EJ'S NEWS

EJ is East Jefferson Beekeepers Association's Mascot.

Volume 10

Gloria Neal, Editor **October 2021**

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East Jefferson Beekeepers' Meeting

Saturday, October 9th
Wild Olympic Salmon shelter at

HJ Carroll Park in Chimacum:

Highway 19,
between Chimacum School and Ness Corner Road.

Please bring your own chair.

Board meeting 9:30 a.m.

New beekeepers Q & A 10 a.m.

General meeting 10:30 a.m.

THE PREZ SEZ

Dear Fellow Beekeepers,

EJBA By-laws specify that we hold elections of officers and trustees at our October meeting. Officers include; president, vice president, secretary and treasurer. In addition, we elect three trustees who are members of the board. A quorum of 15 is required to elect officers and trustees. Nominations can be submitted via mail or email to the Secretary. They will also be accepted in person at our October meeting. Nominations received to date include:

President:	Dave Morris
Vice President:	Rich Thomas
Secretary:	Susi Thomas
Treasurer:	Catherine Slaton
Trustee:	Mike Kelley
Trustee:	Tony Weller
Trustee:	Mike Duncan

Our October 9 meeting will be held at HJ Carroll Park. In November we are honored to, once again, have Dr. Tim Lawrence provide a presentation. "Dr. Tim" is the Director of the Island County WSU Extension Office and one of the state's premier bee experts. Dr. Tim has made several excellent presentations to EJBA, and we look forward to hearing from him at our November meeting. That meeting will be held at The Church United, 1820 Irondale Road in Port Hadlock just north of the laundromat.

Dave

OCTOBER MEETING AGENDA

At the general meeting, we will focus on two main topics:

(1) *Winter preparations*: continuing our winterizing discussions, this time on quilt boards, candy boards, insulation, etc.

(2) *Products:* Everyone is invited to bring samples of THEIR honey for an EJBees Honey Tasting! And if you make other honey/wax products, or other formats of honey presentation (such as comb honey, for example), please bring samples for show and tell. This should be educational for our new beekeepers, and a lot of fun for all.

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2021 EXECUTIVE BOARD

President: David Morris

Vice President: Rich Thomas

Secretary: Susi Thomas

Treasurer: Harry Prather

Trustees:

Mike Kelley

Tony Weller

Catherine Slaton

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Mike Kelley, Rich & Susi Thomas

APPRENTICE CLASSES
Harry Prather

COMMUNICATIONS
Susi Thomas

ACTIVITIES-EVENTS
Rich Thomas EJBEES.org

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Mike Edwards

BLOG –EJBEES.COM
Mike Kelley

SWARM CORDINATOR
Tony Weller

ASSETS MANAGER
Catherine Slaton

MEDIA SPECIALIST
Jim Gurney

NEWSLETTER
Gloria Neal

LETTER FROM THE EDITOR

EJ Beekeepers...

Where is the time going? October is here already! Time to think about winterizing. So our October meeting will center around health of our bees and making sure they can survive the winter.

Rich and Susi will be presenting some great winterizing techniques at that meeting., so you won't want to miss it!

Bring a sample of your 2021 honey for tasting. Single-use utinsels will be provided to protect against mixing of honeys, and contamination.

I was glad to finally see some rain. I was surprised to see the "girls" flying even in the rain. I'm hoping the flowers will be willing to give up some nectar now.

I know many of our beekeepers fought the robbing during the long nectar dearth this year, and Catherine decided to fight it with open feeding. Be sure to read her article, as she was able to at least keep the robbers away from her colonies while she was treating with formic acid, and was unable to close off the entrances during that time.

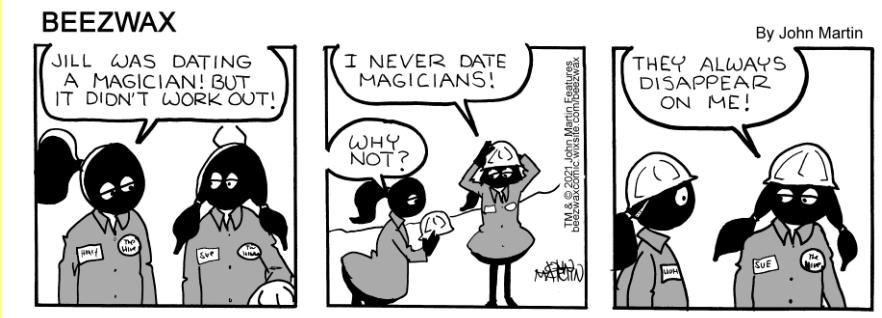
There ARE also drawbacks to open feeding, and Catherine has included some great YouTube links so you can make your own decisions.

This will be our last outdoor meeting, so I'm hoping October will be good to us and give us a warm morning for our gathering.

Check out Susi's wonderful article on bee biology and temperature control in the hives. Some of the honey bees' methods have been borrowed by man, as you will see. There's always something new to learn!

That's the buzz for October,

Gloria 360-301-1850 eastjeffbees@gmail.com



IN THE GARDEN

What a Bee Season!

I don't know about the rest of you, but up here on Faun Meadow, it's been a doozie. I suspect everyone has felt the impact of near-drought conditions on your bee yards, and I hope robbing has been less of a problem for others than it has been here in the Chimacum hills. The season started out hopeful with all four hives coming through the winter with great vigor. Vigor turned to capped swarm cells, capped swarm cells turned into Taranov splits. Quick as you can say "Bob's your Uncle," four hives became 12. Then came the dearth, then came robbing, then came Catherine running around like a banshee, sobbing. Even with all the defenses in place, one of my strongest hives was lost to bandits, and another is still struggling from being ransacked. How to help my hives recover, and other hives to complete stores with varroa treatments in place? Intuitively, it seemed that using top, or frame feeders, might incite more robbing, so as soon as formic acid strips went into place, I switched to open feeding.

I heard from both sides on open, or barrel feeding. One camp warned it could lead to more robbing, another camp supported the idea with *certain provisions*. Distancing the open containers was critical, although just how *much* distance was advised anywhere from 100 to 300 feet. Being one who likes to err on the side of caution, I set my containers at 300 feet plus. Granted, this is not possible on all properties.

Containers ranged from hive top feeders to five gallon buckets. 2:1 syrup was poured three inches in and five to six inches of loose, dry straw set on top. Shims were added, then tops to keep rain from diluting syrup. Within minutes honey bees arrived. Another 15 minutes and there was a curved corridor from feeders to hives, looping around a copse of trees mid-property, humming placidly.

My chief concerns outside of robbing were: Will yellow jackets, bald-faced hornets, or ants impact supply? (A few fed, but not enough to burden the system.) Will bears, or other wildlife be attracted to the syrup? (So far, no.) If I don't keep a constant supply, will robbing start up again? (Replenishing every morning at sunrise, most of the syrup is gone by mid-afternoon. However, there is enough residue to keep some bees busy.)

First hive check post twenty day treatment is scheduled for the first of October. I'm hoping to see good stores of syrup in the brood boxes. Then the question becomes: If necessary, do I switch back to top feeders or maintain open feeding? My inclination is to continue open feeding. Does open feeding satisfy the foragers' instinct to collect food stores from *outside* the hive? My hunch is yes, but until I am able to study bee behavior for a greater duration, I won't know for sure.

--Catherine Slaton

https://youtu.be/f8bDzD-aXj4

https://youtu.be/sJ-pVAXKScM

https://youtu.be/fF1x5Npb6

TIPS & TRICKS from Susi

October 2021 -- a monthly offering of useful hints for beekeepers

- *Wrap hives with Mylar foil padding to insulate them during cold weather, leaving a vertical space for entry holes in the front (Figures 1-2).*
- *Secure bamboo screen to vertically-set pallets that are supported by five-foot metal fence posts as a good winter windbreak (Figures 1,2,3).*
- *Use broken-up pieces of sugar candy on candyboard instead of a solid block, because it allows ventilation. Alternatively, use pure sugar cubes (no additives).*

If you would like to submit your own tip or trick, please send it to richandsusi@cablespeed.com .

East Jefferson Beekeepers Association

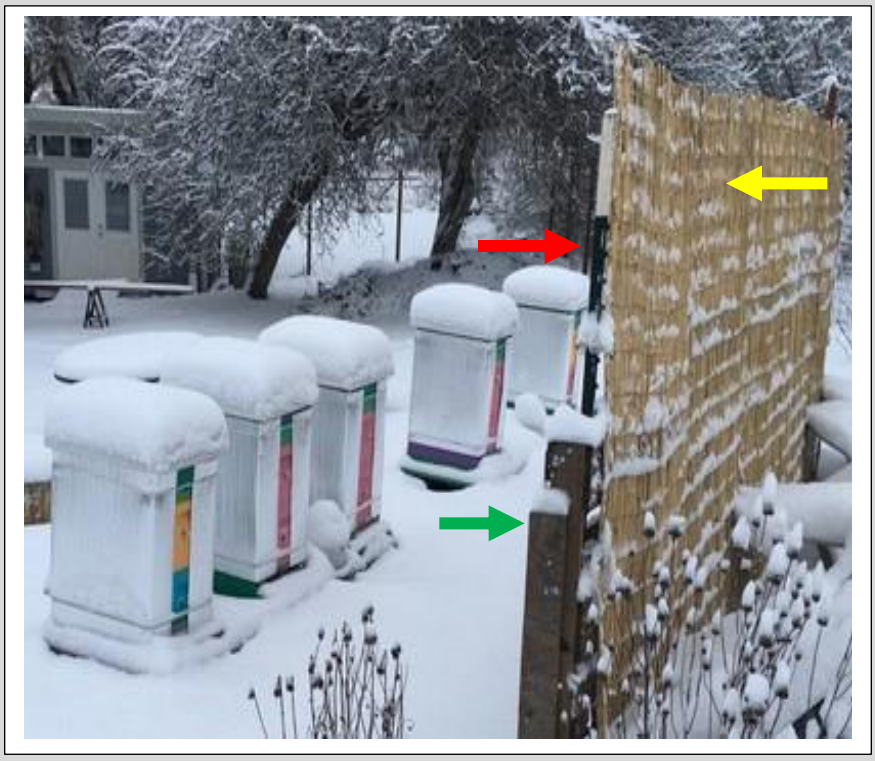


Fig. 1. Mylar-wrapped hives (vertical opening over entries) with windbreak (*Mike Kelley*).

Arrows: red = post; green = pallet; yellow = bamboo screen.

Figure 2. Pallets view (Mike Kelly).

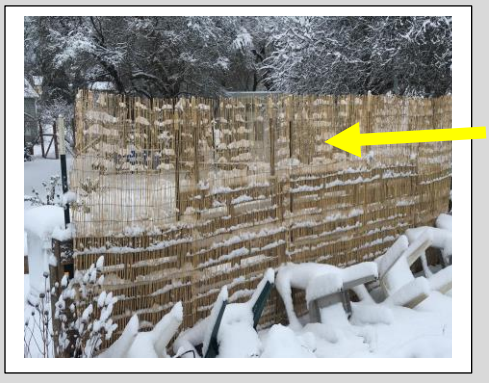


Figure 3. Bamboo screen view (Mike Kelly).

Dr. Sam Ramsey on Asian Giant Hornets & Beekeeping

WSDA Webinar – October 5, 2021, 5:30 p.m. No registration required.

Join the Washington State Department of Agriculture, Dr. Samuel Ramsey, and Washington State University Extension to learn about *Vespa mandarinia* and the threat they pose to honey bees. This webinar will showcase Dr. Ramsey's experiences beekeeping with the hornets in their native range. Beekeepers will also learn how to distinguish hive losses due to these hornets or to other reasons.

Learn more about *Vespa mandarina* at agr.wa.gov/hornets.

Facebook event link: https://fb.me/e/12WhTtBYE

Beekeeping and Vespa mandarinia II
Tuesday, October 5, 2021
5:30 PM Pacific for 1 hr
Meeting number (access code): 2452 021 6456

Join from the meeting link

https://watech.webex.com/watech/j.php?MTID=mb8116e89aa8b2163d7ad593a0cc66c0c

Tap to join from a mobile device (attendees only)

+1-415-655-0001,,24520216456## US Toll

+1-206-207-1700,,24520216456## United States Toll (Seattle)

Join by phone

+1-415-655-0001 US Toll

+1-206-207-1700 United States Toll (Seattle)

Susi

DR. TIM LAWRENCE AT NOVEMBER MEETING

We have invited Dr. Tim Lawrence as our special speaker for the EJ Bees meeting on Saturday, November 13. Dr. Lawrence is a world-renowned bee researcher who lives on Whidbey Island and is employed at Washington State University in Pullman. He has been keeping bees for over 30 years, and at our meeting, his presentation will be on the fascinating topic of drones and drone congregating areas.

DON'T MISS IT!

BEE BIOLOGY *by Susi Thomas*

Keeping the Temperature "Just Right"

Honey bees fanning at the hive entrance (Image: Buagar, YouTube)

The well-known words of Goldilocks—"*Not too hot, not too cold. Just right!*"—describe perfectly the way a bee hive must be maintained.

Ideal for brood-rearing is about 94°F, but for the adults the preferred range is broader. In general, honey bees maintain a hive temperature of ~91 to 98.6°F during the active season. They monitor temperature, by the way, using sensory receptors on the first five segments of their antennae tips that can detect changes of less than a half a degree Fahrenheit, so they know when the mercury rises or falls *(see Bee Biology, EJ's News, Sept. 2021 for more about bee antennae).*

Through both the architecture of the hive and specific behavior, the bees are able to warm the colony if the weather turns cold (down to minus 40°F) and cool it when it is hot (up to 104°F, or even higher). This allows *Apis mellifera* to live in environments from the coldest temperate zones down to nearly hot desert conditions.

A wild or feral cavity nest typically has some natural insulation, and the interior would be sealed with propolis against drafts and cold. In a domestic apiary hive, propolis is similarly used to close up cracks, gaps, or unwanted openings in the boxes. Honey bees usually keep the brood at the center of the hive and surround the larvae with honey- and pollen-filled cells, which along with the wax comb, confer a bit of insulation for the brood.

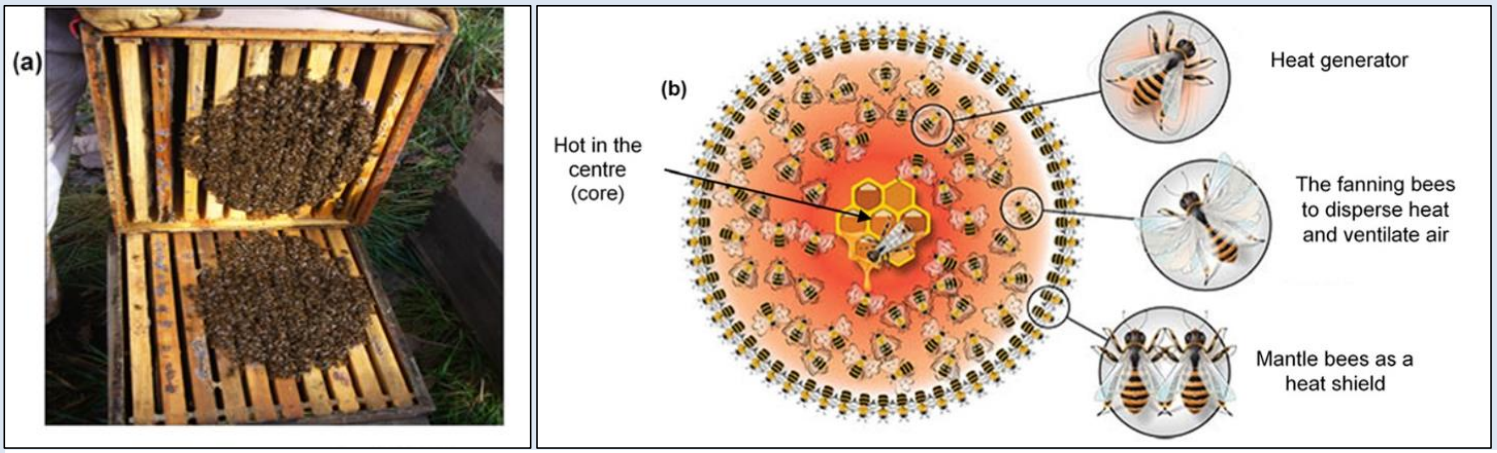
Not too cold: Behaviorally, it is a cooperative effort of the colony members to raise the temperature within the hive during cold weather, but it builds fundamentally on the physical ability of the individual honey bee to keep *itself* warm. That is, a bee metabolically heats up its flight muscles in the thorax by "shivering" (rapid vibration of muscles), and the heat is kept contained in this insulated, densely hair-covered section of the body by special features of the circulatory system.

(continued on page 7)

(Keeping the Temperature "Just Right" contd. from page 6)

Thus, the bee is not only always ready and able to fly because the flight muscles are warm, but it also radiates heat from that little thoracic furnace. Certain workers (nurse bees) that are over two days old can function as a "heater" in two different ways: (1) by pressing its warmed-up thorax directly onto a capped brood cell to transfer its own body heat to the larva in the cell; or (2) by entering an empty cell among those containing brood and radiating heat in all directions—thus warming six surrounding brood cells at a time. One theory describes that strategically placed among the larva-containing cells of the brood comb, 5% to 10% of the total cells are deliberately left empty for this purpose.

When the winter temperature drops to 59°F, the bees will start to cluster in the hive. They form a compact sphere of essentially three layers: at the center is the queen and any remaining brood, plus nurse bees that care for both. Next is a layer of heater bees and fanning bees. The heater bees maintain the core temperature at about 93°F (or less than 85°F if there is no brood), and the fanners disperse the heat and keep the air moving to regulate the amount of CO_2. The dense outer "shell" consists of bees lined up side by side, close together and facing outward, acting as a shield to prevent heat loss from the cluster. As the "mantle bees" forming the shell cool down, they are replaced by warm bees from the interior, and this rotation of roles and positions continues for as long as the colony is clustered.



Winter cluster (a) in a beehive; (b) shown as diagram of the division of labor (images: Randy Oliver)

All this heat-generation requires a lot of calories, supplied by concentrated honey that is fed to the heater bees by hive workers freely moving around inside the warm sphere. The cluster can move up or down to reach honey stored in the hive, but typically not side to side. Without adequate honey (around 2 to 4 gallons = 24 to 48 lb) in the hive, the colony could starve over the winter. Also, if a cluster is too small in population to maintain an appropriate temperature, the colony is unlikely to survive the cold season.

Not too hot: An individual bee can cool down by holding a droplet of water or nectar on its tongue. That is, if the bee's thorax heats up to 115°F, it regurgitates a droplet of nectar from its honey crop, and through the evaporation of the droplet's water content, cools the head immediately, and as a result, pulls heat out of the thorax through its coupled circulation. Similarly, inside the hive, bees are supplied with water droplets for individual cooling by designated water distributors----which receive their water supply from special water foragers (*see Bee Biology, EJ's News, Feb. 2021*).

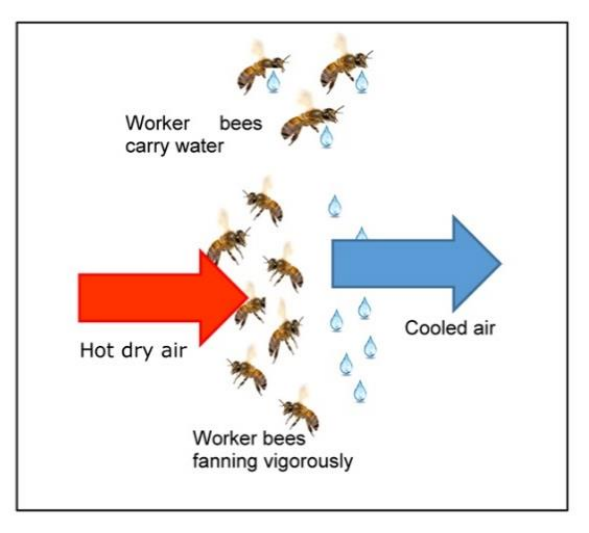
Cooperative behavior for cooling the hive during hot weather begins with reducing the number of warm bodies inside the hive boxes. During spring and summer days, foragers and drones are outside for most of the day, and during a very hot night, many bees remain outside, bearding on the outer front hive wall to keep themselves cooler and the hive uncrowded.

(Continued on page 8)

(Keeping the Temperature "Just Right" contd. from page 7)

To actively cool the hive, bees ventilate it by fanning their wings once the air temperature exceeds 95°F. These fanners are positioned throughout the hive (left, right, top, and bottom) to force air to circulate throughout the hive. As the temperature rises higher, the fanners cluster at the hive's entrance and on the landing platform, moving warm air out and allowing cooler fresh air to passively move in, which also facilitates exchange of oxygen and CO_2 and controls humidity.

The final method of cooling is analogous to a "swamp cooler" in a building—that is, it employs evaporation of water drops distributed throughout the hive by water recipients starting from the hottest zones, such as the upper area under the lid where the heat is more intense, while fanners create cool, humid air and circulate it throughout the hive.



Bees use evaporative cooling, something like a swamp cooler, to lower the temperature and humidify the hive (Image: H. Jarimi)

How do the water foragers know when to go collect additional water for the hive? They are informed by the water recipients that "beg" for water more and more intensely as the hive heats up. The foragers then fly to their sources and return carrying about 80% of their weight in water, filled up like little balloons. Dr. Tom Seeley describes the transfer: "The water carrier comes in looking really fat, and the water receivers start out looking very skinny. Over a minute when the transfer takes place, their forms reverse."

Although some water can be stored in cells of the comb, as is done by bees in the hottest, near-desert environments, it is in more temperate zones stored instead inside the honey crops of living bees that hang like "99 bottles of beer on the wall" in the hive during times of heat stress.

Just Right: The ability of honey bee colonies to regulate the climate within the hive is one of their most important attributes. It allows them to remain physiologically active when other insects could not do so and might need instead to hibernate, aestivate, or overwinter in a pupal or protected egg state. Our bees are able to emerge and fly on any winter day when the weather allows, and to leap into action at the first signs of spring when early willow pollen appears, after tirelessly heating and fanning for the long, darkest months of the year. Their work will continue through the heat of summer, building their stores of honey and pollen to survive the next winter to come.

As Jamie Ellis wrote, *"A single bee is a cold-blooded insect, but the honey bee colony is a warm-blooded creature, in which each individual bee is like a single cell of a complex organism. It can make its temperature different from that of the surrounding environment, and this makes it (along with other similar social insects) rather special within the class Insecta."*

Not just "rather special." No . . . I would say they are "just right."

Nectar, Et Cetera

We all know the main players in the nectar show for our area: maple and blackberry, and the understudies—willow, cherry, pear, sumac, among others. Before you know it, it's August and early to midseason nectar sources are a distant memory. Dahlias, zinnias, and asters come center stage. Honey supers are off, and we're doing our best to keep the bees out of the house and the honey.

My first extraction, I expected the amber color of supermarket honey; to my surprise the honey was very light. The internet revealed that light-colored honeys might be sourced from blackberry, fireweed, clover — plants that my hives are surrounded by. Further reading revealed that borage and sumac are sources of dark nectar, two plants I have, but in a lesser quantity. Midcolor nectars include cherry, holly, sunflower, and apple. The woods here are full of black cherry and holly, so shouldn't my honey be darker? Does it come down to quantity of bloom, or amount of nectar per bloom? Size of bloom? How does one quantify the amount of nectar per tree? Is it possible to analyze honey for its nectar sources? Or perhaps there are super-tasters out there who can determine content with a single spoonful? Do some nectars weigh more than others? Does a bee ever think a feeder is a giant blossom on steroids that at times will magically replenish itself?*

While I did not find a mechanism for analyzing honey content, I did find that for a measly $360.00 plus tax, shipping, and handling, Hanna Instruments will sell you a HI96785 Honey Color Photometer that takes the guesswork out of *grading* your honey. For a fraction of that price purchase an analog color chart that resembles a paint-fan deck, albeit much smaller, to grade your bees' hard work. And there are many more devices for grading.

Whichever system you choose, chances are you will use the Pfund scale, named after Dr. A.H. Pfund, associate Professor of Physics, John Hopkins University. This scale grades color from zero to 140 mm, light to dark.

And finally, if you are a beekeeper who likes to immerse yourself in scientific papers and graphs, take a look-see at the link from fiitea.org on color grading, including specific nectars, by S. Aubert, M. Gonnet, France (1986).

—Catherine Slaton

*#Whatkeepsmeawakeatnight

https://en.wikipedia.org/wiki/List_of_Northern_American_nectar_sources_for_honey_bees
https://www.bjcp.org/mead/color.pdf
https://www.honeybeesuite.com/the-color-of-honey/
https://www.nytimes.com/2005/07/31/business/yourmoney/the-color-of-honey-no-more-bickering.html

(See Honey Color Chart on page 10)

Favorite Links, Etc.

Bee disposition with varroa infestation:

https://www.tandfonline.com/doi/abs/10.1080/00218839.2021.1959754?journalCode=tjar20

Thanks for sharing this Catherine!

MORE HIGH TECH IN THE HIVE!

Here's an app (developed in Sweden) for iPhone and Android phones that analyzes photos of your bees for varroa mites, sick brood, and other things. I think you should take a look at it:

BeeScanning – Find varroa mites and sick brood - BeeScanning

The app is free for 1 or 2 hives, but otherwise is a $40 annual subscription or $5 per month.

My thanks to Mark and Pam Butcher for sharing this Link. It is especially important for those of us who are experiencing limited eyesight when trying to see those Phoretic varroa in the colony.

WINTER SURVIVAL?

Some useful tips for beekeepers evaluating your bee population: I have many times said that if you ever see one mite or see one bee with deformed wings, you are in trouble. Here is confirmation. From an ARTICLE in Bee World Page 50 • VOL 98 • June 2021 •

The detection of 11 malformed bees in a 15,000 bee cohort (a one-story hive) in an autumn colony indicates a very low chance of successful hibernation (Dainat & Neumann, 2013). This is something the beekeeper can record and act upon. In practice, the detection of any malformed bees at any time should ring alarm bells telling you that it is necessary to *immediately* initiate varroa control. Ding ding ding!

Rich

Nectar Et Cetera

Thanks Catherine

Unlike foragers, drones are not too particular about where they spend the night. Drones are very likely to stop in at any colony and the guard bees usually let them in. Wandering drones may be a major mode of mite transmission.