



The Managed Mentoring Program on getting started in beekeeping.

# Managed Mentoring



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## Varroa Treatments

Lesson | Mite Treatment Options



# What is Covered in this Module

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Treatment Dynamics

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Treatment Tactics

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Guidance

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Plan Considerations

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Treatment Instructions

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Following Labels & Trusted Sources

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# Treatment Dynamics and Outcomes

## □ Kill a Bug on a Bug

- *Thinking of what we are trying to accomplish....*
  - Treatments are designed to kill varroa mites in the hive, resident on bees
  - They are also in some cases designed to penetrate the capping and kill mites in the cells of developing bees
- *All while doing minimal harm and inflicting the least disruption to honeybees*
  - Treatments do harm brood in development
  - It can also impact adult bees and impact colony operations



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## ▶ A somewhat complex problem to manage

### □ Treatment Solutions are complicated

- *We are going to spend time breaking down some of the key factors that play into how to treat a colony for varroa mites*
  - As you will see, there are many factors to consider and to get educated about

### □ Break it down, build a plan

- *We are going to take it step by step, in digestible chunks*
- *Then come back to center and make some plan suggestions*



# Treat to keep Thresholds in Check

## □ Treat when warranted

- *Monitor bees to know the thresholds*
- *When thresholds are exceeded, treatment is warranted*
- *Monitor thresholds **post treatment** to assure treatment met objectives*

## □ Choose the right treatment for the situation at hand

**We treat colonies to keep the harm levels that varroa inflict upon colony bees to a manageable level.**

**If levels are allowed to cross thresholds, the impacts of survivability are greatly diminished**



# Treatment Classes

## SYNTHETICS

- ❑ **Apivar/Amiflex**  
(Amitraz)
- ❑ Apistan  
(Tau-Fluvalinate)\*
- ❑ CheckMite+  
(Coumophous)\*

## ESSENTIAL OILS

- ❑ **Apiguard**  
(Thymol)
- ❑ **ApiLife Var**  
(Combination of  
Thymol, Eucalyptus,  
Menthol, and  
Camphor)

## ACIDS

- ❑ **Formic Pro**  
/MAQs  
(Form Acid)
- ❑ **ApiBioxal**  
(Oxalic Acid)
- ❑ **HopGuard3**  
(Potassium Salt of  
Hops Beta Acids)

\*Available, *but not to be used*. Outmoded, Dangerous, Ineffective



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## Non-Chemical Approaches

### □ These are additional measures to employ

- *Screened Bottom boards*
  - Minimally effective – if at all.... Mites are groomed off and fall through
- *Drone Brood Culling (removal)*
  - Removal of capped drone brood (with mites in the cells), lowering mite populations
- *Brood Interruption*
  - Prevent the queen from laying, ceasing capped brood
    - Combine with treatment that kills exposed mites – also lowers mite reproduction
- *Replace Queen with Varroa Resistant Tendencies*

*Mostly these are not in play for new beekeepers.*

*We will provide a lesson on these and more in anticipation of your second season of beekeeping later in the program*





# Approved Treatments

The Label  
is the Law

## □ Use Only Approved Treatments

- *The products on the previous slide are the only ones to be used in beehives*
  - These are registered as safe with bees, **and the honey they produce**, when applied by the label instructions
- *There are many unsanctioned methods and products promoted that are not registered, not approved, and sometimes outright dangerous*
  - This includes classes of essential oils and non-label uses of approved products



# Treatment Regime

## □ Product Choices

- *It is not uncommon for beekeepers to administer several treatments of differing products across a single beekeeping year*
  - With an array of products to choose from you must decide on what to use
  - Conditions present during application influence choices (temperature, honey present, state of the bees, etc.)
- *Some beekeepers evaluate their goals and decide on a treatment regime (more on this later)*



# Preventing Resistance

## □ Mites can become resistant to medicines

- *Varroa mites can develop resistance to applied treatments*

- Case in Point: Beekeepers started with two products, Cumophos and Tau Fluvalinate, two medicines that were initially very effective

- In time, and with repeated usage, both products became completely ineffective and are no longer recommended or useful

- *Rotation is imperative*

- In order to stem resistance, subsequent treatments should be altered so no one product is used in succession.

- The premise is a second, competing product will kill off mites that survived the first



# Designing a Regime

## □ Product Selection

- *Product Characteristics and Conditions driving decisions*
  - When you become informed about product choices, you will understand that there are factors to consider prior to application
  - Certain products require specific Temperature and Weather conditions as a condition of use
    - For example, products may rely on a specific temperature range to activate and if it is too cold or too hot, they may not work, or they work so fast that they harm the bees
  - Use with Honey on board
    - Some products cannot be applied when there is honey that will be harvested present on the hive. The product will penetrate and taint the honey.



# Colony Factors

## □ Colony State as an input to selection

- *What product you choose to administer is also driven by the state of the colony at any given point during the season*
  - Factors that influence choice include:
    - Size of the colony at time of treatment
    - How many boxes, and what shape, do the bees occupy
    - Are the bees building brood – what states of brood are present? (large contingent of larva, large swaths of capped brood, etc.)
    - Are drones present?



# Colony Makeup

## □ Why it Matters, an example

- *Part of the effectiveness of some products depend upon colony makeup*
  - Illustrative Example: **Capped Brood**
    - Varroa Mites develop their offspring in capped brood cells
  - Some treatments, Formic Pro for example, will not only kill varroa mites on resident bees, **it will also penetrate the cappings** and kill varroa mites in development
  - This means that in those periods where capped brood is prevalent, you might select Formic Pro over another product to gain that benefit



# Temperature and Honey

## □ Temperature Considerations

- *To Hot: Will the product bomb the bees with chemicals?*
- *To Cold: Will the product get hot enough to chemically release?*

## □ Honey Considerations

- *Is it safe to use with consumable honey on the hive?*
- *If it is not safe, how can it be used so it does not impact honey to be harvested?*



# Product Impacts & Risks

- You should know the potential impacts
  - *Both to the bees and to yourself during handling and application*
    - Injury to self (acid burns, skin irritation, eye injuries, and other poison effects)
    - Injury and impacts to bees and the colony
      - Injury or Mortality to developing brood
      - Injury or Mortality to adult bees, including potentially the queen
      - Irritable bees – bees absconding
      - Tainted brood food and food stores – tainted wax
      - Injury to queen and drone reproductive health





## Cannot use with Honey



- ❑ Apivar
- ❑ Apiguard
- ❑ ApiLifeVar
- ❑ Require Buffers
  - *These products require time to work*
    - An Apivar treatment window is 42 to 56 days
  - *Some require moratoriums after removal*
    - ApiLifeVar labeling requires a 30 day wait period before honey supers can be added
    - ApiVar requires a 14-day wait period

## Safe to Use with Honey Supers



❑ Formic Pro /  
MAQS

❑ Oxalic Acid  
ApiBioxal

❑ HopGuard3

❑ Safe to Use

- *These product can be used when collecting harvestable honey*

- The residuals will not impact consumable honey and you can treat the bees during nectar flows and it will not adversely impact the honey stored by the bees for their consumption

# Treatment Instructions

## □ Follow them Scrupulously

- *Must follow the process*

- Product suppliers, and the government agencies that oversee them, will stand by their products if you use them in the manner directed (the label is the law)
  - They simply will not support you, or answer questions, if you use them in any other manner other than how they are instructed to be used.
    - Common sense says that if they did not test for the practice you are using, then legally they cannot make any claims. It is not unlike the drug industry for humans – off label application is not permitted
- Instructions are explicit
  - To get the desired outcome you need to know and follow directions
    - If you use a vapor product and the bottom board is not closed, it will not work. Instructions matter



## Effectiveness Considerations

### Will it Work?

- *No product has a 100% effectiveness kill rate*
  - Product success is often highly dependent upon conditions and makeup of the colony
  - Colony size, application methods, temperatures, makeup of the interior of the hive, and other factors play a large role in how effective treatments play out
- *Percentages Reported are a Guide*
  - There is much debate about actually how accurate the percentages reported – consider them a guide

### Product Brochure Efficacy Estimates

- |               |             |
|---------------|-------------|
| □ ApiVar      | (up to 98%) |
| □ Formic Pro  | (61 to 98%) |
| □ MAQS        | (61 to 98%) |
| □ ApiGuard    | (74 to 95%) |
| □ HopGaurd3   | (70 to 85%) |
| □ ApiLife Var | (70 to 90%) |
| □ ApiBioxal   | (82 to 99%) |



# Treatment Tactics

## □ Forecasting a Treatment Plan

- *Many beekeepers look to some treatment regime over the course of the beekeeping season (spring, summer, fall – late winter)*
- *Take into consideration the annual plan for local conditions*
  - Consider the honey harvest windows – local temperatures, colony state, and other inputs
    - Don't forget.... Vacation plans and life events have to be factored in
- *Based on evaluation, and conditions they may start with a treatment plan design (and know the rationale to why it is structured that way)*



## Example Timeline (with rationale examples)

- |           |                          |  |
|-----------|--------------------------|--|
| □ Jan/Feb | Amitraz                  | <i>Low number of strips, placed while the bees are clustered... start with low mite population</i> |
| □ Jul     | Formic Pro               | <i>Ok to apply (temps not withstanding) when honey onboard</i>                                     |
| □ Sep     | Apiguard                 | <i>Possible use if still mites present after summer knockdown treatment</i>                        |
| □ Nov/Dec | Oxalic Acid Vaporization | <i>An option to have in case a late surge occurs</i>   |



# Treatment Plan Design

## □ So many things to consider... Where to start?

- *It is no surprise that it is confusing, given all that was covered*
- *There is help in the HBHC Varroa Management Decision Tool*
  - Until you get some experience and learn to manage this in your own way, know that there is a guide that simplifies choices – while taking into consideration all of the conditional inputs
  - Follow the online wizard, answer the questions as to the situation, and it will provide choices with you **and don't forget to watch the instructional videos**
- *Once you have your selection, follow the label*



# The Label Is the Law

- This is the best way to come to a close
  - *We do not make it a habit to tell you how to use the treatments*
    - We ourselves do not try to remember the rules.
    - This forces us to read the label every time and that helps us to:
      - Learn any changes since last use
      - Refresh our direct knowledge of how to use the product – no guesses
      - Remind us of the detailed instructions to follow and help us to plan; not forgetting the important points – like putting the slide back into the screened bottom board and such
      - Ensures that we remain safe and do the best not to harm our bees





# Labels and MSDS

*Being directly well informed will provide you with the confidence and know how to effectively manage varroa mites*

## □ The Fine Print is enlightening

- *The best way to be informed is invest in the research required*
  - How long is a product good for? How should it be stored? What should you do if you come into contact with it (will it harm you?) Does it have to be removed after use? What is the proper disposal method? Can I use less of the dose? How do I treat a Nuc? Can I treat a package? And a 100 more questions.....
- *Labels and Material Safety Data Sheets (MSDS)*
  - These two resources, along with website information from product manufacturers, should address all questions you may have or information you need or on any problems you might encounter.
  - Invest the time to do your research, it is amazing what you can learn



# Varroa Management Resource Website

## Honey Bee Health Coalition

- *A free resource with an abundance of resources for understanding and managing varroa mites in beehives*
  - Instructions, pest insights, how to videos, decision guide, and more
  - A key resource for varroa management and more



<https://honeybeehealthcoalition.org> >



# Closing Comments

- **Customary Close**
  - Where we stand, where we are going...
    - *This module closes out our mini-series on varroa mites.*
    - *Our next lessons focus on:*
      - Small hive beetles
      - The Calendar of Summer
      - From two boxes to two three or more
      - As well as Summer and Fall Feeding



# Q&A

- **What Questions did we not anticipate?**
  - If you have feedback, you can leave a constructive comment; but be nice.
  - You could also send an email to [comments@managedmentoring.com](mailto:comments@managedmentoring.com)
    - *Please refer to this video in the subject so we know what the reference is.*

