

“Promoting the Craft, Science, and Future of Beekeeping since 1947”

# THE BEELINE



Official Newsletter of the Central Iowa Beekeepers

## ISSUE

Fall 2018

## UPCOMING MEETING INFORMATION

September 22, 2018

**Dr. Amy Toth Lab Bee Field Station**  
**ISU Horticulture Farm**  
**55519 170<sup>th</sup> Street**  
**Ames, IA**

2:00 p.m. Tour starts!  
4:00 p.m. Winterizing your hives  
5:00 p.m. Dinner in Ames

Any questions contact:  
Jamie Beyer, (515) 231-0215  
[beyersbog@aol.com](mailto:beyersbog@aol.com)

## NEWSLETTER / MEMBERSHIP SUBMISSIONS

### NEWSLETTER

**DEADLINE: December 1, 2018**

### VIA EMAIL

[3oakshoney@gmail.com](mailto:3oakshoney@gmail.com)

### VIA MAIL

Jolene Eriksen  
324 NE 64<sup>th</sup> St  
Pleasant Hill, IA 50327

### MEMBERSHIP

We encourage you to receive the newsletter via email; however, we understand if electronic delivery is not for you! You may make updates to your subscription, or add a subscription by sending a notification to Valerie Just at:  
[justiowahoney@gmail.com](mailto:justiowahoney@gmail.com)

Hello Central Iowa Beekeepers,

I can hardly believe that it is already time to write this letter. The summer has moved by too quickly.

The bees have once again been good to me, and I hope that they have been good to you as well. Personal experience and conversations with fellow beekeepers seem to indicate a spotty honey flow this season. I have seen some colonies with supers stacked high enough to need a ladder for removal, and some that only have a couple supers that are not very heavy. This year's nectar flow has seemed much different than the last couple of years. Unusual spring weather must have delayed some sources while others (like the mint and oregano I watch in my backyard) seemed to be somewhat advanced. My experience was that the summer dearth was very short, or not present in some locations. Hopefully, by the time you read this you have had a great harvest, and gotten your fall mite treatments in progress or nearly completed. All too often it seems I hear about colony losses in the spring caused by no treatment, or worse a mite treatment put on too late.

Speaking of mite treatments, one of the topics of the upcoming meeting is scheduled to be preparing colonies for winter. Treating for mites is one of the first essential steps in preparing a colony for winter. Making sure these late summer early fall bees are healthy is an important part of colony overwintering success. It will also be great to take a tour of the lab at ISU and see what our local bee researchers are up to. The meeting will be in Ames this time, so be sure to see elsewhere in this issue for time and location.

Learning about bees has been a fascinating adventure, and talking with fellow beekeepers has been a great source of ideas and information. This summer was no exception. Julie and I took the opportunity to spend a few days on the peninsula that makes up Green Bay in Wisconsin. We discovered Sue of Sweet Mountain Farms, a beekeeper on Washington Island that raises Russian bees much like one of our local growers, Jason Foley. We decided to stop by for a visit. It really is a small world, she knew Jason. While we were there, Sue gave us a tour of her facility and let us sample some very interesting honey. The honey harvested post lavender bloom was something new for me, and quite good. She shared with us about: using hive products in soaps, some interesting beekeeping tips, and some of her equipment designs. She also has an inspiring personal story of having to begin again and reinventing herself later in life. We are both glad we decided to stop and talk with her.

Looking forward to seeing you at the September meeting, and hearing about your experience this summer with the bees.

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Assistant Editor’s Note: The page numbers do not align with the content. I worked and worked on this, but needed to get this out. Please bear with us for this issue!



## Central Iowa Beekeepers Association 2018 Fall Meeting

Our Fall Meeting is scheduled for Saturday, September 22. The meeting will start at 2 PM. We are excited to announce that we will be touring the Dr. Amy Toth Lab Bee Field Station and seeing first hand some of the research that Amy's team is doing. Randall Cass is a major researcher on this team. As you may remember, Mr. Cass presented at our Winter Seminar last January and is the ISU Extension Entomologist specializing in Bees. The Field Station is located at the ISU Horticulture Farm. Address is 55519 170<sup>th</sup> St. which is about 6 miles North of Ames and then 1.6 miles East of Hwy 69.

Toth's field team is actively doing several types of research on honey bees, some of which involves determining how much soybeans contributes to hive nectar flows. There is more but I will let the field team describe the research on the 22nd. I know I will screw up the description but believe me – it is fascinating to learn how they go about the research. We will be boarding people movers to take us to hives located on the Horticulture Farm. As a side note – Linn Wilbur started working for the field team this August. His experiences are going to be fun to listen to.

So, bring your veils and a lawn chair so we can see what is going on first hand.

To add to this, Linn Wilbur and Jamie Beyer are going to be going over Winterizing Your Hives in a presentation that will follow our tour of the Horticulture Farm research. There are some key steps to ensure that your hives will overwinter Iowa's harsh conditions.

The meeting should be over by 5 PM. For those that are interested in having Dinner – we will travel into Ames and have Dinner at a restaurant that will be announced at the Field Station.

Any questions please contact Jamie Beyer at 515/231-0215.

## CIBA General Membership Meeting Minutes

**March 17, 2018, Iowa State Extension Office**

Approximately 66 members in attendance

President Mike Sander called the meeting to order at 2:03 pm. The President asked for additions, omissions, or changes to the September 2017 minutes. Hearing none, Mike asked for a motion to approve the minutes as they were. A motion was made and seconded. The minutes were approved as written.

Treasurer Val Just gave a summary of the financial status of the organization. All accounts were moved to Veridian Bank from Members First in Marshalltown. No questions from the members.

An audit was completed and the recommendation was to keep accounts separate and to keep a log balanced to the monthly bank statement.

Members were asked for suggestions regarding speakers for the meetings and the winter seminar. Doyle Kincy suggested more focus on fall/winter duties and especially more information on the winter cluster. What chores need to be done, how much food in the hive, etc. Lynn Wilbur and Jamie Beyer will be planning the 2019 winter seminar. Members were asked for volunteers to serve on the program committee, not just the winter seminar, but also the quarterly meetings.

There was a board meeting to discuss preparations and to put together the agenda for the March membership meeting.

Bee yard update- Committee are working to get the bee yard up and running. The hold-up is the liability insurance, which it turns out is expensive. Our organization needs to be a non-profit. By-laws and articles of incorporation need to be produced. Someone asked to explain about the bee yard. It was described as a demonstration bee yard for the public and media and for training purposes. The yard will be at Cherry Glen Farms. There was a call for volunteers to help with the planning.

Web Update is close to be completed. The url will be [www.centraliowabeekeepersassoc.org](http://www.centraliowabeekeepersassoc.org)

Mike was speaking for Julie, regarding the auction. Signup sheets are at the membership table. All comb to be sold will be inspected. The auction starts at 10 a.m., with consignments starting at 8 a.m.

A call for a photographer was placed, for all meetings and special events.

There was a meeting with Cameron Vannoy to become a Queen candidate. Connie Bronnenberg and Jamie Beyer met with Cameron. An ambassador may be in the future.

Elections: Mike Sander was re-elected President; Jamie Beyer, Vice President; Val Just as Treasurer; and Jolene Eriksen as Secretary. Board members are Steve Hanlin for 3 years, Margaret Hala for 2 years and Jeremiah Kusel for one year.

Jolene Eriksen, Secretary

## **June 16, 2018, Spring Valley Honey Farms**

Approximately 55 members in attendance

President Mike Sander opened the meeting by thanking everyone for coming out.

1. Meeting minutes – The minutes of the March and June meetings will be published in the September issue of The Beeline for review.
2. CIBA Queen Cameron Vannoy was introduced to the membership. In the fall she will be a freshman at Iowa State University. She has hives and will be getting her bees on June 22<sup>nd</sup>.
3. Auction report – Julie Sander reported that we had 16/17 consignors. The auction raised \$870.51 for the organization and the food table raised \$360.31 for the Honey Queen program. The next auction will be April 20, 2019 in a new spot in Perry. Arvin Foell reminded everyone to set aside equipment for the auction. This serves as the primary source of income for CIBA. We extend a huge THANK YOU to Curt and Connie Bronnenberg for their support of our auction by supplying us with a spot to hold the auction in the past.
4. We offer thanks to Ann and Linn Wilbur for their contribution of drinks and paper products for the potluck today.
5. Mike stated that there are donation baskets for contributions towards any costs for today's meal.
6. The Facebook and Website are going up on the internet. The website was created by the DMACC web development center.
7. Jamie Beyer, program chair, is asking for volunteers to help with developing programs.

8. 501(3)c update – CIBA needs to file with the state, update the by-laws format, and add additional information. The documents have been reviewed by an attorney and are ready to go.
9. The question was asked, “Why be a 501(3)c?” We can accept donations that are tax deductible, we would have a non-profit status which allows us for cheaper rents with organizations, and we can have liability insurance so we can get have a demo bee yard.
10. Motion was made to adjourn.

Jolene Eriksen, Secretary

## CIBA Committees Need Someone Just Like You!

By Valerie Just and Jamie Beyer

**Newsletter Committee Note:** We want to thank Kelsie Searcy and Nancy Kurrie for volunteering to join several committees at our last meeting in June. Kelsie and Nancy, the leadership team has had a seriously busy summer, but we are planning on having committee meetings in the near future. We so appreciate your generosity in raising your hand to assist with our organizational needs, and we will be reaching out to you to establish meeting timeframes. The CIBA member names in red in the table below signify our new volunteers – when you see them at the meeting, don’t forget to thank them for taking the plunge!

We are still looking for a committee chair and committee members for the **Publicity Committee** – don’t be shy!

### **We Make a Living by What We Get, but We Make a Life by What We Give ~ Winston Churchill**

As you all know, our organization has several objectives written in our by-laws, with a primary goal to promote the art of beekeeping and honey production through close coordination, cooperation and fellowship amongst our membership. We have various committees that you may not be fully aware of, and we need someone just like you to engage with fellow members to accomplish the goals within the committee. Together, we can make a difference.

If you have been thinking that you would like to become more engaged in our organization, but just don’t have the time commitment to serve as an officer or director, working on a committee is an excellent way to get your feet wet without over-committing personal time. If you are waiting for the perfect timing to volunteer, it will never come, especially if you continue to sit on the sidelines - take the plunge - joining a committee allows you to take volunteering for a test drive, just as you take a test drive when buying a new car!

### **What’s in it for you?**

#### **Happiness and Health!**

DID YOU KNOW that the happiest people are those who help others? Most folks discover that the surest way to happiness is to be part of something bigger than themselves.

“There’s a growing body of research showing that volunteering is associated with better physical and mental health outcomes,” says Eric S. Kim, a research fellow at the Harvard T.H. Chan School of Public Health.

#### **Engaging with others that share the same interests and passions!**

Who doesn’t want to spend time with a bunch of like-minded, fun-loving beeks – and gain valuable beekeeping tips, tricks and secrets? Trust me when I tell you this will be an outcome of your volunteer journey.

#### **Accomplishing group goals, feeling productive and energized!**

Working together as a group/team to accomplish goals and objectives that assist others along their beekeeping journey; drive legislation that protects our bees; provide further education to the public to enable greater support for our bees – and the list goes on.

## Committee Opportunities

This is the list of active CIBA committees, which provides a host of opportunity! At the upcoming June meeting, committee opportunities will be an agenda item to ensure that we give ample opportunity for you to ask questions and gain clarity. We will have sign-up sheets for each committee at the upcoming meeting in September, so please don't be shy – we need you!

ID#	Committee Name	Committee Defined	Program Chair	Committee Members
1	Queen /Ambassador Program	Interview potential candidates. Assist the queen/ambassador throughout the year providing resources and guidance	Connie Bronnenberg	Jamie Beyer, Arvin Foell
2	Bee Yard Program	Dependent on #6. Upstart and define the program parameters, but will be a learning resource for CIBA members and public education. Dependent on the non-profit 501C3 committee, as this program chair will need to gain liability insurance for the yard.	Open	Arvin Foell, Mike/Julie Sander, Linn/Ann Wilbur, Dean Howarth, Jeremiah/Gordan Kusel, Jenny Burton, Christina Nigon, Curt Bronnenburg, Ray Meylor
3	CIBA Bee Squad: Beekeeping Mentorship Program	New committee! Upstart and define the program parameters. Works closely with the Bee Yard Chair, as bee yard will be a resource for new beekeeper education. Engages with club members to determine mentoring needs. Works with new beekeepers each year to meet the educational/hands-on needs of new beekeepers in the membership. Works with local educational programs to create club awareness, club benefits of the mentorship program	Val Just	<b>Kelsie Searcy</b> <b>Margaret Hala</b> <b>Nancy Kurlle</b> <b>Arvin Foell</b>
4	Program Committee	Develops quarterly meeting program agendas, finds speakers, and locations of meetings and seminars.	Jamie Beyer	Linn Wilbur <b>Kelsie Searcy</b>
5	Newsletter Committee	Provides editor with content and assists in preparing the quarterly Beeline for preparation for the CIBA membership and distribution to the Iowa beekeeping clubs. Works with state apiarist for quarterly articles.	Jolene Eriksen	Val Just <b>Margaret Hala</b>
6	Bylaws/Articles of Incorporation - 501C3	Manages annual revisions of CIBA By-laws. Works with volunteers for the objective of gaining a non-profit status for our organization.	Jamie Beyer	Dean Howarth, Marlon Mormann

7	<b>Website Committee</b>	Creation and maintenance of the organizational website	Mike Sander	Carly Vannoy
8	<b>Facebook Committee</b>	Maintains and monitors Facebook pages. Enables the ability for club engagement/social engagement.	Jeremiah Kusel	Jenny Burton Carly Vannoy <b>Kelsie Searcy</b>
9	<b>Publicity Committee</b>	Manages the marketing of our programs through the various media outlets. Will collaborate with most committee chairs to ensure needs are being met.	Open	Open

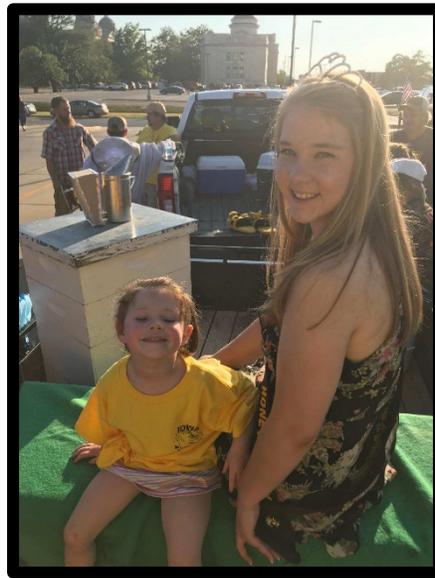


## CIBA Queen – Cameron Vannoy

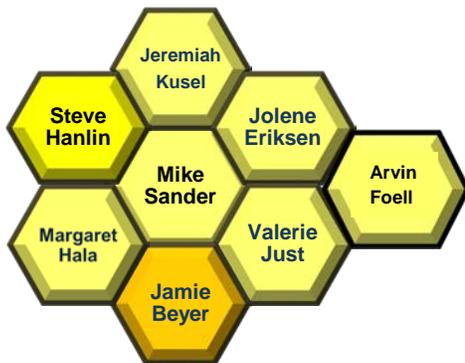
By Jamie Beyer, Chair of the CIBA Queen/Ambassador Committee

As most of you know Central Iowa Beekeepers has our own Queen/Ambassador. That is Cameron Vannoy. A couple pictures of her are after this article. She is very good as our queen and has been in this role for about 6 months now. Cameron is available to represent CIBA at our meetings and any other meetings/functions that promote beekeeping in Central Iowa. If you want to book Cameron for a meeting/function you can contact Connie Bronnenburg (515-480-6076) or myself (Jamie Beyer, 515-231-0215) to see if the event qualifies. We do not want to overwhelm her with requests. As I mentioned, Cameron has been doing a great job of representing us. We are very lucky to have her as our queen. She also has been lucky enough to have received a full hive from CIBA to give her more experience in beekeeping.

Since we are on the subject of our Queen/Ambassador – we are looking for candidates to apply for our 2019 Queen/Ambassador. Please contact Connie or myself and we will send out an application to you. Candidates need to have a strong interest in Honey Bees, of course. Families with young girls (and yes – guys) that have bees are encouraged to apply. They do not have to be experts on bees. We have a few months to decide but time will slip away. This is a great way to encourage leadership. CIBA queens will be good candidates to become the state of Iowa Honey Producers Association Queen. We know Cameron is applying to become their Queen this November. Good luck Cameron!!



## Get to Know Your Club Leadership



### Meet Your Vice President

By Jamie Beyer

I am not sure who would want to read this especially if it is long – so I will keep it short.

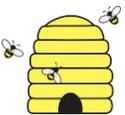
- Grew up in Jefferson, IA. This is only about 40 miles from where I live now in rural Boone County.
- Got a Bachelor's and then a Master's Degree from ISU in Fish/Wildlife Biology.
- Met my girlfriend/partner, Denise, 37 years ago. No kids but would have liked to.
- I have a business called Midwest Waterscapes that I started 35 years ago. This is a water garden/feature consulting/installation business. I do not do much installing anymore but I do a lot of writing on the subject. Check out <https://www.pondtrademag.com/> under authors. Coauthored a book called "All About Garden Pools and Fountains" written about 20 years ago.
- I have had and still have an ornamental fish hatchery in Ames where I raise all kinds of pond fish and aquarium fish.
- Have achieved the status of becoming a Lifetime Master Gardener donating tens of 1000's of hours of volunteer time.
- Involved in a lot of groups and held a lot of positions most notably President of the Story County Master Gardeners and President of the Iowa Trappers Association.
- Retired from being an Operator at the City of Ames Power Plant 3 years ago. This job allowed me to play in water on my off time.
- Since my retirement I became interested in Honey Bees. So, I am into my 4<sup>th</sup> year of keeping bees.

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- Started with 2 packages in the spring of 2015, took Andy Joseph's class in January of 2016. This is in reverse of how I should have started but.....
- One of my packages swarmed that fall and I caught it. So, I overwintered 3 hives in 2015/2016.
- Met Linn Wilbur in the fall of 2015 and because of his mentoring was able to become more confident of what I was doing.
- Split my three hives in the spring of 2016 to make 5 nucs with Linn's advice, of course.
- Joined CIBA and the IHPA. Became VP for CIBA and also became the Legislative Representative for IHPA.
- Went into that winter of 2016/2017 with 6 hives which I was lucky enough to overwinter all of them.
- Last year was the year I learned how to swarm trap honey bees. This is a process of having the bees find my new home for them. So, between swarm trapping and making more splits I ended up with 18 hives going into last winter. I combined a couple hives, lost a queen in a couple hives and gave a swarm away to one of Linn's mentees.
- Expanded to 5 apiaries so that I can provide enough habitat for my girls.
- Was able to overwinter all 18 hives last winter. A few of them were gangbusters.
- This year has been another year for catching swarms. I also did 10 splits for myself and then gave away enough brood to Linn so he could do about 25 splits. Right now, I have 39 hives – my original goal was to have 4 hives which I changed to 10 hives last year. Linn is constantly giving me grief over these goals!! Now, I really do not know what I want for a goal. I do know that it needs to be less hives than I have right now!!
- I just extracted, with Linn and Ann Wilbur (and their friends) – we make it a joint effort so there is only one clean-up between the two of us. Besides it is more fun to make it a "party". It looks like I have between 900 to 1000 pounds of honey from my girls this year. Now, I have to figure out how to market all of this liquid gold.
- So, I am in my 4<sup>th</sup> year of bee keeping and learning about them. Who knows what will come next for me. So far, I have not lost an overwintered hive. Why? I treat for mites but I also baby my hives. What is babying honey bees? It is making sure they have all they want at the RIGHT times. Enough space, enough sugar syrup, enough pollen patties, enough habitat, good apiary locations, clean equipment, a dry hive and trying to duplicate what nature would provide for bees all contribute to success – at least for me.

Honey Bees have really become a passion. I love nature and bees are an amazing super organism!! Learning about them and how they live is truly enjoyable. Anytime I can learn from someone else I always will listen and consider how they enjoy/keep bees. The CIBA officers and Directors are a great group of beeks and I learn from them every meeting. The projects I am involved with in CIBA are our Queen Program, our future Bee Yard and lining up programs. I have taken on a lot but I learn a lot in the process. Good luck with your bees.

## CIBA Member Contributions



### **Margaret's FAQs**

By Margaret Hala, Board of Director

First and foremost, CONGRATULATIONS TO THOSE WHO WON IN THEIR CLASSES AT THE STATE FAIR. I know how hard it is to get that done by this time of year (Late July and early August) and I hope you all had a great honey crop!

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Question	Margaret Says
<p>We have a lot of frames that are filled but only about 60% capped. What should we do?</p>	<p>If there are frames in the super that are 75% or more capped you can remove those and slide the remaining frames together or you can leave everything as is for another week or two. I feel the honey flow is still on because of the rains we had in July. The rule of thumb is that the super as a whole be 75% capped, but we still don't like to take out frames that are totally or almost totally uncapped. If you shake the uncapped frame like you're shaking water out of it and the honey comes out, it's too wet to take. It's not going to hurt to leave the supers on for another week, but don't leave them on till the bees start pulling the honey out and into the brood chambers. That's definitely after the honey flow is done.</p>
<p>What do I do with Queen cells in July? Scrape them, start new hives, or leave them alone?</p>	<p>It's best to be checking in June for swarm cells and removing them, but this does happen in July, sometimes May, too. If you leave the swarm cells alone the hive WILL swarm, meaning the existing queen and roughly half the bees in the hive will leave to start a new hive. This leaves one or more cells to hatch out and get a new hive set up and going. It also means at least a <u>three week break in honey production</u> for that hive and no extra honey production for the portion of the hive that left, so this isn't a good proposition. Typically, the hive that swarmed will have enough food in it to last till the new queen is mated, starts laying and HER bees hatch and get to work. The problem is, sometimes more than one queen will hatch and leave with half the bees in the hive. If this happens, each 'after swarm' gets smaller and smaller. Not good.</p> <p>ALSO, if you remove all swarm cells AFTER they are capped, the mother queen has quit laying and you've destroyed any chance for that hive to make a new queen, because the hive WILL SWARM. If the queen cells are capped, you MUST leave one and try to find the mother queen so you can remove her and 2-3 frames of brood into a new body making them feel like they have swarmed, or take your chances that you will be able to catch the swarm as they leave.</p> <p>We like to remove the frame, sometimes two, with one or more of the best-looking queen cells and let the bees make a new queen so that we either have a new colony, or 2 colonies, started or a fill-in for a colony that loses a queen and doesn't 'catch' a new one. A queen hatching on one frame with multiple cells is more likely to be able to find and eliminate the other uncapped cells than when she's in a full double story hive.</p>
<p>When and how do I threat for mites, etc?</p>	<p>Mite treatment is Spring before supers are put on and, in the Fall, after they are removed. This is a good reason to get honey pulled early, but as per the above question, you can find problems with the honey not being dry enough to pull.</p> <p>As for what to treat with, there are a number of products that will work, it just depends on where you are located and what you're comfortable using. Mite-away, oxalic acid and the others will work best for you if you use one in the Spring and another in the Fall. The same way treatments for foulbrood, etc. works. By switching treatments, it makes it harder for the mite or virus to become resistant to it. I've not been as involved in this portion of working with the bees as in previous years as I'm involved with several Farmer's Markets and don't have as much time to devote to helping work the bees in the Fall.</p>
<p>With the focus on winterizing---What and how do I feed the hives, what do I medicate with, when and how? When do I wrap and what with?</p>	<p>This is exactly what we're going to be talking about at the Sept. meeting, so PLEASE, come.</p> <p>Medicate when or asap after you pull the honey. Insert the entrance reducer as soon as it starts cooling off in the evenings, like anytime now, as mice like to move in with cooler weather coming. Middle entrances can be done when you treat for mites or foulbrood to give the bees time to become used to using the middle entrance. Remember that the bottom will probably become clogged with dead bees during the winter, so a middle entrance is good for allowing the bees to get out and for air circulation. Not allowing access for air movement allows condensation to drip on the bees and brood and kills them. Wrap anytime from mid-Oct to early Nov. depending on weather. Wraps can be roofing tar paper cut to fit, waxed cardboard hive cover boxes, cut down sheets of Styrofoam, hay/straw bales blocking the wind, next to a building to block wind, whatever. You also need to insulate between the inner and outer cover. Think of your house and insulate the hive accordingly. There really isn't a wrong way to insulate a hive. At least I can't think of one, but some methods are better and easier than others. White bead board is easily chewed up and spit out of the hive by the bees, so you will need to cover one side with screen or aluminum foil so they can't chew it. There are higher rated insulating boards than white bead board that can also be used. Cut to fit inside the inner cover ring, or better yet, cut to fit from edge to edge of the inner cover. If your inner cover has a notch cut you don't need to notch the insulating sheet, but if it doesn't you need to provide for the bees and air to get through.</p>

# Biology of the Varroa mite: What you need to know to understand its population dynamics

*The following information is shared by Phil Craft and Veto-Pharma. We thank them for the opportunity to share it with you.*

## Principal stages of Varroa's reproductive cycle

The reproductive cycle of Varroa takes place entirely in the capped brood cells, beginning with a single previously impregnated female individual, the foundress mite.

Varroa multiply rapidly. One cycle produces:

- At least 1.45 new female mites in the worker brood
- At least 2.2 new female mites in the drone bee brood, which is the most attractive for Varroa.

1. The queen bee deposits an egg into an empty brood frame.
2. 8 days after the egg is deposited, the foundress mite enters the cell. This is 15 hours prior to the capping of the cell by the worker bees.
3. 9 days after the egg is deposited, the cell is capped. Varroa foundress mite begins to feed on the lymph on the developing pupa
4. 10-11 days after the egg is deposited the foundress mite lays 1 egg every 30 hours in to the cell (the first egg is male and then all are females).
5. 12-20 days after the egg is deposited, young Varroa females are sexually mature after 5 to 6 days and are then impregnated by the Varroa male.
6. 21 days after the egg is deposited, the young bees leave the cell parasitized by Varroa females. Male and immature are not viable and are eliminated during cleaning. Impregnated mature females, including the foundress, mite, exit the cell. Other cells may now be parasitized.



## Key Points

**Reproduction:** Varroa mite reproduction occurs in honey bee brood cells, during the 12 – 14 day capped phase. Most female Varroa will carry out up to 3 or 4 successive reproductive cycles during their life by penetrating a brood cell just before its capping.

**Phoretic phase:** The duration of the phoretic phase (Phoretic Varroa = on adult bees) between 2 reproductive cycles is variable. An impregnated young female must necessarily mature in phoresy around 7 days (from 5 to 14) before it can infest a cell at the right stage and carry out its first reproductive cycle. However, the phoretic phase is not vital subsequently and depends mainly on the availability of nearby cells to be infested at the right stage of development.

**Lifespan:** The lifespan of the parasite is adapted to the bee's life cycle. A female can live for between 1 and 2 months in the summer and between 6 to 8 months during the winter in the absence of brood.

**Survival:** Only impregnated Varroa females, called foundress mites, can parasitize adult bees and survive outside the brood. Males do not survive after the young adult bee emerges (the same is true for non-impregnated females). They die of hunger (or dehydration) and are thrown to the bottom of the hive by workers when the cell is cleaned.

**Infestation:** In the beekeeping season, male brood cells are much more heavily infested than worker brood cells (8 to 10 times more). The impact and level of infestation are therefore less perceptible, except when the male brood is reduced, thus provoking a mass transfer of the Varroa population toward the worker brood, which has a sudden impact on a single age group and may lead to collapse when the infestation level is very high.

**Spread of Varroa:** Spread of Varroa from one hive to others (mostly due to the robbing of weakened colonies, but also due to drifting of drones or worker bees [returning to the wrong hive], or the reduction of worker population) plays an important role in the Varroa population dynamic. Various studies have shown large quantities of reinfesting Varroa that vary according to the season and colonies of up to 70 Varroa mites per colony per summer day<sup>9</sup> or throughout the year from less than 200 to more than 4,000 mites per colony. Robbing may involve colonies more than 1 km away.

**Swarming:** Swarming causes a momentary stoppage in the Varroa population explosion, due to the broodless period of around 3 weeks linked to the emergence of the new queen, and the movement of part of the phoretic Varroa population departing with the old queen and its swarm. This reduction represents around 15 to 20% of the Varroa population present at the time in the original colony.

## Methods of Detection and Estimation of Varroa Population

### Alcohol washing of bees

Consists of washing bees (around 300) with alcohol (dish washing detergent diluted in water may also be used). Phoretic Varroa from bees on brood frames are detached, and counted. Care must be taken to avoid including the queen in the sample. Find her and protect her.

Objective: Determine the percentage the percentage of phoretic infestation (# Varroa/100 bees) by dividing by the number of bees in the sample. Using a graduated measurement (1/2 cup) makes it possible to avoid precisely counting the number of bees each time.

### Monitoring of natural mortality of Varroa by the use of sticky boards

Counting the number of Varroa mites that fall onto a greased piece of cardboard, or plastic, which is referred to as a sticky board. A screen or mesh floor should be placed above the sticky board to prevent the bees from touching the board.

Objective: This method consists of establishing an average rate of Varroa per 24-hour day. Thus, 12 Varroa observed over 3 days = 4 Varroa/day.

### De-capping of drone and/or worker broods

Involves de-capping 200 or more male brood cells and then removing the brood for counting.

Objective: While this method is precise, it is also destructive to the colony and very time-consuming. Also, it is important that the sample be exact in order to be representative complete.

## Treatment

### Why treat?

The objective of Varroa treatment is not only to control the infestation of the colony treated and to avoid the adverse consequences of Varroa upon overall parasitosis colony health, but also to limit more collectively the stress placed by parasitic populations and their health impact on neighboring apiaries and on the apiary population in general.

A study published in 2010 shows that a colony that is infested by Varroa and not treated can die in a period of between 6 months and 2 years. This time is determined not only by the ability of Varroa to reproduce in the brood, but also by the stress of neighboring hives. High density of bees combined with a severe infestation of Varroa speeds up the death of the colony (Ritter et al., 1984). The failure to treat certain colonies may thus endanger one or more apiaries.

### When to treat?

#### **Treatment in the late summer or autumn, just after the honey harvest:**

Now is the time to limit the level of infestation in order to avoid the collapse of heavily infested colonies in late summer – early autumn. Reducing Varroa levels in colonies should be a priority going into winter in order to have healthier winter bees and to begin the following season with as low Varroa levels in hives as possible. To have healthy winter bees, it is important to reduce the number of Varroa on the nurse bees of these winter bees, and therefore to treat as soon as possible after the removal of honey supers.

During heavy infestations, the later the treatment, the greater the period during which Varroa causes damage to the hive is prolonged. This delayed treatment may make it possible to eliminate most of the parasites, but may not overcome the effects of Varroa on infested bees prior to treatment. Treating early makes it possible to prevent levels of infestation so high that the colony will not survive winter. An early treatment will also help the colony get off to a relatively good start the following season.

#### **Springtime treatment:**

This treatment is aimed at reducing the level of infestation before the placement of the first honey supers to ensure that Varroa levels are controlled for the entire season and to prevent possible collapse of colonies in late summer. It is generally carried out under the following conditions:

- When wintering conditions have not been favorable due to high infestation levels following the late summer/autumn treatment.
- When brood has been present all winter (even small amounts), enabling the ongoing increase of Varroa numbers.
- Or when the level of Varroa populations are high in the spring due to robbing of weak colonies by stronger ones, or drifting drones or workers.

Treatment between honey flows; according the indications of the label, removing strips 2 weeks before introducing the supers. This treatment is aimed at reducing the level of infestation during a honey flow, in particular after significant merging, or equalization of colonies. This reduces the mite population for the rest of the beekeeping season and prevents colony collapse in late summer.



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