



Beekeeping Quick-start

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4/7/24



Agenda

- Introduction - Pollination
- Bee castes and their function
- life cycle of workers and colony reproduction
- Hive products
- Beekeeping resources / support
- First year equipment, sources, costs
- Nucs, bee packages, swarms: sourcing and installing
- Next steps – Feeding the bees, hive inspections
- Varroa Destructor – treatments
- Bee laws & ordinances



Honey Bee Pollination

■ Pollination

- Bees are critical to our food production system¹
 - Approx. 100 U.S. crop species rely on pollination
 - Of 4000 bee species in US honey bee most responsible
 - Major U.S. crops: almonds, non-citrus fruit trees, berries, melons, and squash
- Bees are on the decline
 - 2020-2021 honeybee mortality reached 50%²
 - Decrease in forage
 - Increase in use of pesticides esp. **neonicotinoids**
 - Parasites esp. Varroa mite

¹USDA [pollinator week factsheet 06.25.2020 \(usda.gov\)](https://www.usda.gov/pollinator-week-factsheet-06.25.2020)

²[Struggling beekeepers stabilize U.S. honeybee population after nearly half of colonies died last year | PBS NewsHour](https://www.pbs.org/news/struggling-beekeepers-stabilize-u-s-honeybee-population-after-nearly-half-of-colonies-died-last-year/)

Modest dependency Yield reduction of 10% to 40% without pollinators	 Oilcrops including sunflower seed, rapeseed, sesame, mustard seed  Soybeans  Fruits including strawberries, currants, figs, gooseberries, eggplant  Coconuts and okra  Coffee beans Also includes: broad beans, karite nuts, seed cotton
High dependency Yield reduction of 40% to 90% without pollinators	 Fruits including apples, apricots, blueberries, cherries, mangoes, peaches, plums, pears, raspberries  Nuts including almonds, cashew nuts, kola nuts  Avocados Also includes: cucumber, buckwheat, nutmeg, anise, fennel, coriander
Essential Yield reduction greater than 90% without pollinators	 Fruits including kiwi, melons, pumpkins, watermelons  Cocoa beans  Brazil nuts Also includes: vanilla, quinces

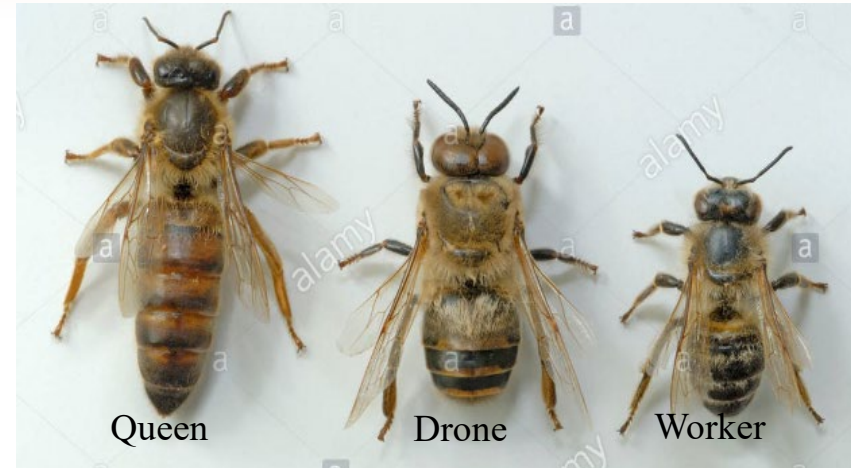
Sources: Marcelo Aizen et al. (2019) and Alexandra-Maria Klein et al. (2006). Icons sourced from Noun Project.
OurWorldinData.org - Research and data to make progress against the world's largest problems. Licensed under CC-BY by the author Hannah Ritchie

<https://ourworldindata.org/pollinator-dependence>



Bee Castes

- Two sexes: Females and Males
- Two castes: Queen and Workers
- 80% workers (females)
- 20% drones (males)
- 1 Queen





Bee Castes - Queen



■ Queen

- Number 1 bee in the hive
 - Creates stability through pheromone communication
 - Defines hive genetics – traits such as gentleness, VSH, etc.
- Has one job – laying eggs
 - Up to 2000/day
 - Builds hive to 60,000 bees in Spring
 - Can select male or female as she lays
- Requires constant maintenance
 - Entourage feeds, grooms, cleans queen
- Does not rule, the hive rules – honey bee democracy
- Lifespan
 - 2-5 years depending on fertility
 - Replaced by the hive through superposition





Bee Castes - Drone

■ Drone

- Does no work in the hive
- Has no stinger – can't defend the hive
- Leaves hive flies to drone congregation areas
- Hangs about and eats
- Can't feed himself – tongue can't reach flower nectaries
- Has one job – mating with virgin queen of an other hive
- Body has been optimized for his job
 - Larger eyes to spot the queen in-flight
 - Physical structure built for speed and semen delivery
- Services are needed during three seasons
 - Driven from the hive in the winter
- Life span 2-3 months



Drone



Queen



Worker





Bee Castes - Worker

■ Worker

- Sterile female – has ovaries but does not mate
- Does all the work in the hive
 - Tends larvae
 - Tends queen
 - Tend young drones
 - Gather pollen
 - Gather propolis
 - Gather nectar
 - Gather water
 - Polish/cap cells
 - Clean hive
 - Moves larvae/resources within hive
 - Undertakes
 - Evaporate nectar
 - Defend hive
 - Cool and heat the hive
- Life expectancy
 - 4-6 weeks in March – July – work themselves to death
 - 5-6 month Aug – Nov. – Winter bees less active



Life Cycle

- Day 1 Queen lays egg
- Day 3 Egg hatches
 - Worker/Drone fed royal jelly for 2 days – beebread afterwards
 - Queen larva is fed only Royal Jelly
- Day 9 Larva spins cocoon and workers cap cell
- Day 15-18 pupa metamorphosis
- Day 16 Queen emerges
- Day 21 worker emerges
- Day 24 drone emerges

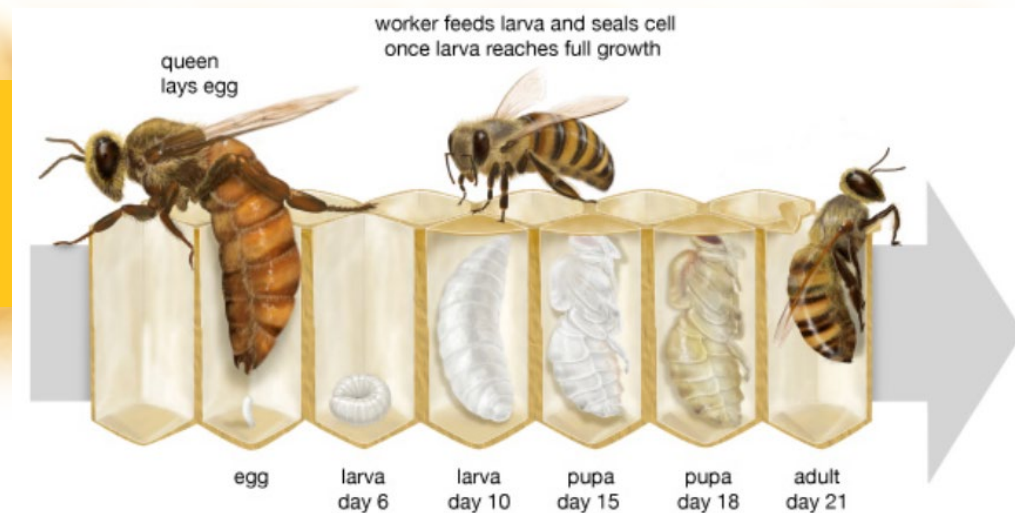
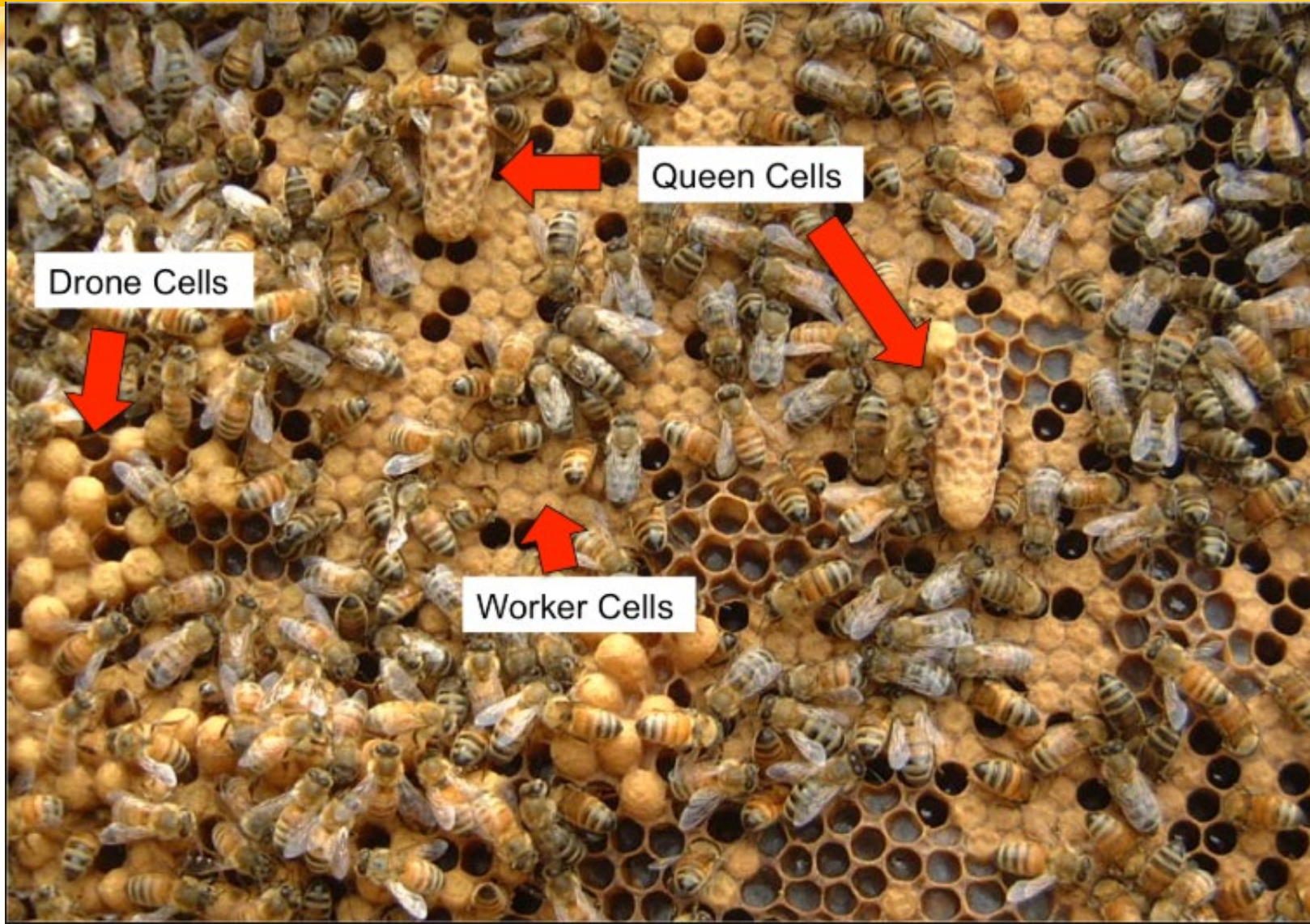


Figure 3: Four of the honey bee development stages identified in Brood shortcut keys, E = egg, 1 = young larva, 3 = middle larva, 5 = old larva.





Brood Cell Types





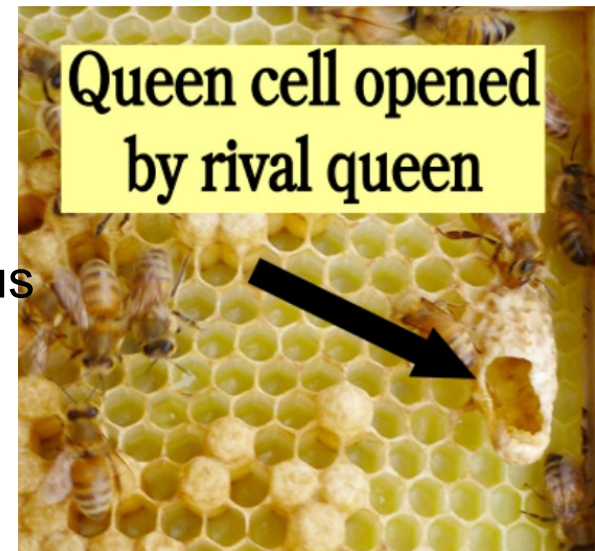
Life Cycle – Worker bee

- Life Cycle of worker bee by day
 - Day 1 – bee emerges and, in a few hours, starts cleaning cells
 - Day 2 – duties include feeding older (+3 day old) larvae
 - Day 5 – Head glands begin to make royal jelly
 - Feed <3-day old larva & queen
 - Begin orientation flights
 - Day 10 – 18
 - Wax glands begin to work, starts drawing comb & capping cells
 - Heating and cooling hive
 - Honey processing- nectar transfer, evaporation
 - Day 19 – becomes guard
 - Day 20-~45 – becomes field bee
 - Gathering nectar, resin, pollen, water, scouting
 - Dies alone in the field or in hive having worked herself to death



Colony Reproduction

- Bee colony is considered super-organism
 - Entire colony is biological unit not individual bee
 - Reproduction is making another hive by swarming
- Swarming
 - Occurs in the Spring at start of nectar flow
 - Triggers include hive overcrowding
- Hive mind prepares multiple new queen larva
 - Old queen leaves with approx. half the hive
 - Swarm settles while scouts look for new home
 - Generally, not aggressive, gorged on nectar and no hive to protect
 - New hive location determined with democratic and 100% consensus
- New queen(s) emerge and take over the old hive
 - First emerging queen kills sisters in their cells
 - Multiple queens fight for dominance
 - Leaves hive to mate then returns







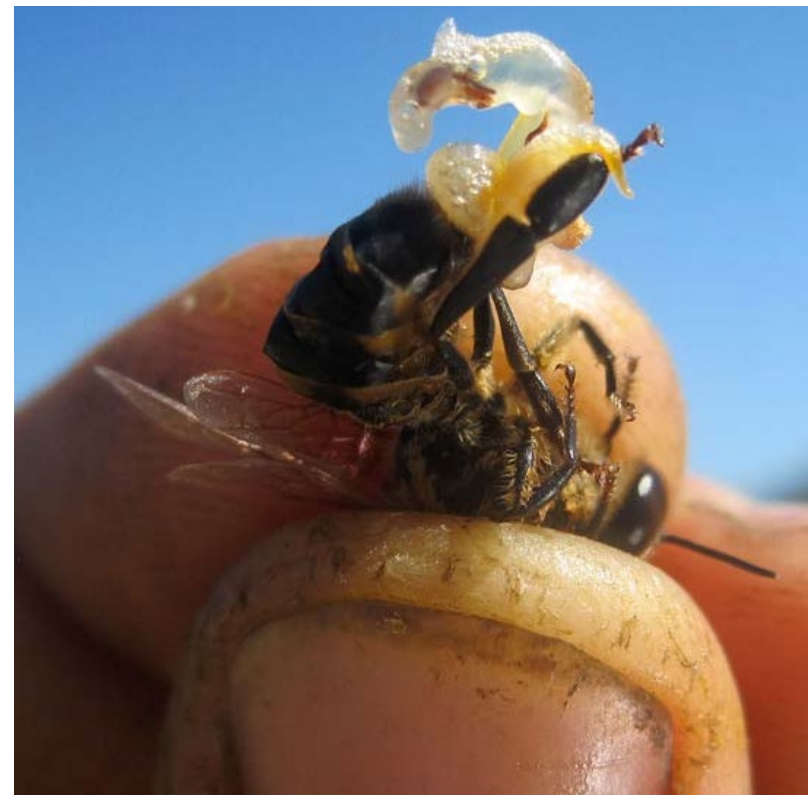
Drones Waiting for a Female





Mating

- Queen will mate once in life with 10-20 drones
 - Sperm is kept in spermatheca
- Drone mates once
 - Act is explosive and kills him



Hive Products - Bee Food



- Royal Jelly
 - Produced from glands in the head of workers
 - Fed to all workers & drones larvae for first three days
 - Fed exclusively to Queen throughout her life
- Pollen
 - 22 amino acids, 27 minerals, vitamins, enzymes
 - 40% carbohydrate 5% fat
 - Fermented as bee bread
- Bee bread
 - Mixture of pollen and honey
 - Fed to workers and larvae older than 3 days
- Nectar
 - High in carbohydrate 5-80% sugar



Nectar/Honey



Pollen



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Nectar/Honey



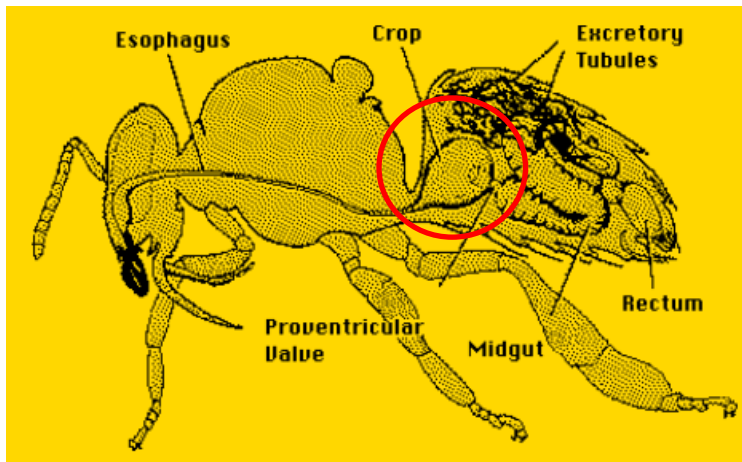
Pollen



Hive Products - Honey

■ Honey

- Bees gather and store nectar in an expandable crop
- Transported to hive where “processor bees” regurgitate into open cell
 - Invertase in crop breaks sugar into glucose and fructose
 - Enzyme glucose oxidase breaks down to gluconic acid and hydrogen peroxide¹
 - Changes the Ph for long-term storage
- Bees fan open cells evaporating water until its contains 18.6% water





Hive Products - Honey

- 1 lb of Honey¹
 - Nectar Collected from 2 Million Flowers
 - Odometer: 55,000 Miles
 - Man-hours: 800 bees lifetime
 - 1 Bee produces 1/12 tsp of honey in her lifetime
 - 2 Tbsp can fuel a bee's flight around the world





Hive Products - Honey

■ Antimicrobial properties

- Reduced moisture content and low pH (3-4.5) create hostile environment bacterial / molds
- Extremely long shelf life
 - Found unspoiled in ancient Egyptian tombs by modern archeologists¹
- Known for millennia to have medicinal uses
 - Earliest documented usage recorded on Sumerian tablets 1900-1250 BC²
 - Ancient Egyptian medical manuscript Papyrus Ebers 1500 BC
 - Prescribed as antiseptic, wound, burn dressing

¹**Letters from the Hive: An Intimate History of Bees, Honey, and Humankind**

By Stephen Buchmann, Banning Repplier

²**Healing Honey: A Natural Remedy for Better Health and Wellness**

By Lynne Chepulis



Hive Products - Wax

- Bees Wax
 - Secreted by glands on underside of workers abdomen
 - Created from honey: 6-8 lbs. honey required for 1 lb. beeswax
 - Occurs to workers when ~10 old, lasting until ~18 days
 - Hooks on legs bring wax flakes to mouth to be worked
 - Used in hive to build comb and cover cells
 - Harvested during honey extraction





Hive Products - Propolis

- Propolis (bee glue, bee penicillin)
 - Resinous mixture made from saliva, beeswax and tree sap (essential oils)
 - Sticky at temps >70F but becomes hard and brittle at lower temp
 - Used as a building material in the hive
 - Calk: Seal cracks and openings <1/4”
 - Structural Reinforcement
 - Strength
 - Vibration reduction
 - Strong anti-bacterial, fungus properties
 - Entombment of hive invaders
 - Known since ancient times to have medicinal uses
 - Biologically active constituents have a broad spectrum of biological and therapeutic properties
 - antidiabetic, anti-inflammatory, antioxidant, anticancer, rheumatoid arthritis, chronic obstructive pulmonary disorders, cardiovascular diseases, respiratory tract-related diseases, gastrointestinal disorders, as well as neuroprotective, immunomodulatory, and immunoinflammatory agents. ¹

¹Propolis: Its Role and Efficacy in Human Health and Diseases

[Nadzirah Zullkiflee](#),¹ [Hussein Taha](#),² and [Anwar Usman](#)^{1,*}

[Molecules](#). 2022 Sep; 27(18): 6120.

Published online 2022 Sep 19. doi: [10.3390/molecules27186120](https://doi.org/10.3390/molecules27186120)



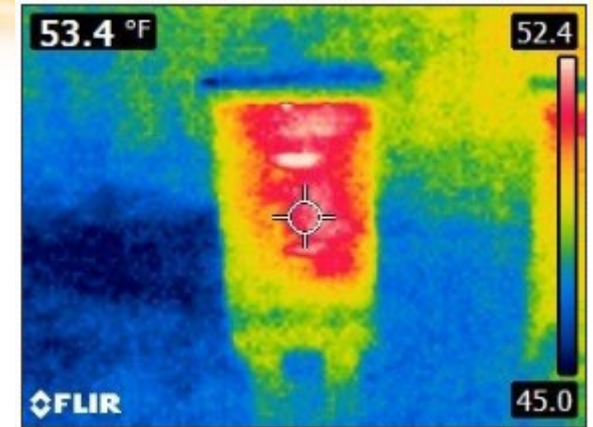
Santa Clara Valley Beekeepers Guild

- SCVBG – non profit beekeeping organization founded 1978
 - ~400 members
 - Purpose
 - Serve beekeepers through mentoring and education
 - Promote urban beekeeping.
 - Outreach and Education
 - Support scientific research
 - Meetings first Monday of each month – all welcome
 - Maker Nexus, 1330 Orleans Drive, Sunnyvale
 - Meetings begin with 60 min. of Q&A with experts
 - Presentation by experts/significant voices in beekeeping community
 - Door prizes



Santa Clara Valley Beekeepers Guild

- Access to experienced beekeepers and subject matter experts
- Find a mentor
- Training classes: Swarm collection, basic beekeeping
- Informative monthly newsletter
- Members only forum: seek advice, buy/sell equipment, swarms/queens
- Borrow equipment
 - 6 honey extractors
 - FLIR 5 Infrared camera
 - Candle making kit
- Extensive lending library of beekeeping books



Thermal Image of Hive



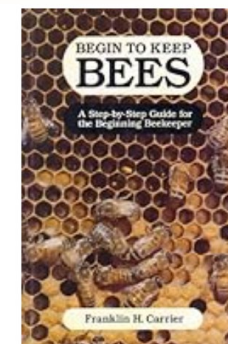
Beekeeping Sources

- Dadant and Sons (www.dadant.com)
 - Midwest online retailer since 1865
- Mann Lake (www.mannlakeltd.com)
 - California online/brick-mortar retailer in Woodland
 - The “Sears catalog” of bee keeping supplies
- Better Bee (<https://www.betterbee.com/>)
 - Beekeeping Supplies
 - Online classes!!

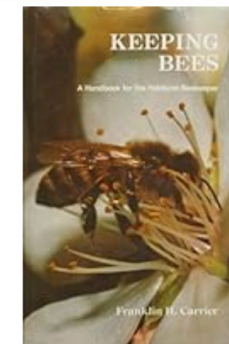


Educational Resources

- Bee Guild Classes
 - Swarm training, apiary workshop
- Online Classes
 - Better Bee (betterbee.com), [Core Bee Course](#) 6 hours, MWF May 13,15,17 3:30-5:30pm
- Very good Bee websites:
 - Scientific beekeeping Randy Oliver <https://scientificbeekeeping.com/>
 - Santa Clara Valley Beekeepers Guild <https://www.beeguild.org>
 - Honeybee Suite (look at Index) <https://www.honeybeesuite.com>
 - Keeping Backyard Bees www.keepingbackyardbees.com
 - Bee Keeping Like a Girl [Blog - Beekeeping Like A Girl](#)
 - In the Beekeeper's Workshop « Michigan Beekeepers Association Lots of good info & DIY Plans for Everything Bee. <https://www.michiganbees.org/beekeeping/in-thebeekeepers-workshop/>
- Recommended books
 - The Beekeeper's Handbook by Dr. Diana Sammataro & Dr. Alphonse Avitabile
 - Beekeeping For Dummies, Howland Blackiston
 - Begin to Keep Bees by Franklin H Carrier. Out of print but available used. Somewhat dated but good step by step instructions
 - Keeping Bees: A Handbook for the Hobbyist Beekeeper by Franklin H Carrier
 - The Backyard Beekeeper, 4th Edition: An Absolute Beginner's Guide to Keeping Bees in Your Yard and Garden, Kim Flottum



Begin to Keep Bees



Keeping Bees: A Handbook for the



Langstroth Hive



Langstroth in 1890



Top cover extends over inner cover and first super

Inner cover catches condensation, can be used with bee escape

Medium super typically honey super (56 lbs. full).

Queen excluder placed above brood boxes, prevents queen from entering honey supers

Deep super typically used as brood box

Entrance reducer 3 possible entrance widths for different seasons/hive strength

- Bottom board bottom and landing zone



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Hive Boxes

- Amazon
 - May Bee brand



DETAILS IN THE DOVETAILS

MayBee Hive's boxes have an unrivaled degree of craftsmanship. With this kind of accuracy in every cut, your bee hive will avoid unwanted gaps that would cause extra work for your bees.

Made in China
Wood tends to split (predrill holes)
Possibly not enough wax on foundation



Roll over image to zoom in



8-Frame Langstroth Beehive Dipped in 100% Beeswax, Complete Bee Hives and Supplies Starter Kit Includes 2 Deep Hive Bee Box and 2 Bee Hive Super with Beehive Frames and Foundation

Visit the MayBee Store
5.0 ★★★★★ 9 ratings

-5% \$202.99

List Price: \$213.99

Or \$50.75 /2 weeks (x4). Select from 1 plan

Coupon: Apply \$11 coupon [Shop items >](#) | [Terms](#)

Thank you for being a Prime member. Get \$100 off: Pay \$102.99 \$202.99 upon approval for Prime Visa.

Brand	MayBee
Material	Pine Wood
Style	Modern
Target Species	Bee
Assembly Required	Yes

About this item

- STANDARD SIZE - 2 Heavy Beeswax Coated Deep Brood Boxes (14" x 19-7/8" x 9-5/8") with 16 Premium Dovetail Pine Frames and Beeswax Coated Foundation Sheet
- STANDARD SIZE - 2 Heavy Beeswax Coated Medium Super Boxes (14" x 19-7/8" x 6-5/8") with 16 Premium Dovetail Pine Frames with Beeswax Foundation Sheet
- DURABLE MATERIAL - Beehive is Made of Top Grade Cedar Wood. The exterior of beehive are beeswax coated, which made beehive waterproof and more durable.
- PREMIUM DESIGN - MayBee Hives Designed with Pre-Drilled Holes and Pre-Cut Dovetail Joints for Easy Installation.
- COMPLETE KIT - Comes with Deep box, Medium box, Solid Bottom Board, Queen Excluder, Telescoping Top Cover (Metal Capped), Inner Cover, Entrance Reducer and Nails for Assembly. Contains Every Parts of Beehive Box.

\$202.99

FREE delivery April 3 - 5. [Details](#)

Deliver to Karen - San Jose 95118

In Stock

Quantity: 1

Add to Cart

Buy Now

Ships from	MayBee Hives
Sold by	MayBee Hives
Returns	Eligible for Return, Refund or Replacement...
Payment	Secure transaction
See more	

Add to List



Tools & PPE

- Amazon beginner sets
 - Not recommended – include obscure/advanced/not-needed tools



BEELHIVE™ | 1K
Window for Bee
Hive Box Kits for
Complete Home
Bee Keeper

Brand: Beelhive
[Search this page](#)

\$169⁹⁹
Or \$17.08 /mo (12 mo).
✓prime One-Day
FREE Returns

Thank you for being a Prime member. We appreciate your approval for Prime Visa.



Tools & PPE

Priority high-low

- Essential

- Vail / jacket / suit
- Smoker
- Gloves
- Hive tool
- Bee brush

- Nice to have

- Frame grip
- Queen clip





Costs

More Cost / Less Assembly



	Amazon May Bee (unassembled paint not req.)	Better Bee Beginner Kit (assembled no prime/paint)	Man Lake My Next Hive (assembled no prime/paint)	Dadant Exp. Apiary (assembled & primed)
Telescoping top	220	425	340	350
Inner cover				
Bottom board				
2 Deep super (brood box)				
2 Medium Super				
20 Deep Frames with foundation				
20 Medium Frames with foundation				
Top cover feeder	39.99		36.75	39.95
Hive tool	6.99		10.95	8.95
Queen excluder (metal)	25		10.95	11.95
Gloves	14.99		20.95	31.95
Smoker	55		57.95	55.95
Sub Total	\$362	\$425	\$478	\$499
Veil / Jacket	100	99.95	118.99	104.95
Bee Brush	9	6.95	9.40	8.95
Sub total	\$109	\$107	\$128	\$114
Total	\$471	\$532	\$606	\$613



Sources for Bees

- Olivarez Honey Bees (WWW.OHBEEES.COM)
 - Bee packages - 3 lbs. bees w/ mated Randy Oliver Golden West queen
 - \$210 Ship dates are every Friday in April and first Friday (5/3) of May
 - Bees ship direct
- Mann Lake (www.mannlakeltd.com)
 - Bee packages – 3 lbs. bees w/ mated queen
 - \$195/205 w/free shipping – multiple ship dates April and early May
 - Ship via USPS, held at post office
 - \$165/\$175 pickup in Woodland– multiple dates April and early May
 - Italian and Carnolian with VSH, Minnesota hygienic available
- Dadant and Sons (www.dadant.com)
 - Bee packages – 3 lbs. bees w/ mated queen
 - \$188 w/free shipping
 - Ship dates are every Monday in April and first Monday of May
 - Bees arrive at post office later the same week



Local Sources for Bees

- Chick n Bees (Los Gatos)
 - 3lb bee package with mated queen - \$190
 - Order bees now - pick up day is 4/20
- Santa Clara Valley Bee Guild
 - Annual bee package group purchase with discount (closed 3/29)
 - Requires SCVBG membership
- Craigs list
 - Nuc's available
 - \$150-\$250
 - Various locations: SJ, Santa Clara, Morgan Hill, San Martin, Pleasanton
 - Availability: unpredictable, currently now and 5/1



NUC's vs. Package

■ NUCleus hive

- Mini colony containing 5 frames of honey/pollen, eggs, brood, adult bees (nurse, field etc.) drones and a queen
- Advantages
 - Established colony will expand quickly
 - Easy installation into standard hive body
 - Higher likelihood of first time success
- Disadvantages
 - More expensive (\$220 on CR)
 - Will contain mites
 - Must ensure queen is young and mated

■ Package

- Box containing 3 lbs. (10K) of adult bees (workers, drones) + queen
- Advantages
 - Less cost \$155-\$220
 - Bees are of good known stock
 - Healthy, free of disease and low mites
 - Queen is mated and of good stock
 - Special VSH queens available
 - Usually marked
- Disadvantages
 - More initial work to hive a package
 - Requires more time to build strong colony
 - Min 21 days before first bees emerge
 - Start out with no comb, brood, or food stores
 - Bees must draw comb before queen lays
 - Requires gallons of sugar water for feeding
 - Stimulates wax formation
 - Prevents starvation
 - Greater risk of failure and/or no honey first year



Hiving a Nuc

- Perform hiving early evening/sunset
- Loosen & remove outer frame and transfer to hive
- Remove and transfer remaining frames in same order as they were in the nuc
- Center the 5 frames and add additional frames to the outside until 10 frame box is full
- Install feeder

24 Bee Nucs and hives for sale - \$220 (morgan hill)



will be selling 5-Frame Nucs and 10-Frame hives starting April 2024. Our bees make lots of honey now.

5-Frame Nuc (with 3 frame of brood and 2 frame of honey) - \$220 ea
10-Frame Deep body hive (5-6 Frame of brood and 2-3 Frame of honey) - \$340 ea





Hiving a Package

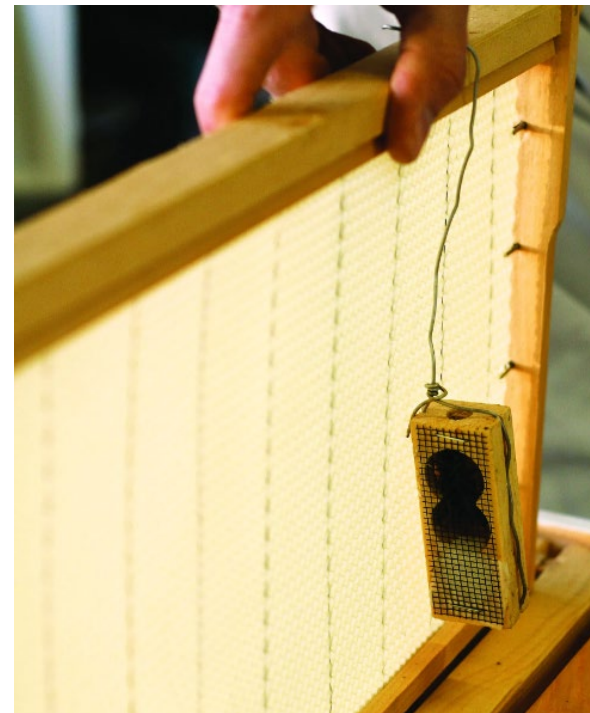
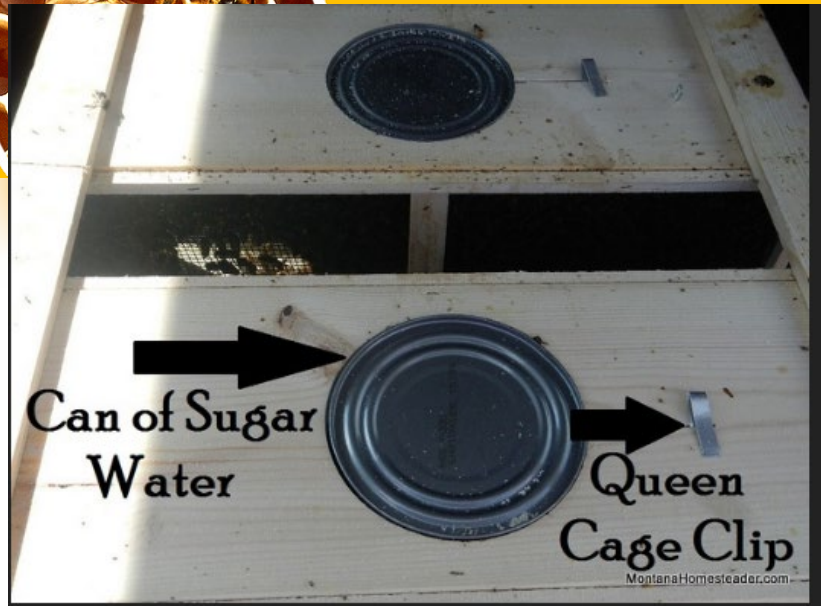
[Randy Oliver on Hiving a Package](#)

1. Perform hiving early evening/sunset - temperature $>65^{\circ}\text{F}$
2. Spray sugar water 10-15 pumps per side – repeat several times 10 min between
 1. Gorges bees, calms and stimulates wax formation
3. Shake bees to bottom of box
4. Remove syrup can and queen cage - Replace can
5. From queen cage, remove cork giving access to candy plug, pierce plug with nail
6. Hang queen cage 2” below top bar of center frame. Screen facing out or sideways
 1. Ensure bees have free access to queen
7. Remove center 3 frame in brood box
8. Remove syrup can, invert box and shake bees into box
9. Place frame with queen in center of box and replace all other frames
10. Close hive and add feeder



Hiving a Package

1. Do not disturb bees for 4 days
2. After 4 days open hive and check that the queen is released
 - If she's not released,
 - remove plug providing path of escape and place cage on frame tops
 - Place inner cover with deep rim side down to create room for cage
 - Do not attempt to remove her allow her to walk out on her own
 - If she's released remove queen cage and close hive
3. Install feeder
4. After 7 day perform first hive inspection





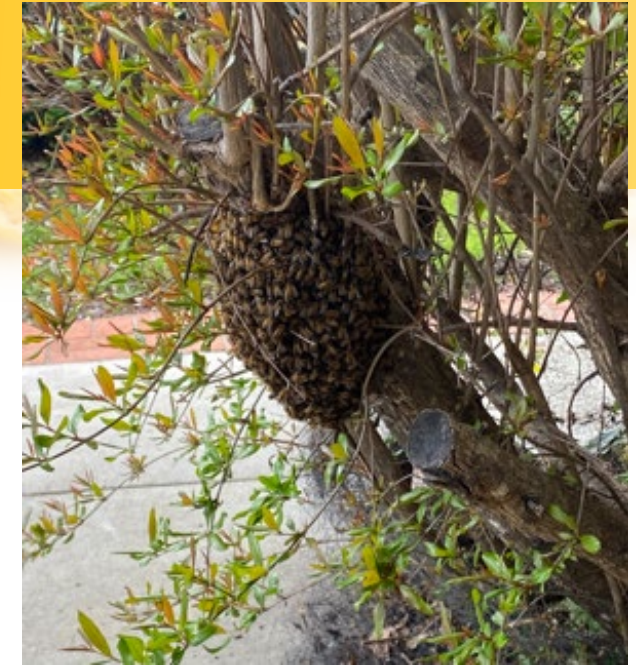
Bee Sources - Swarm Collection

■ Key Principals:

1. Collect swarm clusters before they enter an enclosure/structure
2. Bees are docile, gorged with nectar and have no hive to protect
3. Bees will go where ever the queen is – use this to move bees
4. Bees don't fly at night – all bees in the collection box by night-fall

■ Swarm collection steps

1. Join the Bee Guild, take swarm training class and get on the swarm list
2. Receive calls from the public about available swarms
3. Position cardboard box or hive box below cluster
4. Knock and/or hand-transfer cluster including queen into box
5. In time, all the bees will enter the box to be with the queen
6. At sundown close box, tape and remove – all bees will be in the box
7. Next at day at dusk, dump box of bees into hive box
8. Treat for Varroa <6 days
9. Do not disturb hive for 7 days then perform first hive inspection



Captured Swarm





Beekeeping – Next Steps

- Primary objective of first year –building the size and strength of the colony
 - Build colony up with 2 deep brood boxes
 - Upper box should have 5+ deep frames (40 lbs.) of honey to survive winter
 - Population of colony goes from 10K package to 50K-60K
- Secondary objective of first year – honey production for the beekeeper
- Begin with single deep super as brood box 1
- Add second brood box when all 10 frames are full of brood/honey
- Add queen excluder and first honey super when 8+ frames full on second
- Feed the bees until queen excluder and first honey super are installed



Feeding Bees

- Purpose of feeding
 - Stimulate wax formation and build comb
 - Queen lays eggs in comb which builds hive population
 - Need comb to store Honey and pollen reserves for winter
 - Allows field bees to focus on gathering pollen
- What to feed
 - Simple syrup from white granulated cane/beet sugar – never brown, raw etc.
 - 1:1 (by volume or weight) sugar/water solution
 - 1 Qt. = fill 2/3 of quart jar sugar, fill with hot water
 - 1 gal = 2.5 lbs. sugar add water to 1 gal line
 - Pollen patty on top bars in early Spring (before bloom)
- How much / how long to feed
 - At least until second brood box is added – stop if nectar flow is established
 - Approximately 10 gal. of syrup for package of bees
 - Package consume 1/2 Qt./day at first



Hive Inspections

- Weekly inspections during honey flow through August
- Assess health of hive and need for intervention
 - Verify hive is “Queen Right” – queen is present and doing her job
 - Look for the queen or eggs – eggs mean queen was there <3 days prior
 - One egg per cell – multiple eggs means laying workers
 - Assess brood build up and honey volume
 - Brood in all stages of development
 - Laying pattern of queen – uniform and concentrated in frame center
 - Add super when 7-8 frames full
 - Look for queen cells
 - Overpopulation of bees + queen cells (esp. low on the frame) indicates impending swarm
 - Need swarming intervention e.g. split hive
 - Few bees + queen cells central on the frame may indicate superstition
 - Return frames quickly to avoid chilling brood



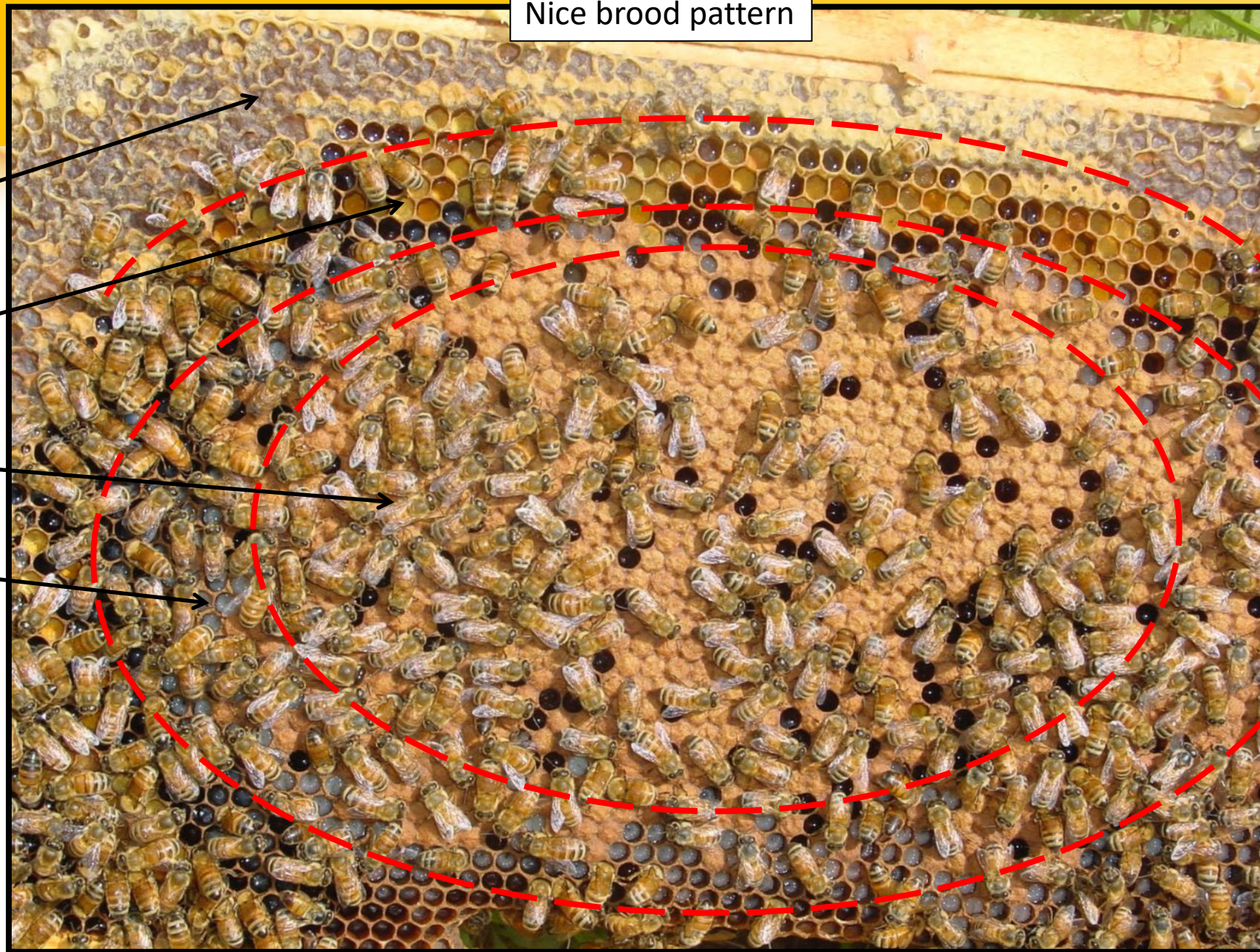
Nice brood pattern

Honey

Pollen

Older capped brood

Younger open brood





Sage Advice from a Bee Sage

My advice—concentrate on (1) varroa management and (2) nutrition (especially in the late summer), and do so proactively—*before* mites or poor nutrition have seriously stressed the colony.

~ Randy Oliver

The number one feedback that I get from first-year beekeepers is that they did not realize how important it was to monitor and control varroa in their hive — most beginners lose their first hive to the mite.

~ Randy Oliver

Randy's Recipe for Healthy Hives:

- **Run locally-adapted bee stock.**
- **Use young, vigorous queens (1½ seasons max).**
- **Monitor and control varroa all season long!**
- **Provide good nutrition (pollen sub if indicated).**
- **Minimize exposure to insecticides and miticides.**
- **Be proactive rather than reactive!**

Those who monitor varroa and provide pollen sub when indicated typically enjoy successful beekeeping.



Varroa Destructor

- World wide threat to bees
 - Very large parasite
 - Bee viruses vector
 - Deformed wing disease and 4 others
 - Cause widespread colony demise
 - All hives have mites
- Not treating results in hive death 1 to 1.5 years
- Untreated hives ~50% hive loss year/year
- Treated hives 25%-35% hive loss year/year
- Registered Varroacides with honey supers on
 - Api-Bioxal (oxalic acid) (Dadant, Man Lake, etc.) – probably best option
 - Formic Pro (Formic organic acid) – requires “operators” license from SCC Ag. Dept.
 - Hopguard III (natural hop derivative)
- Registered Varroacides without honey supers on
 - Above treatments
 - Apiguard (Thymol based natural plant extract)



www.sbai.org.uk/



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Varroa Integrated Pest Management

- Mite monitoring
 - Multiple methods, alcohol wash, powdered sugar roll
 - Determine number of mites/100 bees
 - Monitoring/treatment schedule
 - Early spring
 - Before supers are applied (mid May)
 - Aug 15
 - October
- Randy's top 5 methods in order of effectiveness
 1. Use VSH queens
 2. Split hives in Spring
 3. Apiguard gel; 25 g on a card placed between the brood chambers (spring, summer, fall).
 4. Oxalic acid dribble in Nov or Dec when colonies have the least brood.
 5. Miteaway Quick Strips formic acid gel (any season except cold winter)



Oxalic Acid Treatment

- OA
 - Only EPA approved product Api-Bioxal (expensive)
 - Known to be 99.6% pure Oxalic acid (Wood bleach)

- Two methods of application
 - Vaporized OA –no honey supers on hive
 - 1 gm per brood box
 - Requires PPE
 - Extended release dribble – honey suppers ok
 - For mixing ratios:
<http://scientificbeekeeping.com/oxalic-acid-treatment-table/>

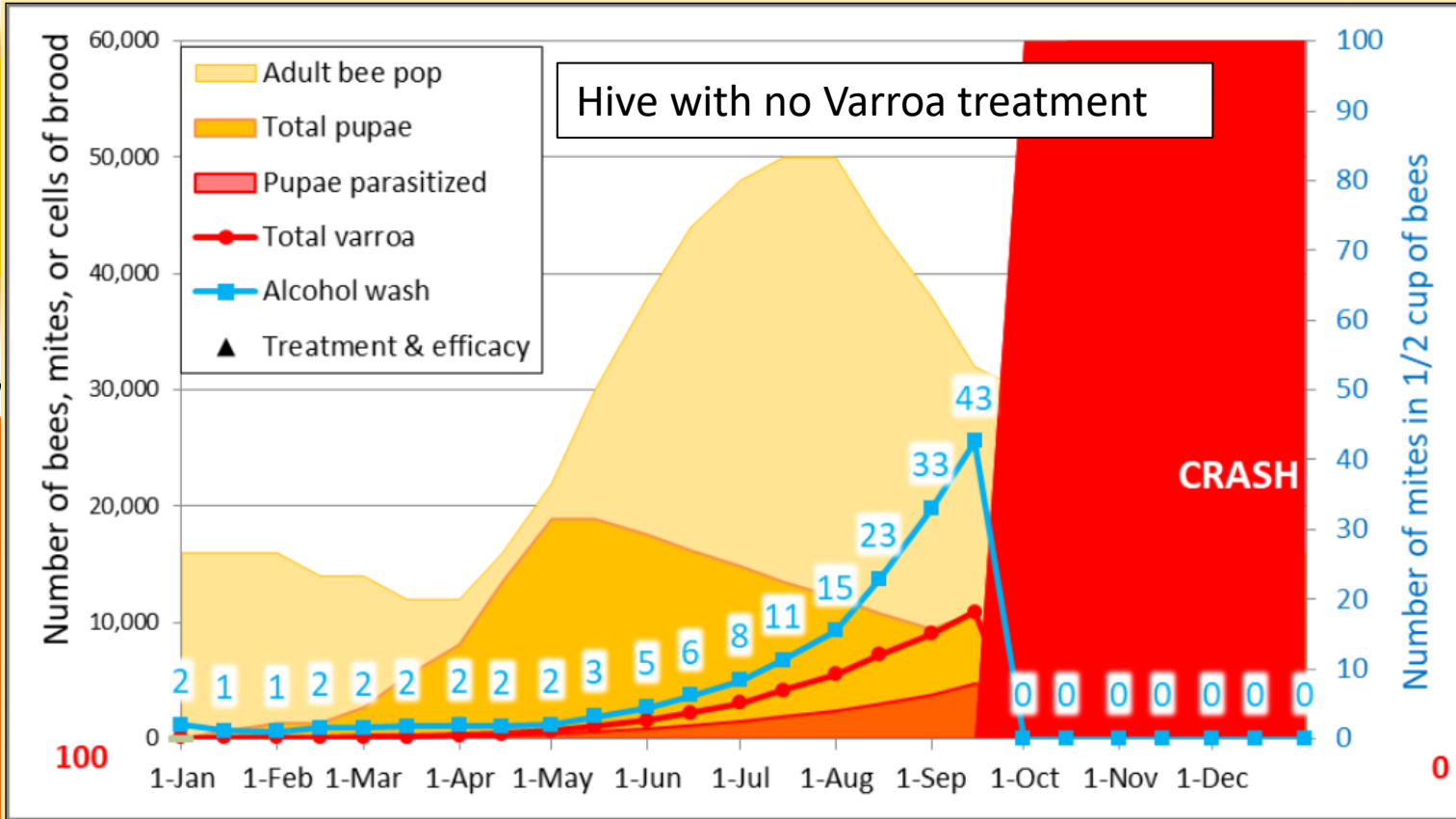
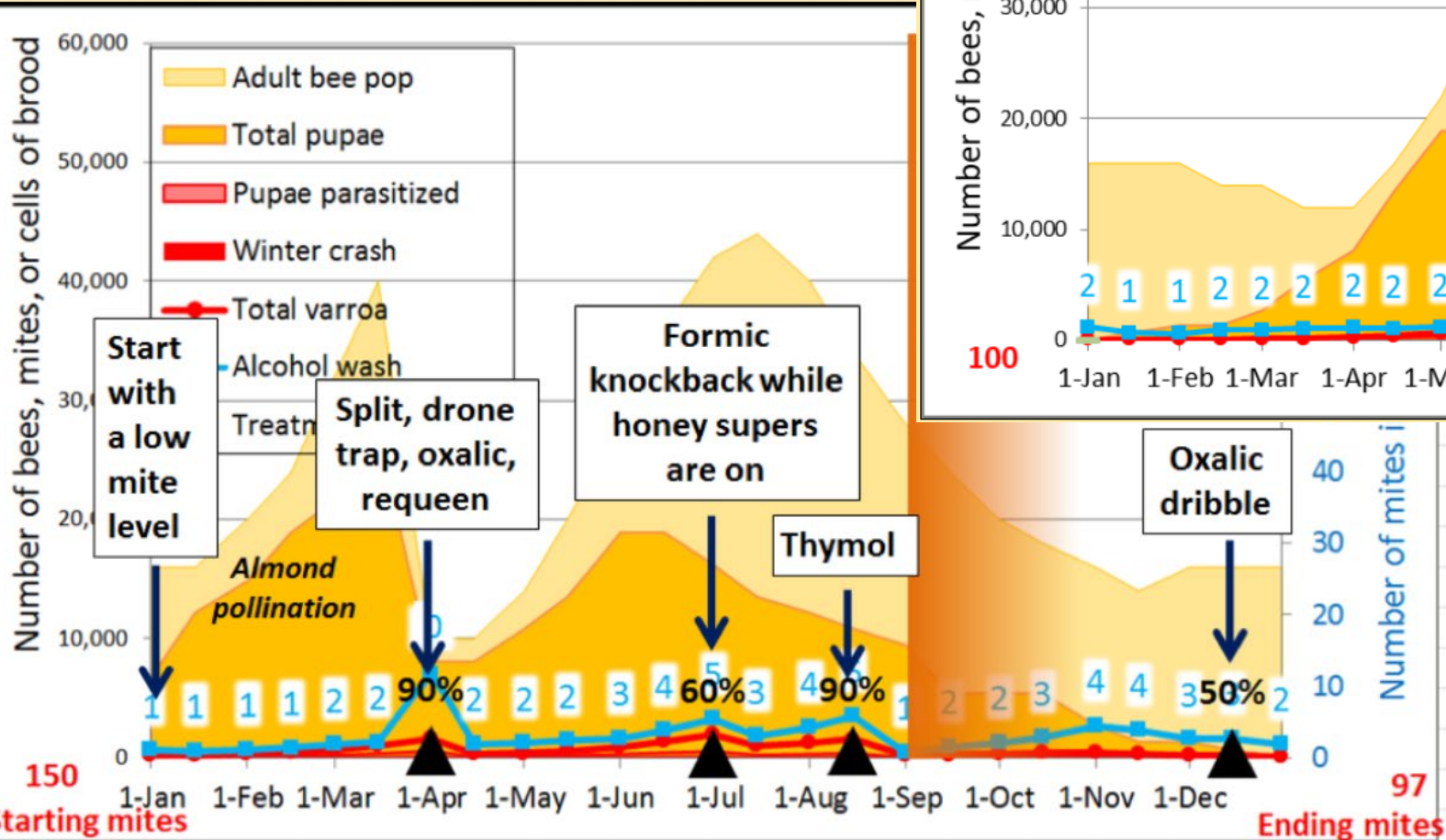


Dribble vs. Sublimation			
Dribble		Sublimation	
Pros:	High efficacy	Pros:	Perhaps higher efficacy
	Very safe to apply		No opening of the hive
	Quick		Can do in freezing weather
	Little equip needed		Perhaps gentler to the bees
			No syrup mixing
Cons:	Requires opening hive	Cons:	Vapor fog is hazardous
	May be problematic in freezing weather		Requires specialized vaporizer and energy source
	Easier with helper		Problems with hot tip





Varroa IPM



R: Randy's California hives, split 4 ways after almonds and oxalic'd (enter a total 90% mite reduction on Apr 1 from splitting 4 ways, oxalic trtmt & drone frame removal)



California Law: Beekeeping

- Food and Agriculture Code, Division 13, Chapter 1, Article 4
 - Requires beekeepers to register hives with county Ag. Dept.
 - Notifies beekeepers if commercial operators will use pesticide in the area (may not be relevant to backyard apiaries)
 - Information will not be disclosed to any person or governmental agency, other than SCC Ag. Dept
 - Can be done at <https://beewhere.calagpermits.org/>
 - If number of hives is <10 can request \$25 fee waver at SCC.agriculture@CEP.SCCgov.org or 408 918 4683
 - Also, who to contact for “operators' license” to use FormicPro
 - Will be issued state beekeeper ID



Santa Clara Agricultural Commissioner's Office

1553 Berger Drive, San Jose, CA 95112
Phone: (408)918-4600 Email: SCC.Agriculture@cep.sccgov.org

2024 ANNUAL APIARY REGISTRATION

California Food and Agriculture Code Section 29040 requires every person that is the owner, broker, or is in possession of an apiary that is located within the state, on the first day of January of each year, to register the number of colonies in each apiary that is owned or possessed and the location of each apiary with the Agricultural Commissioner's Office. California Food and Agriculture Code Section 29042 requires every person who moves bees into the state or otherwise comes into possession of an apiary that is located within the state after the first day of January, shall register the name of the owner and the number and location of colonies moved into the state or so acquired within 30 days after coming into possession of the apiary. A completed registration form and fee (if required) are due to the home county Agricultural Commissioner's office.

The following beekeeper has registered the apiary locations listed below in Santa Clara County. Movements of bee colonies within the county, or into or out of the county must also be reported to the Agricultural Commissioner's Office either with the preferred method of using the BeeWhere system at <https://beewhere.calagpermits.org>, in person or by email.

Note: Title 3 Division 6 of the California Code of Regulations, section 6981, exempts certain vector control activities from notification. Contact your local Vector Control District office to find out if they maintain a spray notification service.

Beekeeper Information			
State Beekeeper ID: B-43-2024-00007	Registration Date: 3/28/2024		
Home County: Santa Clara	Updated Date: 3/28/2024 02:33 PM		
Notification Requested: Yes	Payment Status: WAIVED		
Name: Victor Morris			
Contact: Victor Morris			
Alternate: Victor Morris			
Mailing Address: 1255 mary lee way san jose, CA 95118			
Physical Address: 1255 mary lee way san jose, CA 95118			
Phone: (408) 307-9412		Email: 2foritaly@earthlink.net	
Hive Markings:			

Registered Apiary Locations in Santa Clara County			
Location Id	Longitude (decimal degrees)	Latitude (decimal degrees)	Number of Colonies
Victor Morris	-121.88335	37.27274	2



Local Beekeeping Ordinances by City

Municipal Code Requirements	San Jose	Santa Clara	Sunnyvale	Cupertino	Los Gatos	Morgan Hill
Permit	Yes -No	No	No	No	No	No
City Manager Notification	No	Yes	No	No	No	No
Register with SCC Ag. Commission (408) 918-4600	Yes	Yes	Yes	Yes	Yes	Yes
Max number of Hives	2	2	5	2 on <5000 Sq. Ft. lot	2 on <5K Sq. Ft. lot 3 on >10K Sq Ft lot 4 on >40k Sq Ft lot +1 for ea. ½ acre	1 on <5K 2 on >10K Sq. Ft. lot +1 addl w/ neighbors OK
Distance to side prop line	10' min	10' min	25' min	8' min	>6' allowed <6' w/ neighbor's ok	10' min
Distance to rear prop line	N/A	N/A	25' min	8' min	>10' allowed <10' w/neighbors ok	25' min
Distance to neighbor's house	50' min	N/A	100' min	N/A	N/A	Need OK if <1000' schools, church, public buildings
Distance to public road	N/A	20' min	N/A	20' min	25' min	N/A
Allowed in setbacks	No	No	N/A	Yes	Yes, in side w/ neighbor's ok	N/A
Constant water supply	Yes	Yes	Yes	Yes	Yes	<3' hive
Face house with 6' fence on 3 sides <30' away	x	x	x	N/A	FDB direct flight above neighbors	x
Seismic anchoring	No	No	No	No	No	Required if hive >6' tall



- Backup



Bee Sources - Swarm Collection

- Key Principals:

1. Collect swarm clusters before they enter an enclosure/structure
2. Bees will go where ever the queen is – use this to move bees
3. Bees don't fly at night – all bees in the collection box by night fall

- Swarm collection steps – Day 1:

1. Join the Bee Guild, take swarm training class and get on the swarm list
2. When called to remove a swarm ask questions / request photos
 - a. Ensure they are honey bees and not wasps
 - b. Ask for photo of cluster close up and far away
3. Decline difficult cases / refer to other Guild members
 - a. Only accept clusters on external surfaces – not inside building, tree hollow etc.
 - b. Only easy to access i.e. not high in a tree etc.
4. Wear PPE – bees are usually docile but don't risk it
5. Position cardboard box with air-holes or nuc below cluster
6. Execute single abrupt downward motion, knock cluster including queen into box
7. Use hands/bee brush to scoop remaining bees into box
8. Partially close box, leave below/near original cluster location
9. Watch for bees on box in “bottoms-up” position fanning– “THE QUEEN'S IN HERE!”
10. Use brush to make stragglers airborne – more likely to smell queen's location
11. Return at onset of dark to close box, tape and remove – all bees will be in the box





Swarm Collection Cont.

- Hiving the swarm - early evening day 2:
 1. Wear PPE
 2. Remove center 3-4 frames from nuc or deep super brood box
 3. Sharply bang box down on surface to knock bees to bottom
 4. Invert box above gap in frames
 5. Open fraps while sharply dumping bees into hive box
 6. Close the cover
 7. 5 days later treat for Varoa using oxalic acid vaporization or similar





François Huber

- Follio Hive

