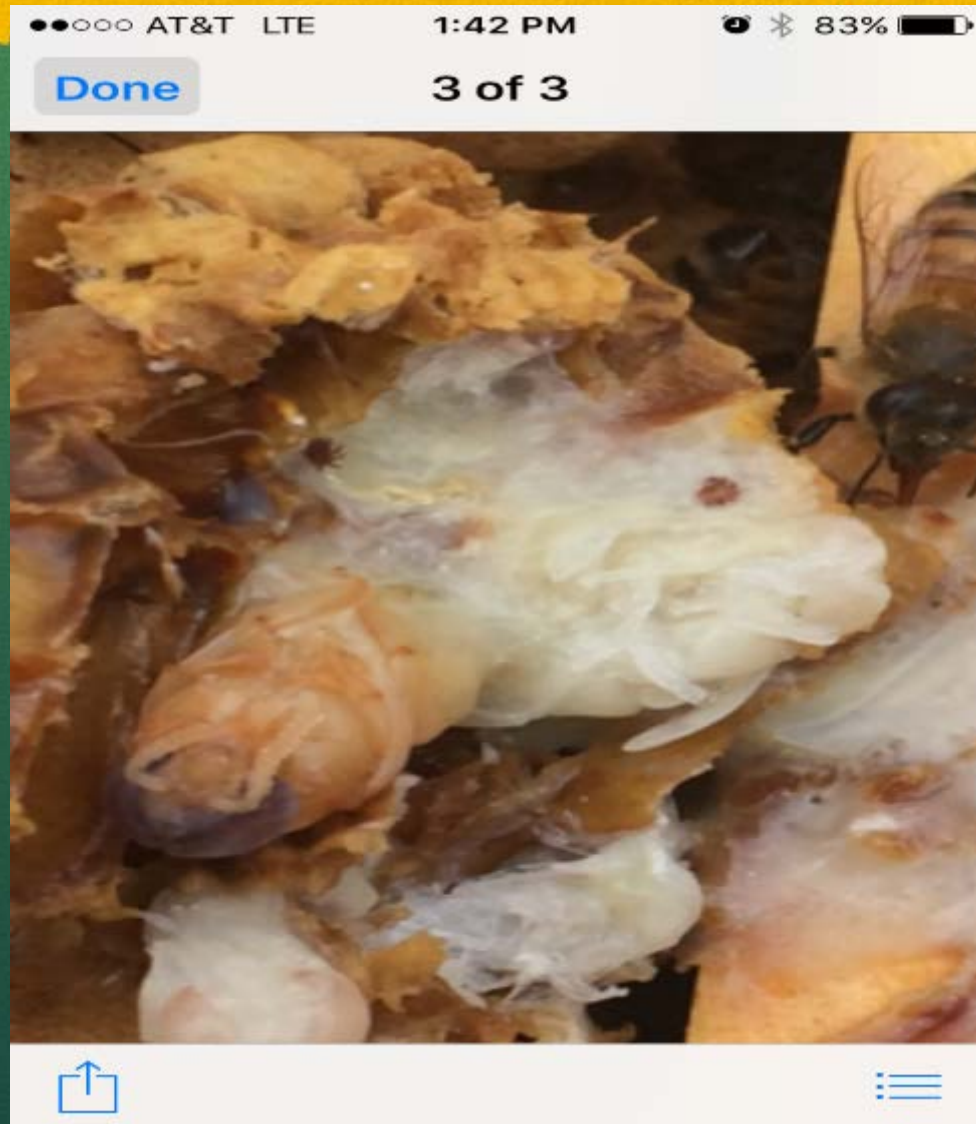
## The purest form of *Evil*: the **Varroa Mite**

- The Varroa mite is like having a parasite the size of a Cantaloupe attach itself to your body and start draining it of its needed fluids, and the worst part is you may two attached to your body.
- They can attach themselves to a host (Honey Bee) and travel (piggyback) to the colony where they seek comb with larva. Once they become capped in they live on the young and multiply.
- They prefer to pray in the Brood of the Drone as they are larger than the Honey Bee and have a longer Pupa stage.
- One goes in-three come out.

The purest form of *Evil*:  
the **Varroa Mite**



The purest form of *Evil*:  
the Varroa Mite on a Baby Drone



## Fighting off the Varroa mite:

- Treat for mites twice a years generally after a honey harvest. Living in Florida we typically treat at the fourth of July and right after Thanksgiving.
- Treatments should last a minimum of 21 days to have the best chance of effecting all of the hatchlings.
- Apiguard / Apivar /Mite away (works like a flea or tic collar.
- Oxalic Acid requires a Varrox Vaporizer (may be illegal in some states it a poison.)

## The menacing: *Hive Beetle*

- *Athina Tumida* originates from Sub-Saharan Africa these pest were discovered in America in 1996 and are spreading like mad.
- Honey bees drive the Beetle to the top of a hive but the will hid in any small crevasse.
- The female lays eggs in the these crevasses in the hive and the larva that is hatched then lives in the comb & honey.

## *Athina Tumida*

- While the Larva burrow through the comb and live off of honey their extrament ruins the honey and produces a smell that can drive of the entire colony.
- Once larva are ready to pupate they find their way to the ground where they burrow to emerge an adult looking to repopulate.
- Honey Bees chase after Hive Beetles to remove them from a hive and weaker hives are in greater danger. However a strong hive can collapse or just leave Hive if the problem is great enough.

## Hive Beetle treatments:

- Beetle blasters:
- Small traps you can fill with cider vinegar and cooking oil. The scent of the vinegar attracts the beetle which drowns in the mixture.
- Beetle boards (install in the bottom of a hive)
- *Best Practices:* Use a screen bottom hive keep it 19 inches from the ground, and place you hives in an area with out a soil ground. (stone, concrete, roof top)



# Athina Tumida: Small Hive Beetle:

*someone you do not want to invite to the party.*



## *Basic In's & Out's*

- After all of what we have gone through are you ready to take the plunge?!
- Join and become active in your local Bee Keeper Association. (its kind of like the ACF)
- Find a mentor, Bee keepers love to share knowledge. (*worse than chefs!*)
- *Check local laws you may have to get a registration number and be state inspected. (just like a health inspection, but for bees)*

# You will get stung!

*And yes it hurts a lot carry Benadryl it hurts more on day 3 and lasts a week.*



# Getting started the Hive:

- Assemble you own, or purchase premade?
- Tools required: Hammer, work bench, wood glue, nails, paint. (mistake paint at you local DYI shop works best light colors recommended and don't paint the inside)
- If you have access to a wood shop *Bonus!*
- Build a stand (Be creative and plan a stand to house one or multiple hives and aim at knee height)
- *Commercial Bee Keepers use a palate system four hives per pallet, but they live on the ground.*

# Components of a Hive

- Base or Bottom Board: I prefer a screen bottom but check what works best in your area (maintaining Colony Temperature)
- Entrance: Entrance reducers can be purchased which you can use to switch the size of the opening. (during heavy pollen season you may want a larger opening and in cooler seasons a smaller)

# Hive Entrance:

Check your I.D. at the door there is always a guard on duty.



# Hive Bodies:

- Hive bodies are also known as *Supers*.
- Supers come in three sizes; deep, medium and shallow.
- Deep Supers are used to hold the main Colony.
- Medium or Shallow supers are used to collect honey. Some beekeepers use double Mediums for Colonies to keep the individual hive box weight down.
- A Queen Excluder is placed between a colony and honey supers so her HRH will not lay eggs in the honey comb.

# Hive Tops & Feeders

- There are a lot of options here:
- Stylish, Functional, Telescoping, Migratory.
- Some tops also work with inner covers which allows a small entrance at the top of the hive which is great for air circulation.
- Feeders can be as basic as a mason jar inverted (with 1/8 inch holes for the Bees to eat through) entrance feeders, top feeders (made from a shallow super)

*Empty fondant buckets work best!*



A young Colony Deep super.  
*Notice the jar of feed on top.*



## Hive Bodies inside:

- Hive bodies will vary and hold between five and ten frames. Each frame is made of wood (there are some plastic ones out there) and are much less expensive if purchased in bulk (do not forget the wood glue)
- Each Frame requires a foundation which are basically a plastic coated in a small amount of beeswax with a hexagonal pattern to assist in the bees production of comb. (Some Bee Keepers will roll melted bees wax to the foundation to further assist)

# *Looking into a Deep Super*

This colony started as a Nuc (only five frames)



# New Frame new Colony



# Buzy at work: Building comb with capped honey.

*This does not happen over night bee patient*



As a colony increases in population you can add another Super.



Not all colonies grow at the same rate.

*Notice the Queen Excluder on the taller hive.*



# Hive placement and location

- Rule of thumb:
- Face the entrance South East so they face the morning sun.
- Avoid shady areas the Bees like it around 95 degrees and collectively fan their wings to control the heat. (A Honey Bee Colony will *Fan* and the hive will breath in and out four times a minute)
- Have a source of water: fountain, pool, lake, river.

*Please if installing a fountain add stone to it to lower the water level. Honey Bees can drown =]*



# Please follow the Rules

- Check with any local agencies for specific hive placement and set up. (*Fences, signage, hive numbers per square footage / acreage*)
- *Always work on a hive from the opposite side of the entrance.*
- *Face entrances away from traffic areas*
- Bees like to travel at 15 feet in the air at 15 mph, and fly up to five miles away.

# TOOLS!

- Look into protective equipment: Hat & Veil, Jacket with hood, or a full suit (get a vented suit you will be happier) Gauntlets yes Gauntlets. Boots (DYI shoppers concrete boot are under \$20 but have no foot support.
- Hive tools. Hive tools come in all different shapes and sizes pick what you like best.
- There are a lot of tools on the market. Get with your Bee mentor to discuss which is best for you. (this will save you money on not purchasing items you will not use)

# The *Smoker*

- Purchase a large smoker, stainless steel, pay the extra money and opt for the heat guard. (you will burn your hands through your glove if not careful)
- Start with a single sheet of crumpled newspaper in the bottom of the smoker get it going then add your fuel.
- Fuel can range from; Spanish moss, Pine needles, news paper, wood pellets (food grade not home heating)
- Get the fire going and close the lid. Hot smoke is whitish in color, yellow smoke or darker smoke is cooler. (you want to use the smoke to mask the pheromones of the bees not burn them out)

# Lighting the Smoker



# Lighting the Smoker



# Lighting the Smoker



# Lighting the Smoker



# Lighting the Smoker





# Lighting the Smoker



# How do I purchase BEES?

*Only buy Bees from a reputable apiary.*

- Bee pack sizes:
- The *Nuc*: represents the nucleus of a colony you get a queen 2-3 frames of Brood, 2 frames of honey and about 2-3 thousand bees. It all comes in a foldable plastic / paper box. (keep the boxes they might be needed to collect a swarm)
- A box of Bees; its just that a box of bees with a Queen. (you need to provide a hive with build out comb and brood)
- Mated Queens when purchased should come with about 20 worker bees.

# Managerial Best Practices

*Now that I have bees what do I do?*

- Inspect (open your hives) at least once a month although you can open weekly. (Bees care to be left alone try every other week to inspect)
- To *Feed* or not to *Feed*; Some Bee keepers do not feed the let nature work it's course, while other monitor and feed in non-honey flow seasons.
- Protect from the elements. Never open a hive below 65 degrees, at night or in poor weather conditions.
- Honey Bees are very clean and keep a clean hive.

# **Swarms happen.**

*Properly managed colonies have a less of a chance to swarm.*

- Bee repopulation is a swarm which is like a colony birth, to control this you can split a hive and add a queen, here is how the process works.
- When a hive becomes over populated the HRH will produce more queens (they will then battle to the death to see which take over the hive).
- Scout bees will then seek out a new home and half of the colony will leave the hive with the original queen to find a new home.
- The new Queen will remain with the remaining bees and settle into her new hive. (new to her)

# What do I look for when inspecting a hive and how do I do it?

- Start from the outer frames and work towards the center. (*Very important* keep the frames in order)
- Try to find the queen. Its ok if you do not, if there is fresh larva and signs she has been laying.
- Look for positives: healthy bees, brood, nectar, pollen.
- Kill all hive beetles with your hive tool. Apparently hive beetles do not like the aroma of the deceased so toss those dead beetles back in.
- If you see anything that does not appear normal contact your bee mentor, or invite them to join you the first few times.
- Inspection should not take more than 10 minutes.

Work from the outside towards the center.



The Queen gravitates towards the center where it is the warmest and lays eggs from the inside toward the out.



Close up the hive as soon as you are finished to help maintain proper temperature.





# It's all about the Honey!

- It is the life's work of 12 bees to produce one teaspoon of honey.
- Bees visit 50 -100 flowers per flight.
- Eight pounds of honey will yield one pound of beeswax.
- A bee colony will travel up to and over 55,000 miles for one pound of honey.
- An average colony will produce up to 150 pounds of honey a year.

# The Harvest.

*It's easy once you have convinced the Bees to give you their honey they worked so hard to produce.*

- Work as a team (you will need a buddy)
- Remove the frames of honey and replace with a new frame or even better yet an empty from of drawn out comb.
- Put the frames into a container that the bees cannot get to, remember you are stealing from them.
- Hey were a restaurant people make room in the Freezer and freeze the honey over night. (trust me)

# The Extraction

- Freezing the honey over night will kill off any parasites or things you just don't want to be eating.
- If you have a small apiary (under 5 hives) go right to the kitchen.
- You will need a bread knife, a large enough lexan, cheese cloth and some stainless steel bowls.
- Don't forget to pick out a jar or bear to showcase your honey in.

## The process.

- This can get messy, through down some parchment wear cloves, and an apron will not hurt.
- You are going to want to cut off the cap of the honey comb. Do this by slicing the top layer of wax off of the frame.
- Gravity is your helper, let the honey drain into a vessel with cheese cloth to remove any particles that could be in your honey.
- Pour into your service containers. (it's that easy)

## For larger amounts of honey.

- Check with your Beekeeper Association, they may have a honey extractor for you to use or borrow.
- This is like a large salad spinner where the frames of Honey are put into it and you turn it on. The centrifugal force speeds up the process.
- Some associations may have a honey night where member come in with their frames of honey and work as a group to make the job easier.

# Questions & Answers

*Thanks & Help support!*

Elizabeth Wessman C.C.C. C.H.E.P. .C.S. credit for photography

Christopher Stalder Master Beekeeper / mentor

*Build the Bee Lab!*

*University of Florida*

*A state of the Art Honey Bee & Pollinator  
research, extension, and instructional Facility.*