

# Getting Started with Beekeeping



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# New Beekeeper

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Points to Consider



# Before you get your Bees

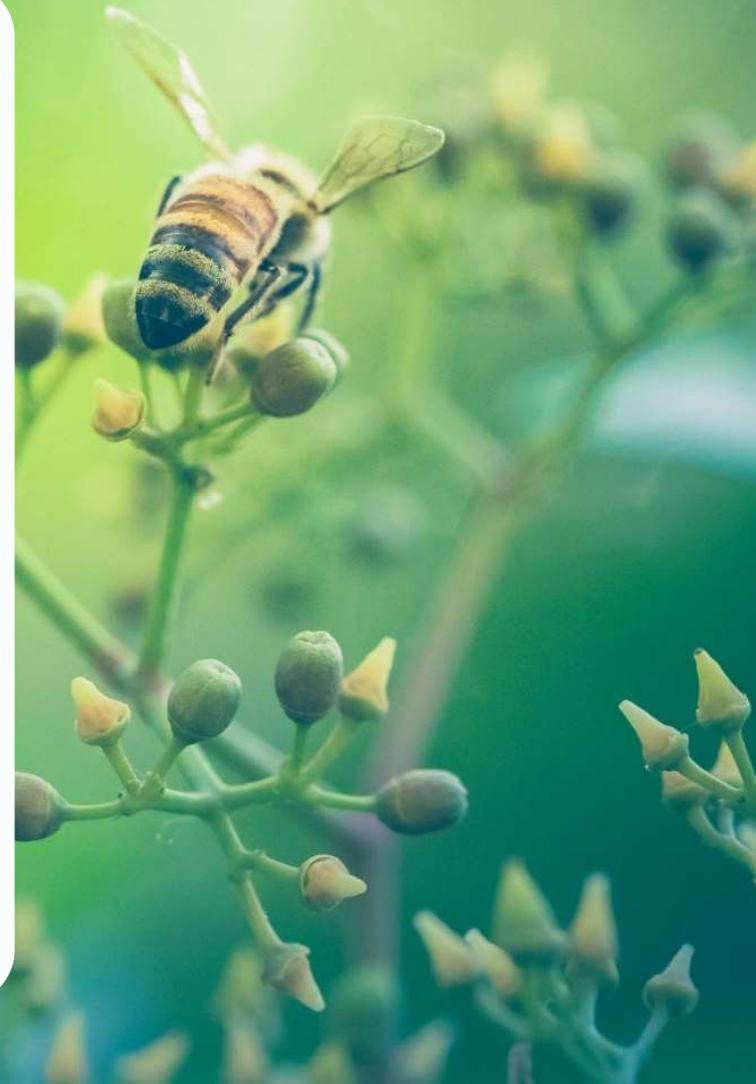
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- Make sure you have all equipment on hand
- Essential equipment consist of a veil, gloves, hive tool, smoker and overalls
- Empty hive structure set and in place (not on order)
- Read and be familiar with common bee terminology of bee keeping

# Keeping Bees in Residential Areas

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- Obtain gentle bees
- Keep your bees out of sight
- Don't work your bees if your close neighbors are outdoors
- Provide your bees with a continuous source of water
- Keep the line of flight well above your neighbor's property
- Use swarm prevention management
- Sweeten your neighbors with some honey



# Hive Location

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- Consider climatic conditions such as wind, shade, and the time of day the sun hits the hive. You should also consider people, pests and pets as well as HOA restrictions.
- Don't over-populate your lot with bees.
- Mosquito spraying protection
- [https://cmcd.org/spray\\_maps/?notify](https://cmcd.org/spray_maps/?notify) - Collier Mosquito Control District



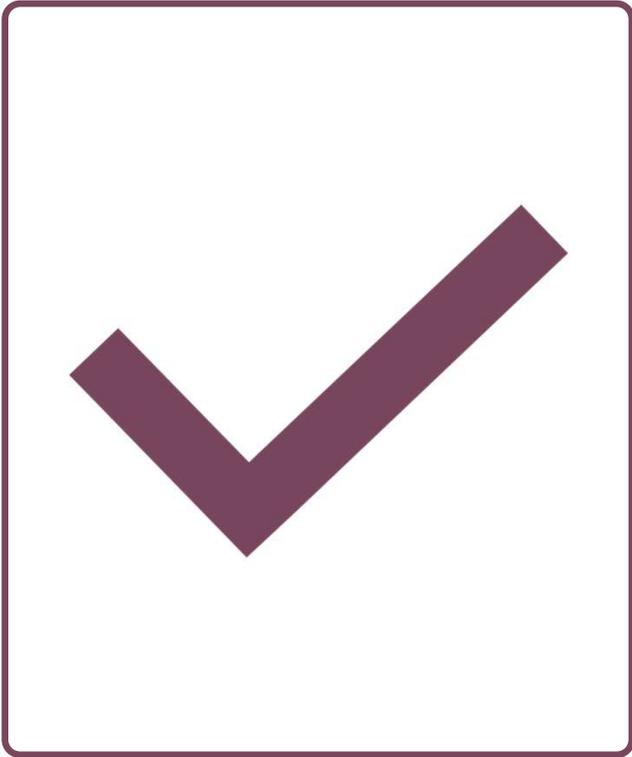
# Considering Hive Placement

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- Rules and Regulations- <https://www.fdacs.gov/search?q=bee>
- Water Source
- Sun
- Wind
- Pets
- Flight Path
- Pests
- Nectar Sources



## Registering your bees with the State/Join a Beekeeping Club



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- <https://www.fdacs.gov/Agriculture-Industry/Bees-APIary>
  - <https://entnemdept.ufl.edu/honey-bee/>
  - <https://flstatebeekeepers.org/>
  - <https://gulfcoastbees.com/>

# Equipment

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# Equipment

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## Veil

- Your veil protects you from getting stung in the face and neck.
- An effective veil should be entry proof and should not blow against your face.
- A veil should always be worn when working with bees.

## Gloves

- Gloves will give you security and confidence.
- Hands and wrists are the nearest areas of skin for bees to sting.
- Choose gloves that are thick enough to protect you but still easy to work in.

# Equipment

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## Hive Tool

- A hive tool is necessary to lever the parts of the hive apart that the bees have used propolis to glue together.
- Screwdrivers or chisels should not be used as they will damage your hives.
- Hive tools are thin and wide with broad flat blades.



## Smoker

- A smoker is necessary to keep the bees calm.
- A good smoker will last a life time and is not the place you should cut costs on.
- Large smokers require less refueling
- A cage on the outside will keep you from burning your hands and usually has a hook to hang on the hive.

# Equipment

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## Clothing

- Overall/jackets are not necessary, but bees can get tangled in ordinary cloths.
- Dark clothing will make bees aggressive, while light clothing will calm them.
- White smooth clothing is best

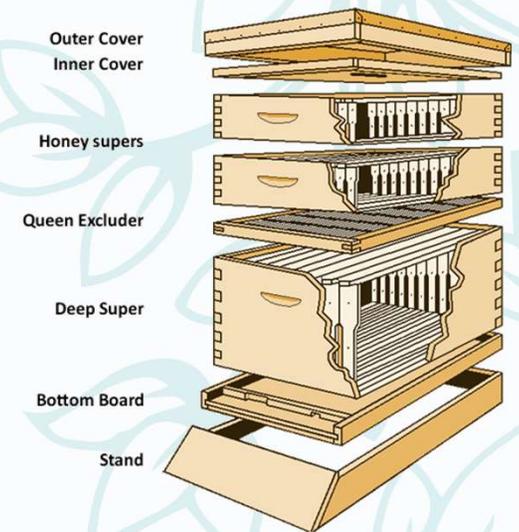
## Hive Structure

- An empty hive structure is needed and its location selected and cleared.



# Hive Structure

- Hive Stand
- Bottom Board
- Hive Bodies
- Queen Excluder
- Honey Supers
- Inner Cover
- Outer Cover
- Frames



# Apiculture

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Insects (Class Insecta)





# Honeybee Breeds

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- Honeybees vary in traits such as disease resistance, temperament, and productivity depending on their breed.
  - New beekeepers often look for gentle temperament as their most desired trait.
  - The environment has a large effect on differences among bee colonies.



## Italian – *Apis Mellifera ligustica*

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- Brought to the United States in 1859
- Favorite stock in this country
- Known for their extended periods of brood rearing.
- They are less defensive and less prone to disease.
- Excellent honey producers

# German- *Apis mellifera mellifera*

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- “Black” bee
- Very dark in color and tends to be very defensive.
- They are a hardy strain, able to survive long, cold winters in northern climates.
- Rare stock at this time



## Buckfast

- Created by Brother Adams, a monk at Buckfast Abby in Devon, England.
- Thrive in cold wet conditions
- Produce good honey crop and exhibit good housecleaning and grooming behavior to reduce the prevalence of disease.
- Moderately defensive
- Moderate in spring population buildup, preventing them from taking advantage of early nectar flows.



# Russian

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- One of the newer bee stocks in the U.S.
- From the Primorski region of the Sea of Japan.
- Evolved resistance to varroa mites

# African- *Apis mellifera scutellata*

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- Imported into South America in 1956
- Highly defensive – **aggressive**
- Well adapted to the tropics
- Grow the colony rapidly and swarm often
- Africanized bees will adapt to our climate by mating with our European races of bees. If this happens, they will become less aggressive.



# Carniolan – *Apis mellifera carnica*

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- From middle Europe (Slovenia Region)
- Also has been a favored bee stock in the U.S.
- Explosive spring buildup- grow rapidly in population and take advantage of blooms that occur much earlier in the spring.
- Extremely docile
- Less prone to robbing other colonies of honey, lowering disease transmission among colonies.
- Good builders of wax combs
- Have a high propensity to swarm



# Caucasian- *Apis mellifera caucasica*

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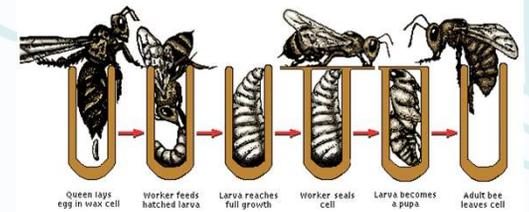
- Race of honeybees native to the foothills of the Ural Mountains near the Caspian Sea in Eastern Europe.
- Once popular in U.S. but has declined over the last few decades.
- Most notable characteristic is its very long proboscis.
- Moderately dark colored and extremely docile.
- Slow spring buildup keeps them from generating very large honey crops.
- They tend to use an excessive amount of propolis.

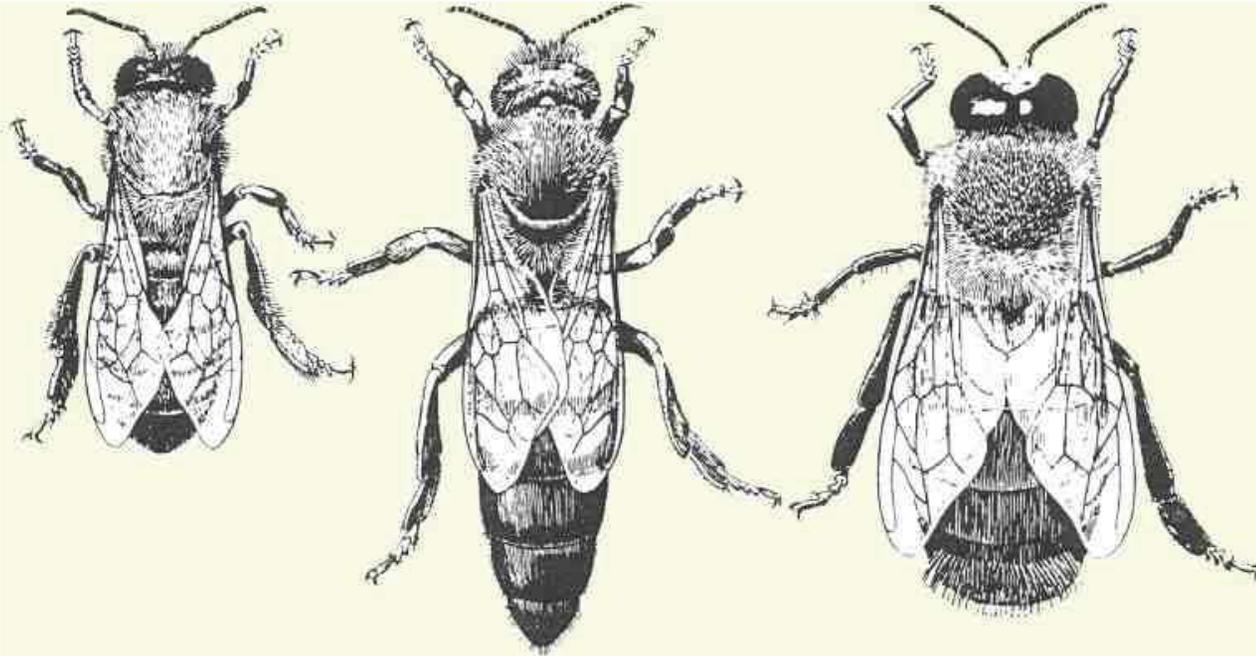


# Bee Biology Basics

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- Honeybees belong to the order Hymenoptera, which includes other bees, wasps and ants.
- Most Hymenoptera have two pairs of clear wings and chewing mouth parts. Some can suck up liquids such as the honeybee.
- Hymenoptera undergo complete metamorphosis during their development.
- There are four stages of life.
- Bees are equipped to collect pollen and nectar.





## Colonies

- Honeybees are social insects that live in highly organized colonies. Each member has a specific job and must work together to survive.
- There are three distinct castes of honeybees in a colony: the queen, the worker, and the drone.

# The Queen

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- The queen is the longest bee in the hive, but has the shortest wings.
- She is the mother of all the bees in her hive.
- Her job is to lay eggs, her productivity is influenced by the amount of food available, empty brood space, temperature and more.
- Her workers recognize her mostly by the smell of her pheromones.

# Queen Cells

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- Look like round balls attached to comb.
- Queen cells must be monitored to prevent swarming
- Worker bees make new queens for one of three reasons:
  - The former queen left with a swarm.
  - The queen is laying increasingly fewer eggs.
  - The colony is overcrowded and has no place to expand.





## How a Queen is Made

- A worker egg (female) will hatch in three days.
- The larva is fed a special food called royal jelly.
- After six days the queen cell is sealed.
- The queen emerges about eight days later and will live up to four years.
- Three reasons for making new queens relate to three types of queens:
  - Supersedure
  - Swarm
  - Emergency

# The Worker

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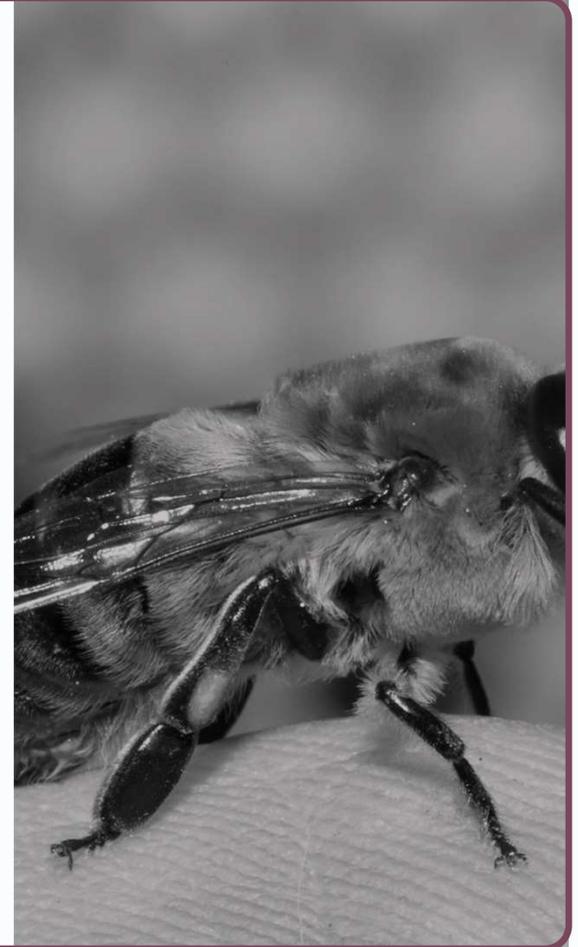
- Workers are smaller than queens and drones
- Some hives may reach up to 100,000 workers
- Each larva is feed royal jelly for three days then pollen and honey for another three.
- The larva will molt (shed outer skin) five times during the six days.
- Just before maturity the nurse bees will cap the cell.
- The larva then spins a cocoon and becomes a pupa.
- The adult worker bee emerges 12 days later.
- It takes three weeks to go from egg to adult worker.
- The workers will live 4 to 6 weeks.



# The Drone

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- Drones are larger than workers, but not as long as queens.
- A drone has large eyes.
- Drones do not have stingers, pollen baskets, or glands for producing wax and their mouth parts are too short to gather nectar.
- Their only function is to fertilize new queens, and they die in the process.
- Drones require slightly larger cells and develop from unfertilized eggs.
- It takes 24 days to go from egg to adult drone.



# Observing the Hive Entrance

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- Bees may gather on the outside of the hive due to heat.
- When it is cold, they will remain inside away from the entrance.
- Sick bees will stay in the hive. Very sick bees will crawl out of the hive and die.





# When and What to Observe

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Record the time of day of your observation.

Record the weather conditions.

Write a summary of activities.

The types and approximate number of bees that you saw. Observe your hive entrance at least once every three weeks

Do not sit in front of the hive entrance. Sit as close to the hive as possible.

Observe them at different times of the day.

# Your First Year of Bee Management

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# Hiving a Package of Bees

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The Entrance should be reduced using the entrance reducer.

Hiving late in the afternoon, on a non-windy day is preferred.

Spray the bees with some sugar water, it helps to spray your frames with some sugar water too.

Set up your hive with 3-4 frames removed from the middle of the hive.

Remove the plywood from the top of the package.

Knock the bees to the bottom of the cage and remove the queen cage. (Make sure your queen is alive and set her aside)

Remove the sugar syrup can and replace the plywood on top of the package.

Rotate the cage and move it back and forth over the hive and get out as many bees as possible.

Gently replace the missing frames and close the hive.

Remove the metal disk from the queen cage that is covering the candy and hang the queen between two frames near the center of the hive.

## Nucs vs Packages



## Hiving a Nucleus Hive (Nuc)

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- Set the brood with 5 empty (non-drawn frames sprayed with sugar water.
- Take the frames from the nuc box and place them in the empty brood box.
- Alternate nuc frames with blanks for faster comb building but keep the brood together.
- Feed the bees with 1:1 Syrup

Favorable weather

Nearness of nectar honey plants

Your management of the bees

How much you feed you new colony to get it going

The honeybee population of the hive

# Bee Management for Honey

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# Feeding a New Hive

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- Sugar Syrup

- 1:1 Syrup, or One to One syrup can be used for supplemental feeding and encourage the drawing of comb.

- 2:1 Syrup, or

- Two to One syrup can be used for feeding after the last honey harvest, or it bees do not have sufficiently stores of honey.

- Dry Pollen Substitute

- Pollen Patty



# How and When do I get “Surplus” Honey?

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# Pest and Diseases For Beginners

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Recognize Common Pests and Diseases  
Found in Honeybee Colonies





# Varroa Destructor

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- First detected in the United States in 1987
- One of the largest ectoparasite to host ratios
- Thought to feed on the hemolymph of immatures and adults

# Spread of Varroa

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- Robbing
- Drifting
- Introducing bees to colonies-through splits, strengthening, etc.
- Migratory Beekeepers
- Reproduction (Swarming)

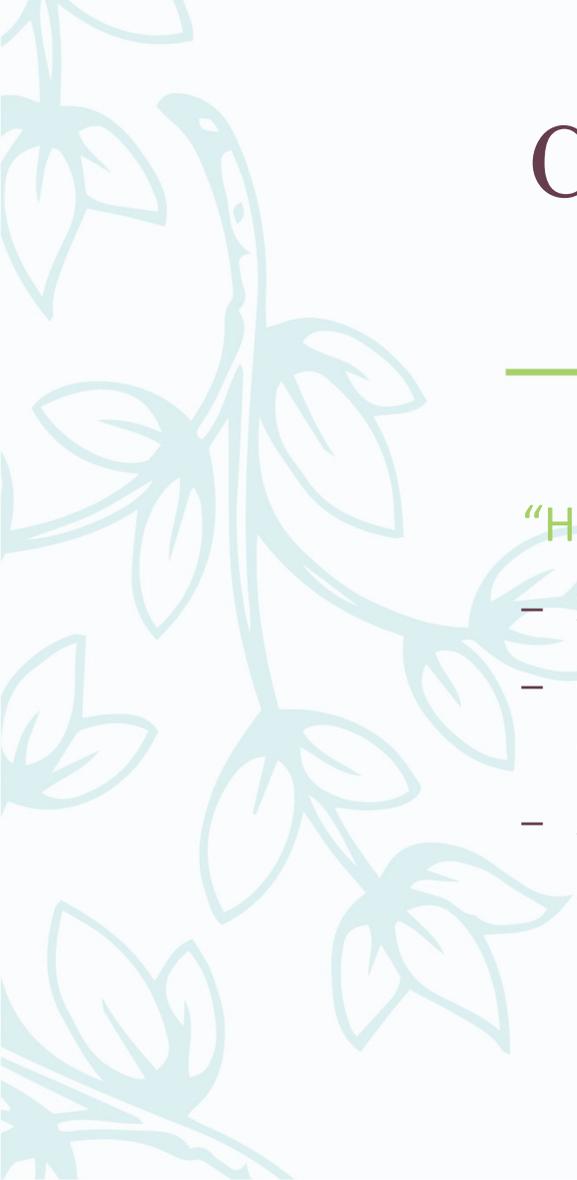


# Monitoring for Varroa

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- Alcohol Wash
- Wash bees with alcohol and use a sieve to collect the mites
- Disadvantage: Small subset of bees, destructive
- Sticky Sheet
- Comprehensive look at colony
- Disadvantages: time consuming





# Chemical Control

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## “Hard” Chemical Control

- Apistan (fluvalinate-pyrethroid)
- Checkmite (coumaphos-organophosphate)
- Apivar (Amitraz-formamidine)

## “Soft” Chemical Control

- Apiguard & Apilife Var (Thymol)
- Mite-Away (Formic acid)
- Oxalic acid
- Essential Oils



# Mechanical Control

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- Drone Removal
- Screened Bottom Boards
- Powder Sugar Packages

# Small Hive Beetle



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- *Athina tumida*
  - Larvae develop rapidly
  - Damage is caused by feeding on pollen and honey stores
  - High numbers can cause the colony to collapse

# Small Hive Beetle Control

- Keep equipment in good condition
- wooded areas vs. fields, sun vs. shade
- Maintaining a strong hive is the best defense

## Beetle Traps



- ❖ Fill with apple cider vinegar to attract beetles
- ❖ Add mineral oil to drown beetles

# Small Hive Beetle



- Chemical Control
- Checkmite+(coumaphos)
- Apistan
- Place on bottom Board
- Remove honey supers

## Guard Star

- Drench the soil to target beetle pupae

# Wax Moths

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*Achroia grisella*



*Galleria mellonella*



# Wax Moth Damage

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## Secondary Pest

- Moths eat wax, make webbing and destroy the comb
- Moths chew holes into capping's of brood
- Chew into wood
- Sometimes cause colonies to abscond





# Wax Moth Treatment and Prevention

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- Keep colonies strong
- Fumigation
- Store supers and boxes in sunlight
- Paradichlorobenzene (PDB) crystals
- Freeze and store frames in plastic bags



# Tracheal Mites

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- *Acarapis woodi*
- Live in the tracheae of adult bees
- Climb inside bee usually through the thorax spiracles, they pierce the tracheal wall and suck bee's hemolymph
- They damage and clog trachea



# Tracheal Mite Symptoms and Treatment

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- No clear symptoms
- Disorganized groups of bees
- Crawling on ground
- Dissection needed to confirm
  - Need microscope
  - Extension services or bee inspectors
  - Collect fresh bees in alcohol (20 bees)

Dr. Jamie  
Ellis on  
Tracheal  
Mites

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# Bacterial Diseases

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## American Foul Brood (AFB)

- Paenibacillus larvae
- Most serious disease
- Spore Forming (hard to kill)
- Easily spread
- Only infects young larva
- Infected when they eat spores in contaminated food

## European Foul Brood (EFB)

- Melissococcus pluton
- Often confused with AFB
- Not as serious and can be cured
- Non-spore forming
- Kills uncapped larva



# America Foul Brood Symptoms

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- Foul putrid smell when you first open the hive
- Cappings of infected brood are sunken or punctured
- Killed larvae are stringy and roby
- Dead pupa have tongue sticking up
- Eventually they dry up into scale



# Prevention and Treatment of AFB

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- Oxytetracycline hydrochlorids (Terramycin)
- Tylosin tartrate, was approved by the US Food and Drug Administration (FDA) in 2005
- You must obtain a prescription from a licensed veterinarian in the state of Florida
- **Antibiotics only kill vegetative cells, spores remain!**
- **Burn hives!**

# European Foul Brood

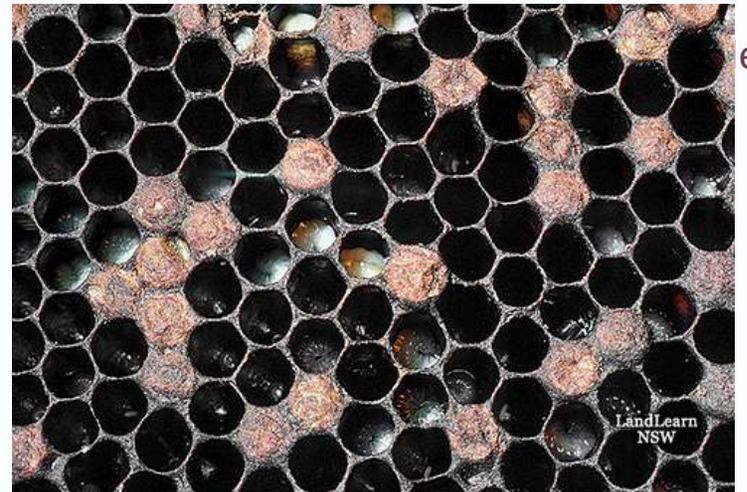
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## Symptoms

- Have a sour odor
- Larva have yellow streaks that progress to brown and then black
- Spotty brood pattern
- Larva curled upward or twisted
- Not sticky and ropey

## Treatment

- Terramycin – 3x for 5-7 days



# Fungal Diseases

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## Chalkbrood

- *Ascosphaera apis*
- Effects honeybee larva
- Infected by spores from oral or dermal routes
- Grows well in damp conditions
- Usually, a minor disease

## Nosema

- *Nosema apis* & *N. ceranae*
- Most common and widespread bee disease
- Causes diarrhea
- Microsporidia – *fungus*
- Rarely kills hives
- *N. ceranae* has been associated with colony collapse disorder



# Chalkbrood Symptoms and Treatment

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- Fungus grows on larva's body covering it with white fluffy mycelium
- Dead larva harden and shrink into chalklike "mummies"
- Infected frames rattle when shaken
- Find mummies at colony entrance or on the ground
- Keep hives well ventilated
- Tilt hives to drain rain water
- Hygienic stock
- Treat by re-queening or let bees clear up on their own

# *Nosema spp. Symptoms and Treatment*

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- Most common and widespread bee disease
- Cause diarrhea
- Microsporidia – fungus
- Rarely kill hives
- *N. ceranae* has been associated with CCD



# Viral Diseases

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- Deformed Wing Virus
- ABPV-KBV-IAPV complex
- Sacbrood Virus
- Chronic Paralysis Virus (CPV)- Hairless black syndrome
- Other Viruses
  - Black Queen Cell Virus
  - Cloudy Wing Virus
  - Filamentous
  - Iridescent Viruses

# Stonebrood

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- A fungal disease caused by
- *Aspergillus fumigatus*
- *Aspergillus flavus*
- *Aspergillus niger*
- Mummies are hard and solid, not sponge-like as with chalkbrood. Infected brood become covered with a powdery green growth of fungal spores.

