

# 2<sup>nd</sup> Year Fall Management

- I have moved away from the Class Syllabus
- Reviewing comments and the large amount of bee loses
- Reviewing some data from Kelly Kulhanek November 2019 talk
- Info here gained from Bee Informed Group

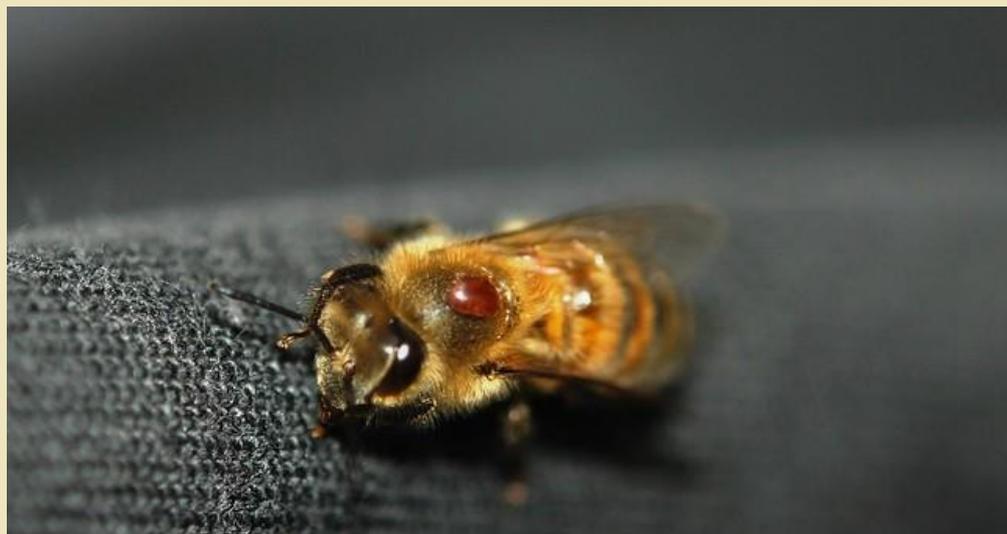


**WANTED**  
*Varroa destructor*



For the wanton destruction of  
Honey Bee colonies worldwide  
Yours could be next  
Take the challenge

**TEST YOUR HIVE TODAY!**



1. Life Cycle
2. Monitoring
3. Management
4. Real world examples

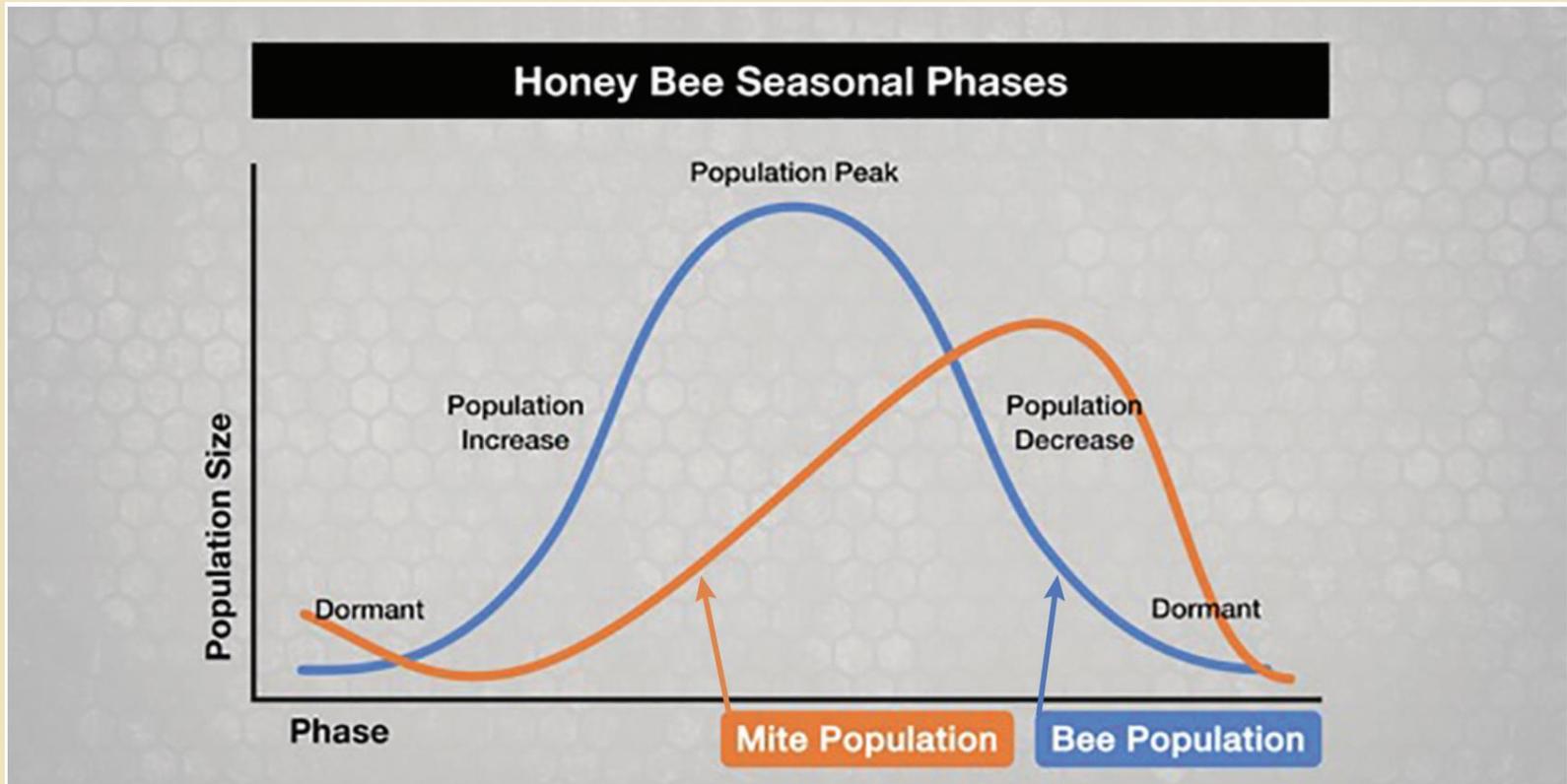
**KNOW YOUR  
ENEMY**



# Varroa life cycle



# Varroa life cycle



From Honey Bee Health Coalition Varroa Guide



# Management Survey

Browser address bar: <https://bip2.beeinformed.org/survey/>

Navigation: Apps, Bookmarks, Gmail, Amazon, User Dashboard, YouTube, BIP2, Bee Informed, WordPress, Great Lakes, NSLDS

Site Header: Bee Informed Partnership, Open Data, Hive Monitors, Tools, Database, kkuhla

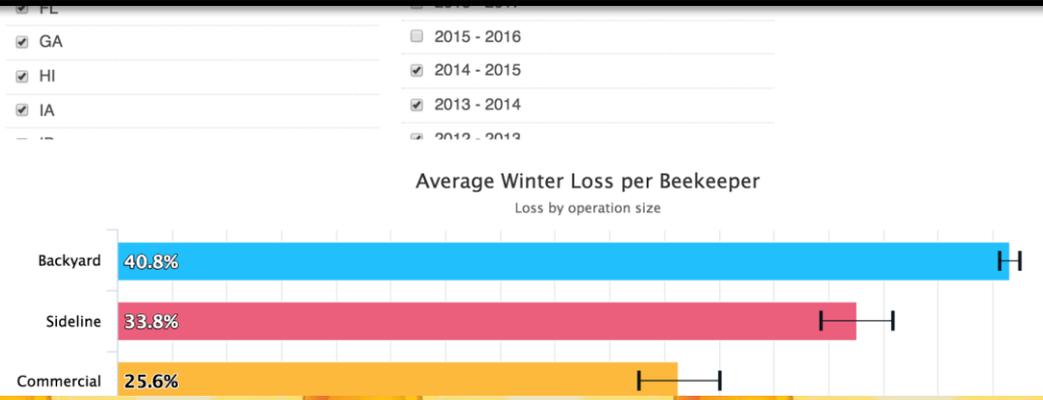
## National Management Survey

- Overall Loss
  - Loss by operation size
  - Loss by year
  - Reason for colony loss
- Near Crops
  - Near Crops During Nectar Flow
- Varroa
  - Used Varroa Treatment
  - Varroa Products Used
  - Number of Varroa Products Used
  - Monitored For Varroa
  - Varroa Monitoring Techniques
- Management Techniques
  - Drone Brood Removal
  - Screen Bottom Board Use
- Management Practices
  - Used Any Management Product
  - All Management Products
- Feed Products
  - Used Carbohydrate Feed
  - Used Protein Feed
  - Used Any Feed Product

### Report: Loss by operation size

*Description:* Average winter colony loss reported by backyard beekeepers (managed fewer than 50 colonies), sideline beekeepers (managed between 51 and 500 colonies) and commercial beekeepers (managed more than 500 colonies).

# bip2.beeinformed.org/survey



Thank you for participating in the 2013-2014 Bee Informed Partnership National Colony Loss and Management Survey

Your participation in this research is confidential. You should be 18 years or older. At the end of the study you will be asked if you are willing to have your name on a contact list to participate in other bee health surveys. If you answer "yes" we will add you to our email contact list. Providing your email address is completely voluntary. We will remove this address from your survey responses and share it securely as a separate, encrypted, password-protected file. There will be no way that your responses could be traced to you in the survey dataset we will create and store. This dataset will also be stored and accessed in an encrypted, password-protected file. In any publication or presentation resulting from this research, no personally identifiable information will be disclosed.

Completion of all or part of this survey is voluntary. If you are not comfortable answering a question, please leave it blank. Questions marked by an asterisk (\*) are mandatory. Without these, we won't be able to enter your responses in our database.

14. In what state(s) do you keep your colonies in between April 2013 - April 2014? (Select all that apply)

Alabama	California	Illinois	Mississippi	North Carolina	Virginia
Arizona	Colorado	Indiana	Minnesota	Ohio	Washington
Arkansas	Connecticut	Iowa	Missouri	Oklahoma	West Virginia
California	District of Columbia	Kansas	Montana	Oregon	Wisconsin
Colorado	Florida	Kentucky	Nebraska	Pennsylvania	Wyoming
Delaware	Georgia	Louisiana	Nevada	Rhode Island	
District of Columbia	Hawaii	Maine	New Hampshire	South Carolina	
Florida	Idaho	Maryland	New Jersey	South Dakota	
Georgia	Illinois	Massachusetts	New Mexico	Tennessee	
Hawaii	Indiana	Michigan	New York	Texas	
Idaho	Iowa	Minnesota	North Carolina	Utah	
Illinois	Kansas	Mississippi	North Dakota	Vermont	
Indiana	Kentucky	Missouri	Ohio	Washington	
Iowa	Louisiana	Montana	Oklahoma	West Virginia	
Kansas	Maine	Nebraska	Oregon	Wisconsin	
Kentucky	Maryland	Nevada	Pennsylvania	Wyoming	
Louisiana	Massachusetts	New Hampshire	Rhode Island		
Maine	Michigan	New Jersey	South Carolina		
Maryland	Minnesota	New Mexico	South Dakota		
Massachusetts	Mississippi	New York	Tennessee		
Michigan	Montana	North Carolina	Texas		
Minnesota	Nebraska	North Dakota	Utah		
Mississippi	Nevada	Ohio	Vermont		
Missouri	New Hampshire	Oklahoma	Washington		
Montana	New Jersey	Oregon	West Virginia		
Nebraska	New Mexico	Pennsylvania	Wisconsin		
Nevada	New York	Rhode Island	Wyoming		
New Hampshire	Ohio	South Carolina			
New Jersey	Oklahoma	South Dakota			
New Mexico	Oregon	Tennessee			
New York	Pennsylvania	Texas			
North Carolina	Rhode Island	Utah			
North Dakota	South Carolina	Vermont			
Ohio	South Dakota	Washington			
Oklahoma	Tennessee	West Virginia			
Oregon	Texas	Wisconsin			
Pennsylvania	Utah	Wyoming			
Rhode Island	Vermont				
South Carolina	Washington				
South Dakota	West Virginia				
Tennessee	Wisconsin				
Texas	Wyoming				
Utah					
Vermont					
Washington					
West Virginia					
Wisconsin					
Wyoming					

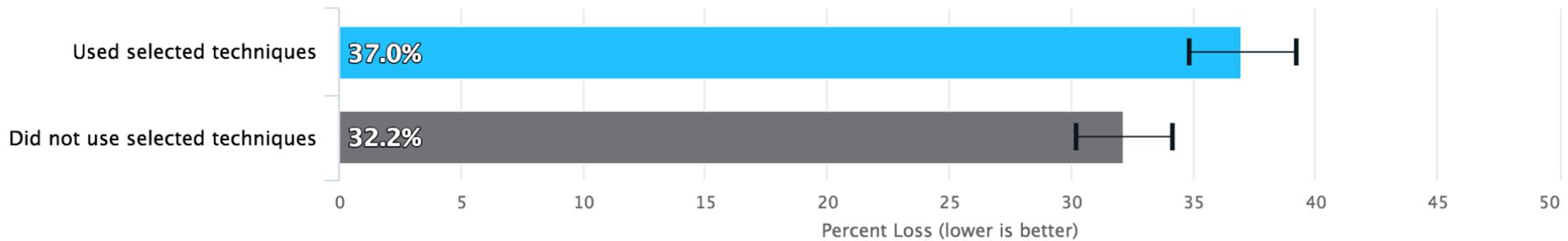


# Monitoring

Visual Inspection of Bees  
(looking for mites on bees)

## Average Winter Loss per Beekeeper

Varroa Monitoring Techniques

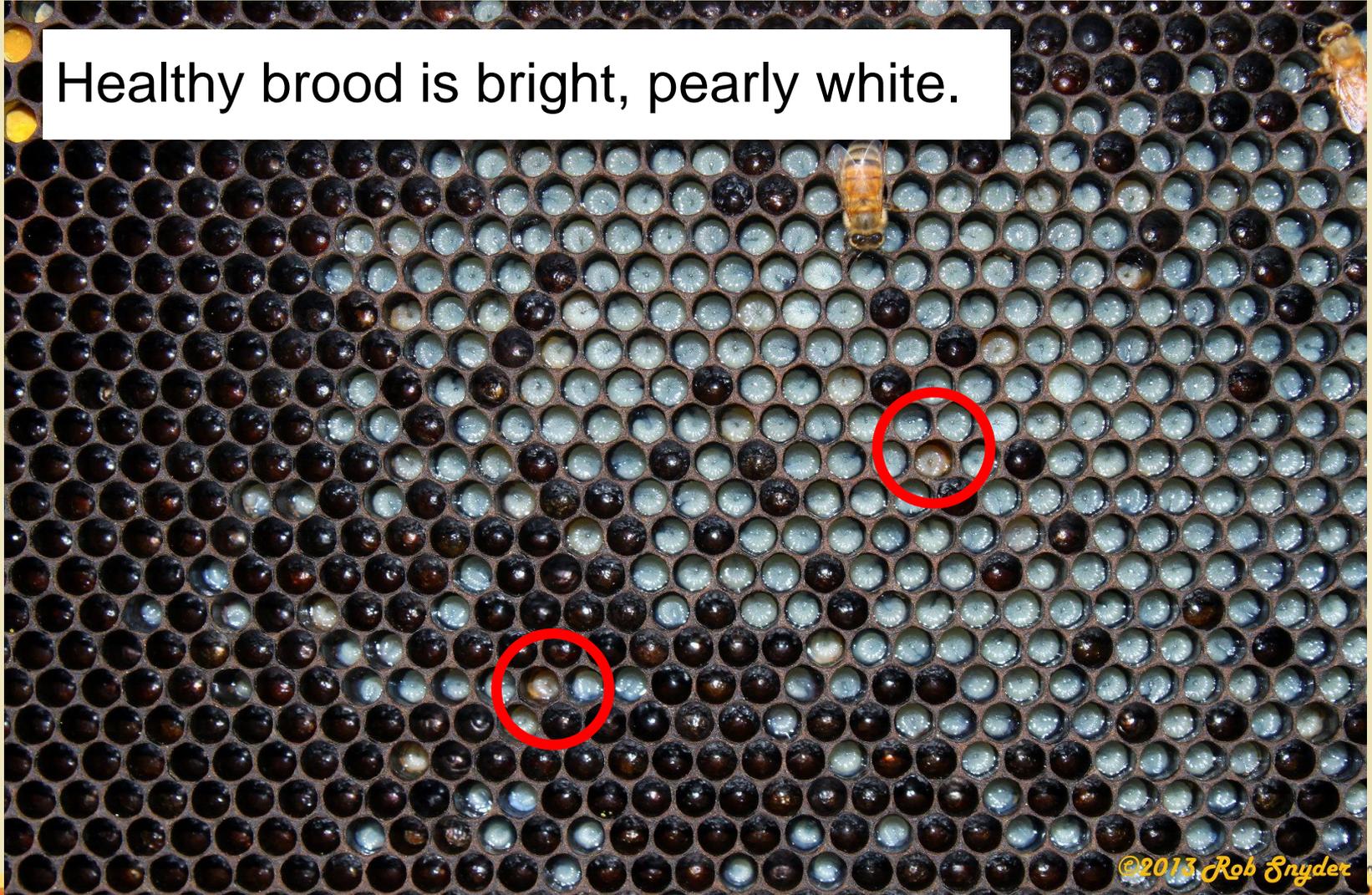


# Signs of Varroa

1.sick brood



Healthy brood is bright, pearly white.

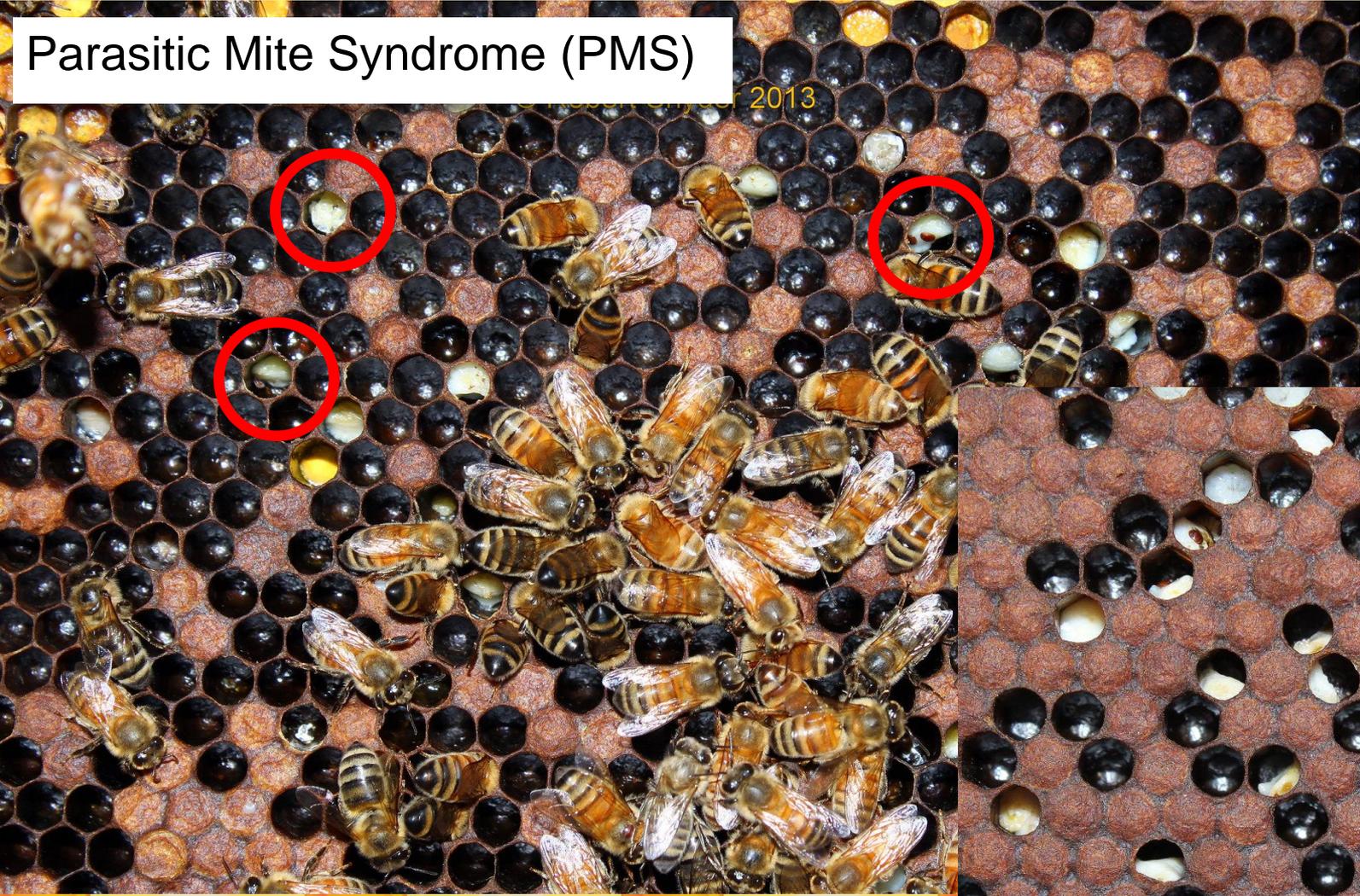


©2013 Rob Snyder



# Parasitic Mite Syndrome (PMS)

© 2013



© 2013 Rob Snyder



# Bald Brood



©2014 Rob Snyder



# Perforated Brood



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# Other Signs of Varroa

1. sick brood

2. viruses



# Sacbrood Virus



© Robert Snyder 2013



# Deformed Wing Virus



© Robert Snyder 2005-2012

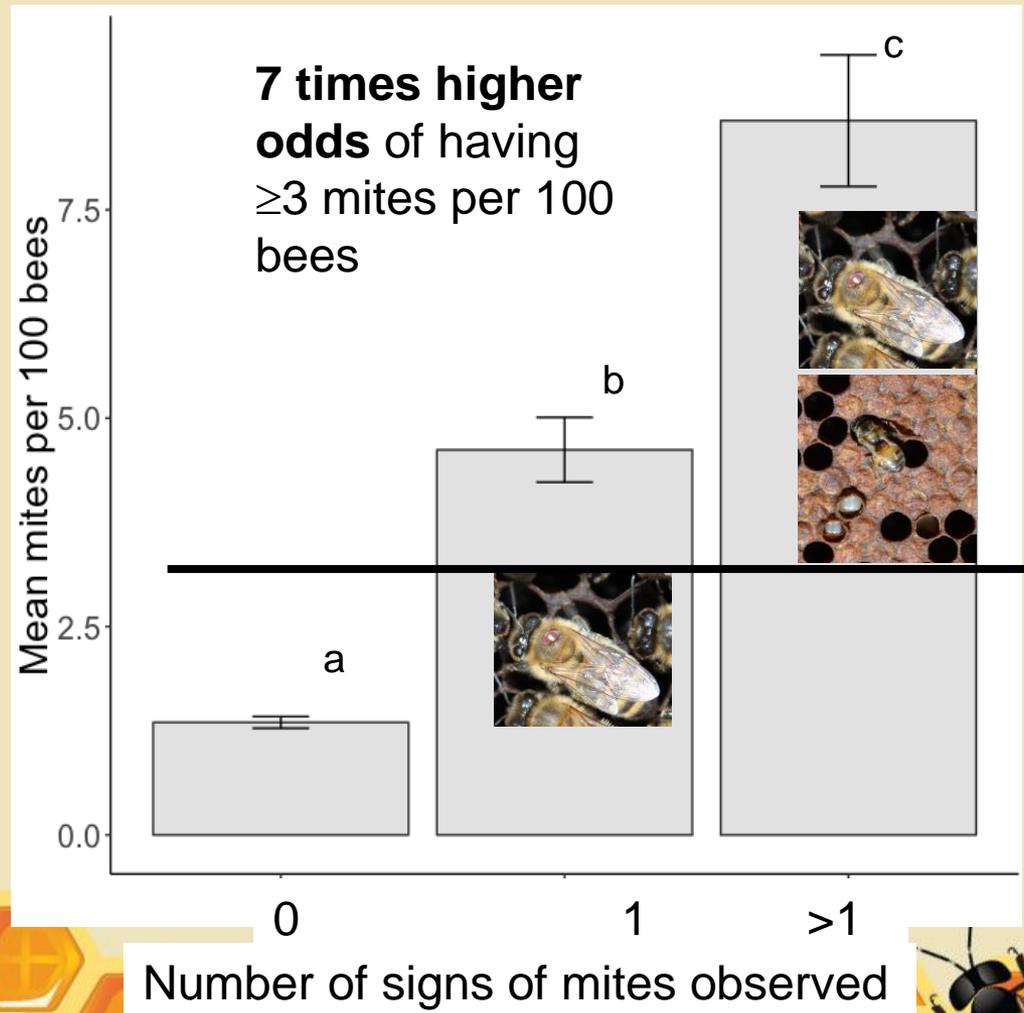


# Parasitic Mite Syndrome



# Other Signs of Varroa

If you see any of these signs/symptoms, your Mite load is probably already too high



Dr. Katie Lee, UMN

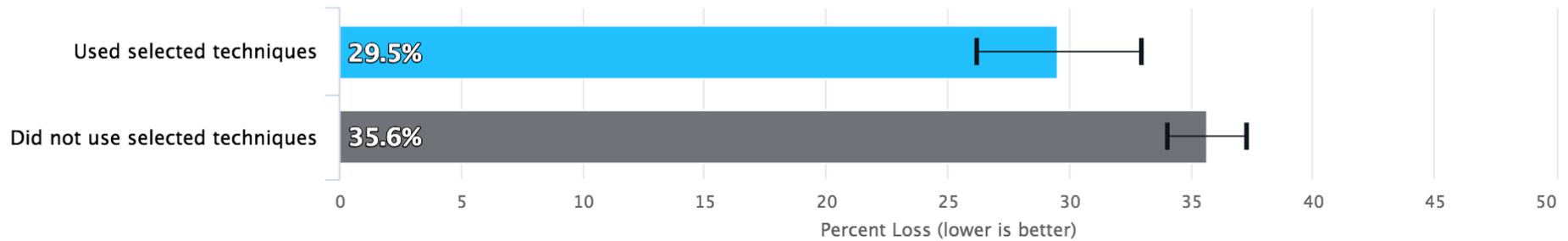


# Monitoring

## Alcohol Wash

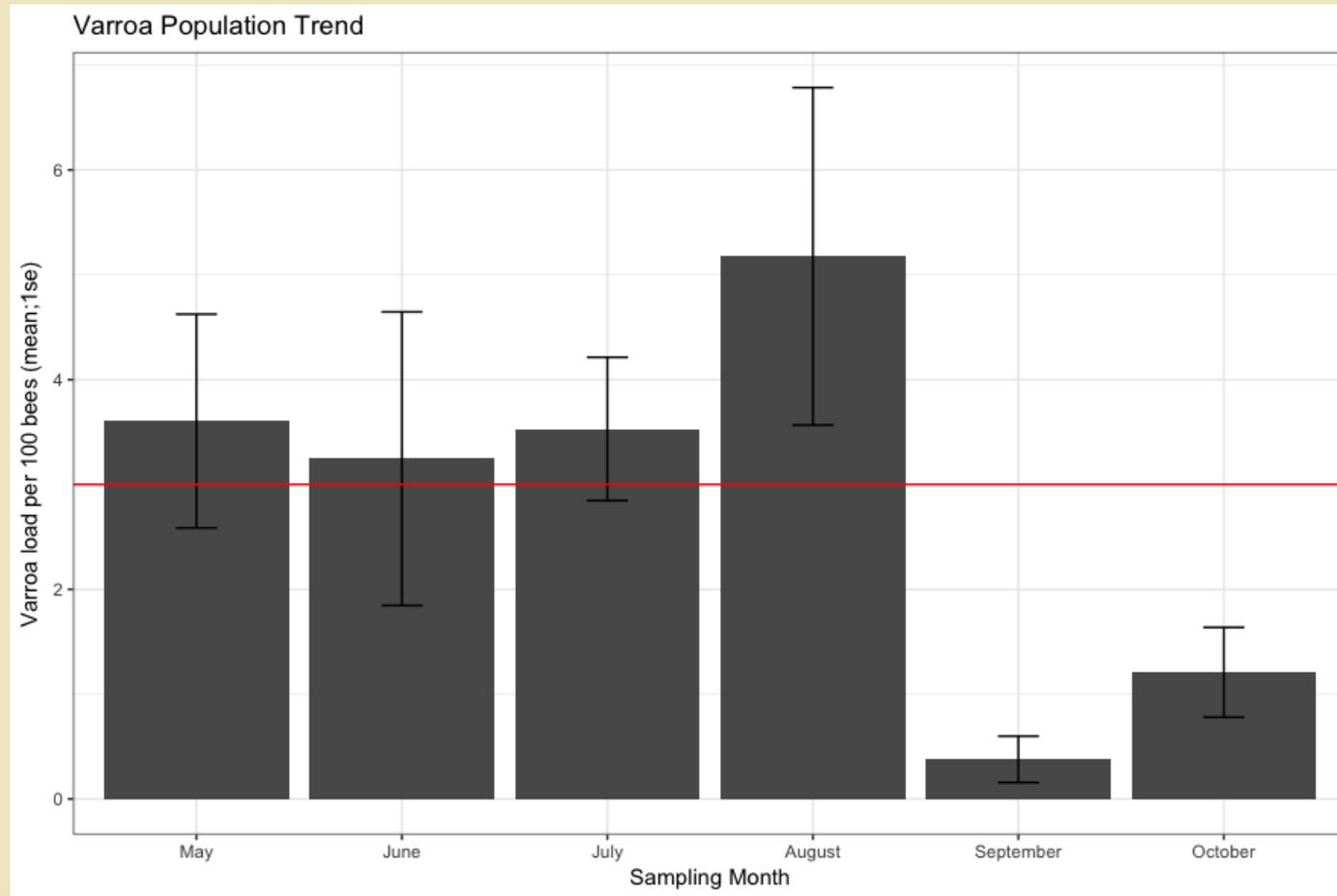
### Average Winter Loss per Beekeeper

Varroa Monitoring Techniques

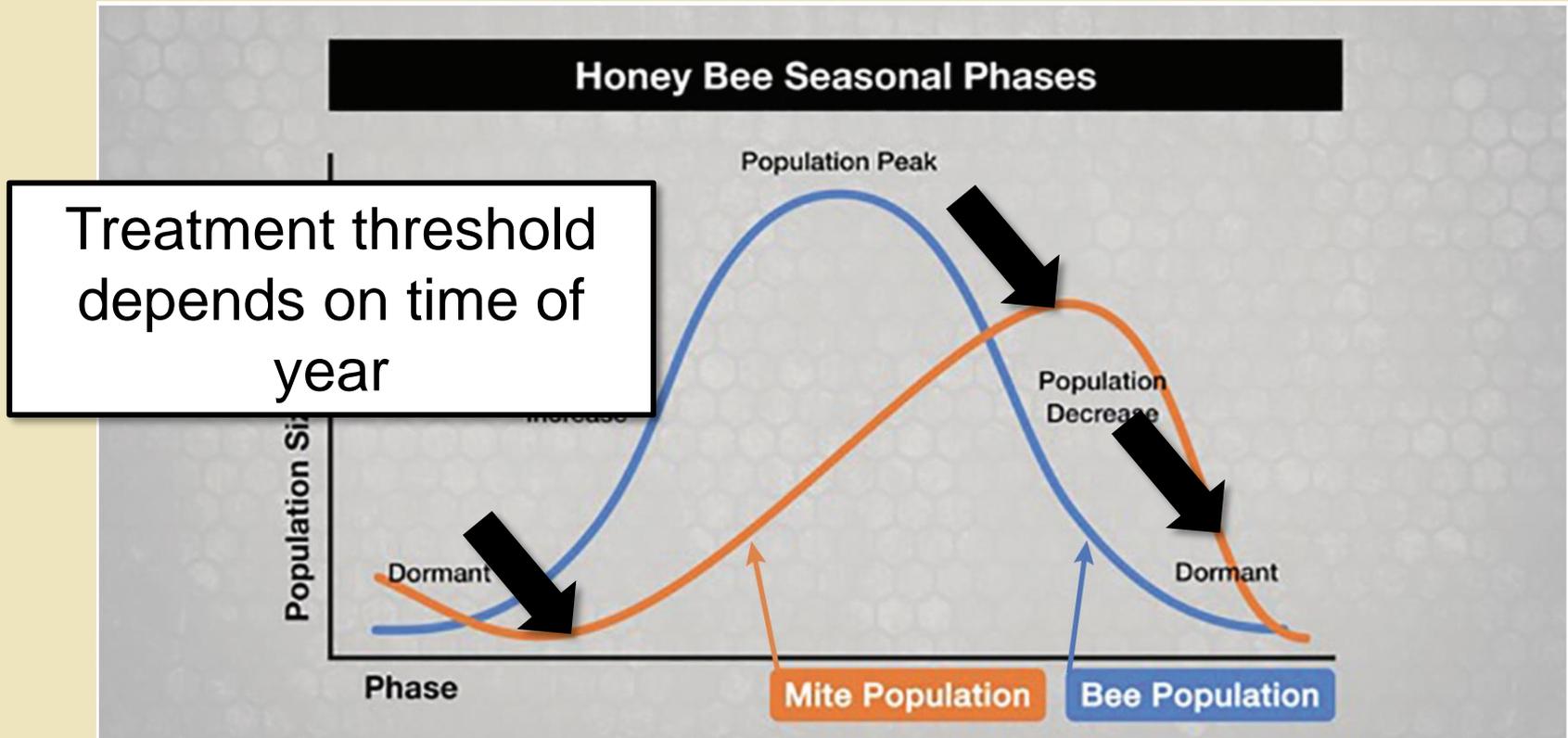


# Treatment Threshold

- 3 mites/100 bees: treat now to avoid a problem
- 5 mites/100 bees: you will probably have a problem



# Varroa life cycle

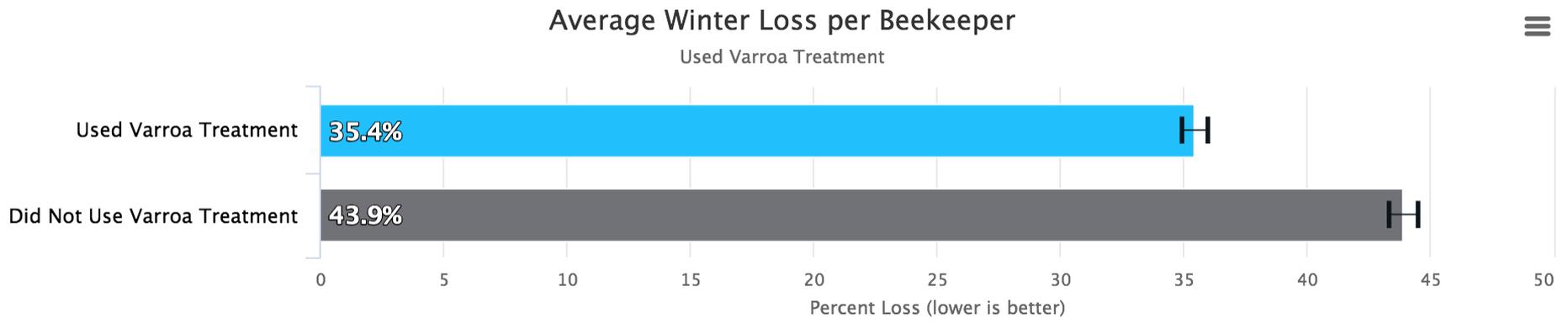


From Honey Bee Health Coalition Varroa Guide



# I'm above treatment threshold. Now what?

## Used Varroa treatment



I'm above treatment threshold. Now what?



# TOOLS FOR VARROA MANAGEMENT

A GUIDE TO EFFECTIVE VARROA SAMPLING & CONTROL

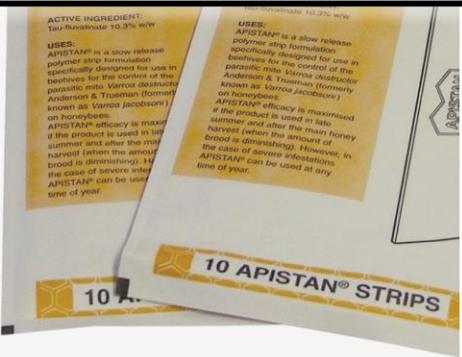
HEALTHY BEES · HEALTHY PEOPLE · HEALTHY PLANET™

GET STARTED



# Prevent Resistance

- Takes 5-10 years to register a new product
- No new products in the pipeline



Amitraz?

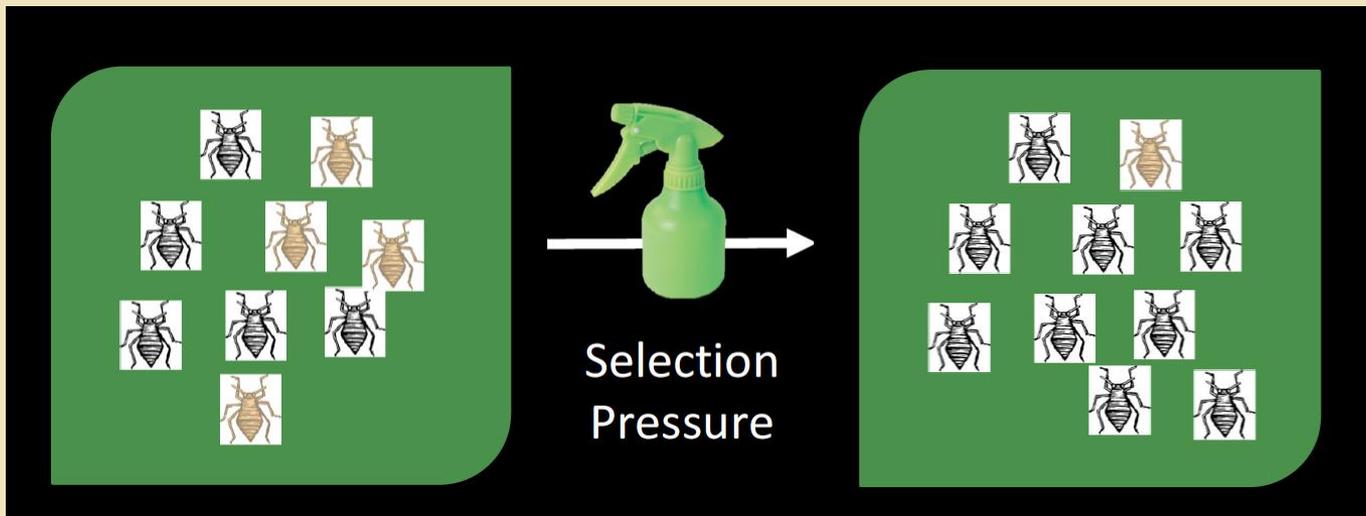
Fluvalinate

Coumaphos



# Prevent Resistance

“Repeated failure of a product to achieve expected level of control”



Slides by Dr. Kelly Hamby



# Prevent Resistance

Reduce Selection Pressure

## 1. Rotate products (change AI)



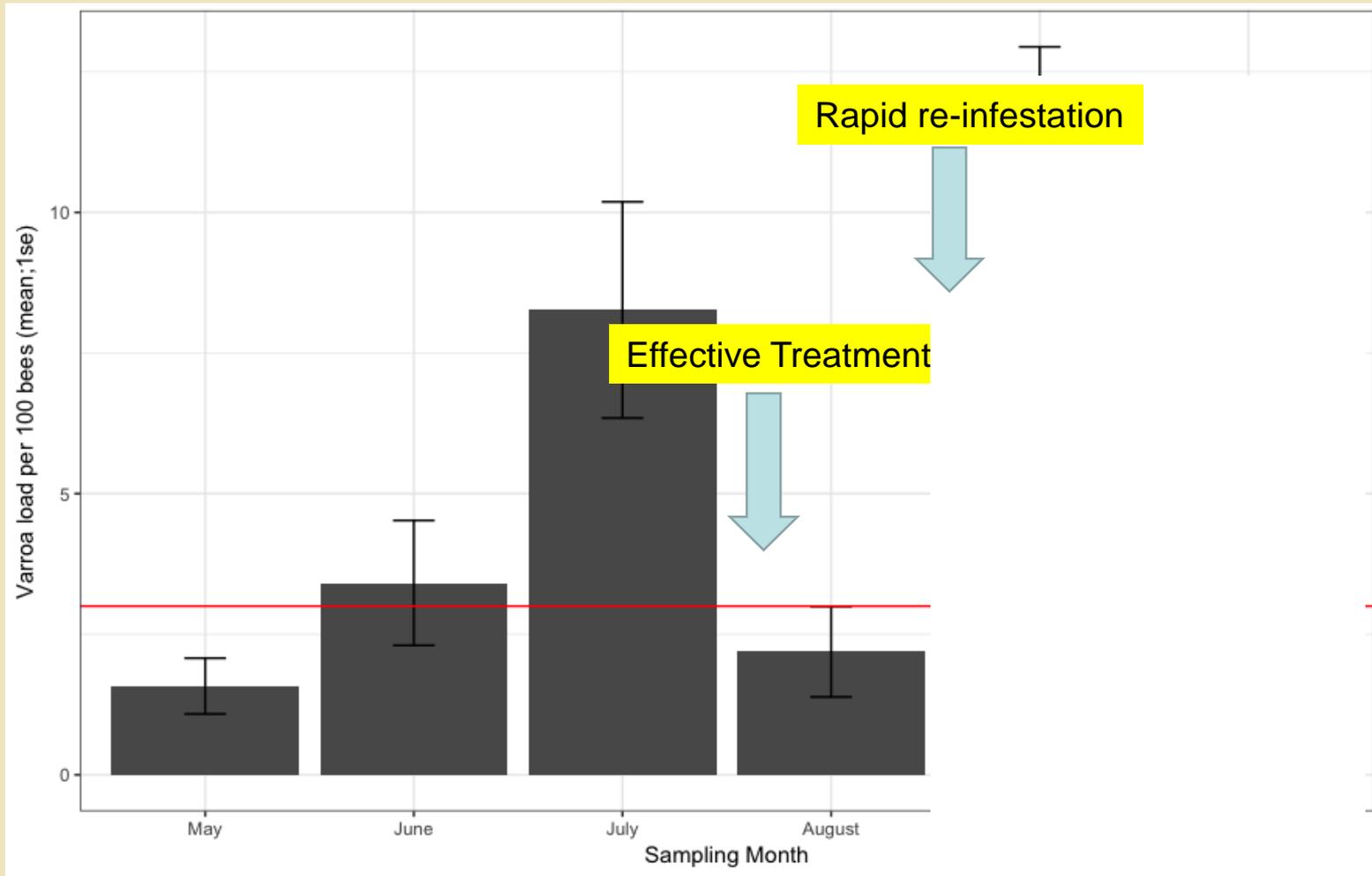
## 2. Only treat if above threshold



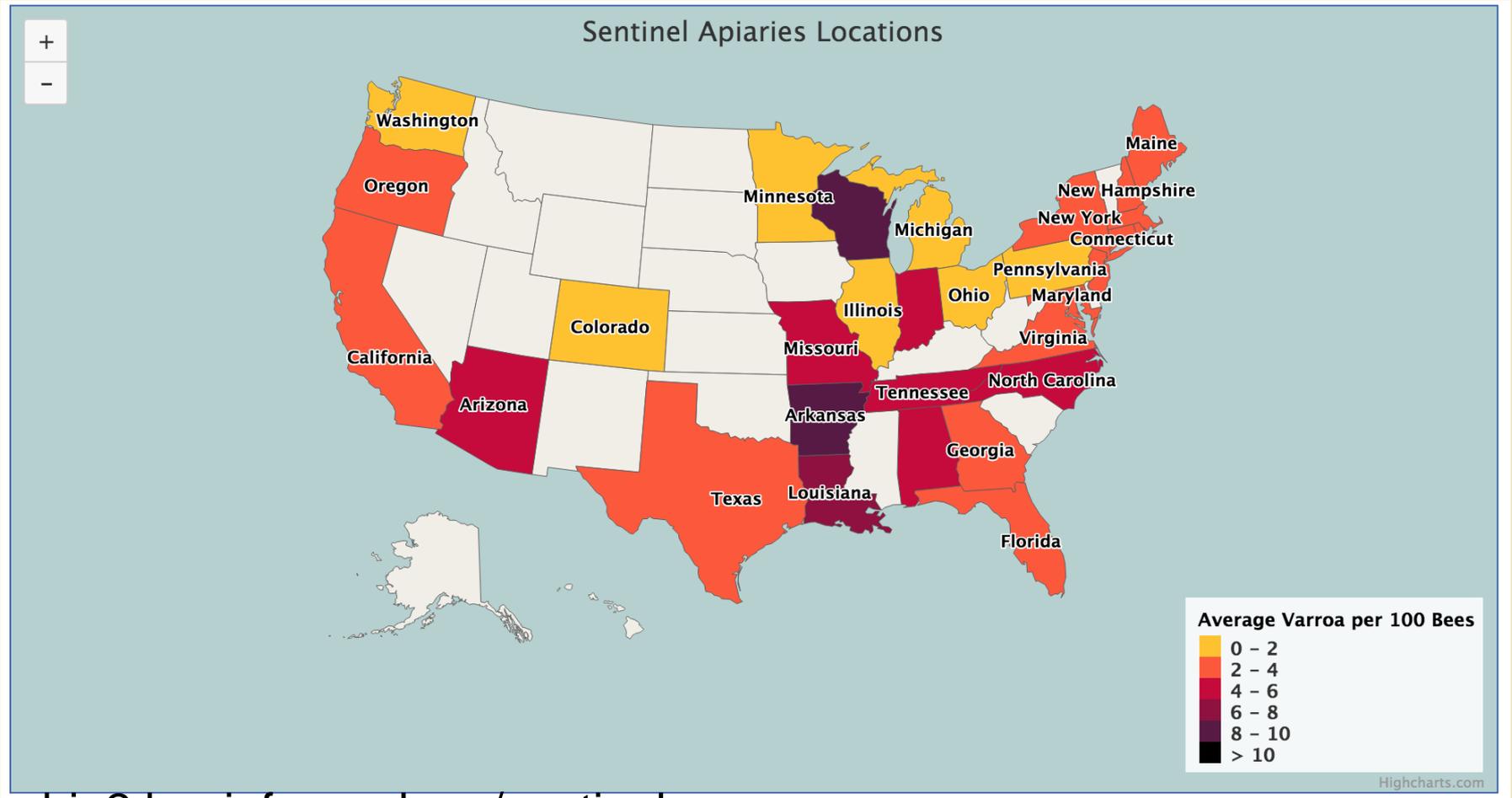
# Pro Vap



# Did your treatment work?



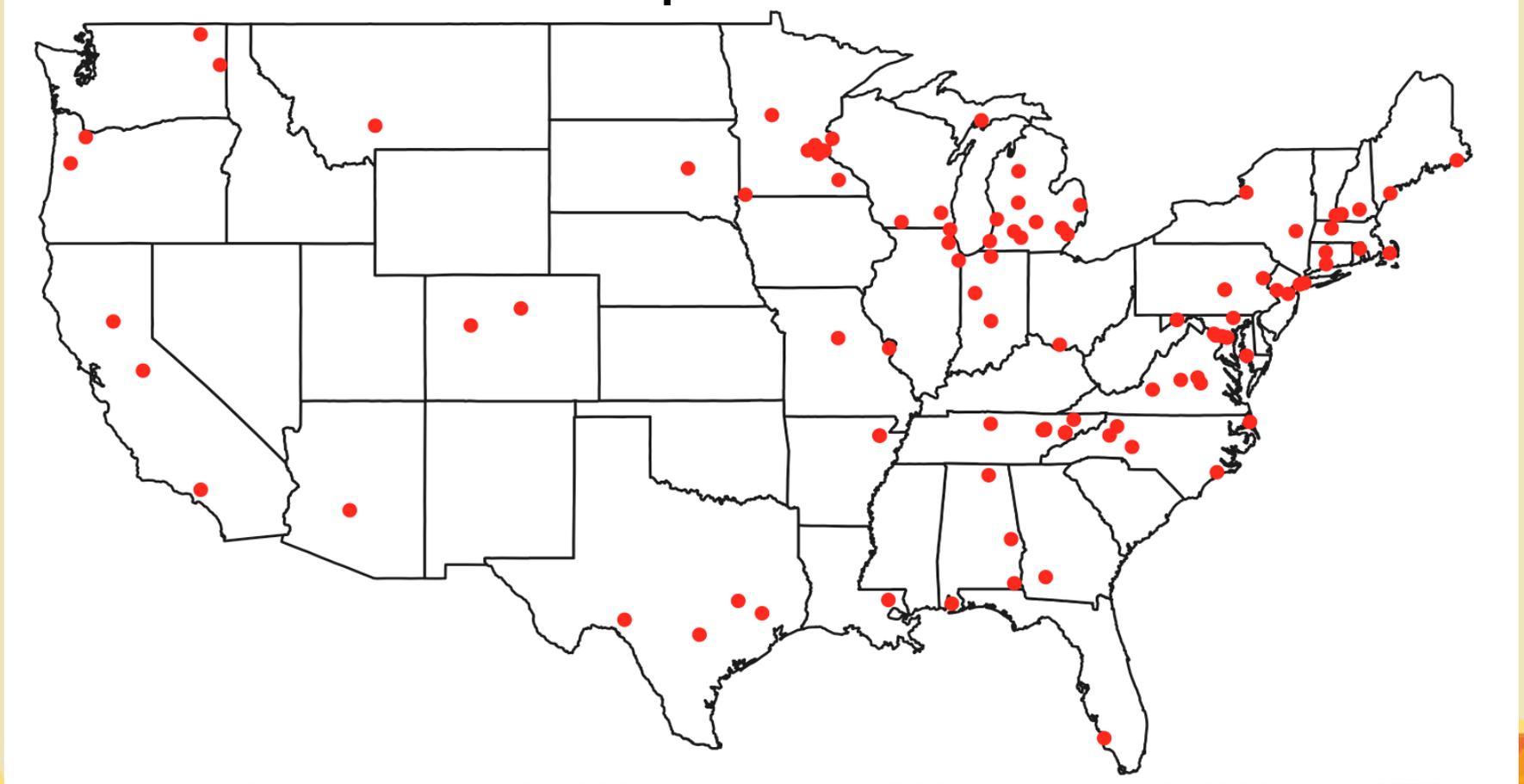
# Varroa Population Trends: Real World Data



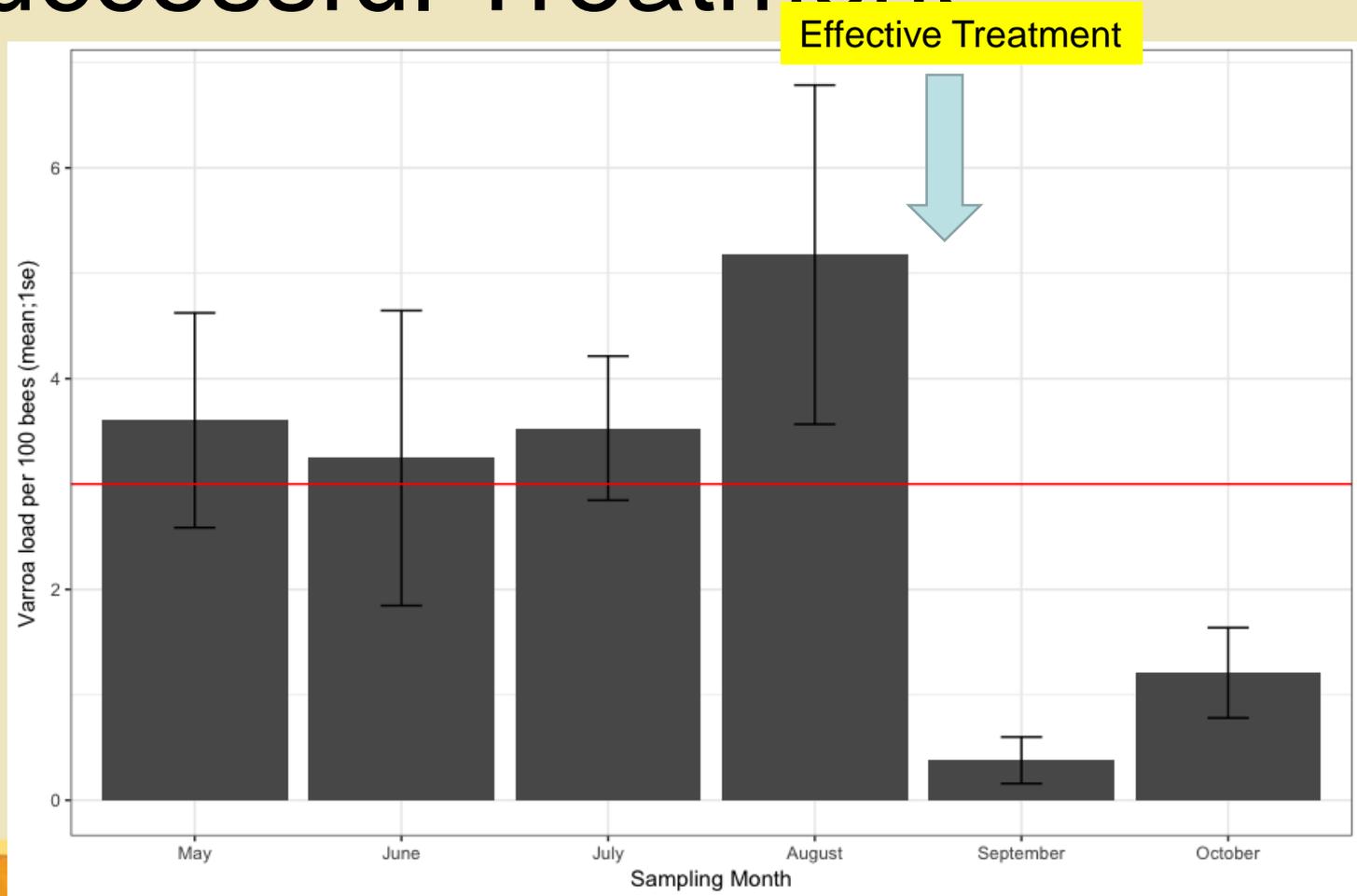
[bip2.beeinformed.org/sentinel](http://bip2.beeinformed.org/sentinel)



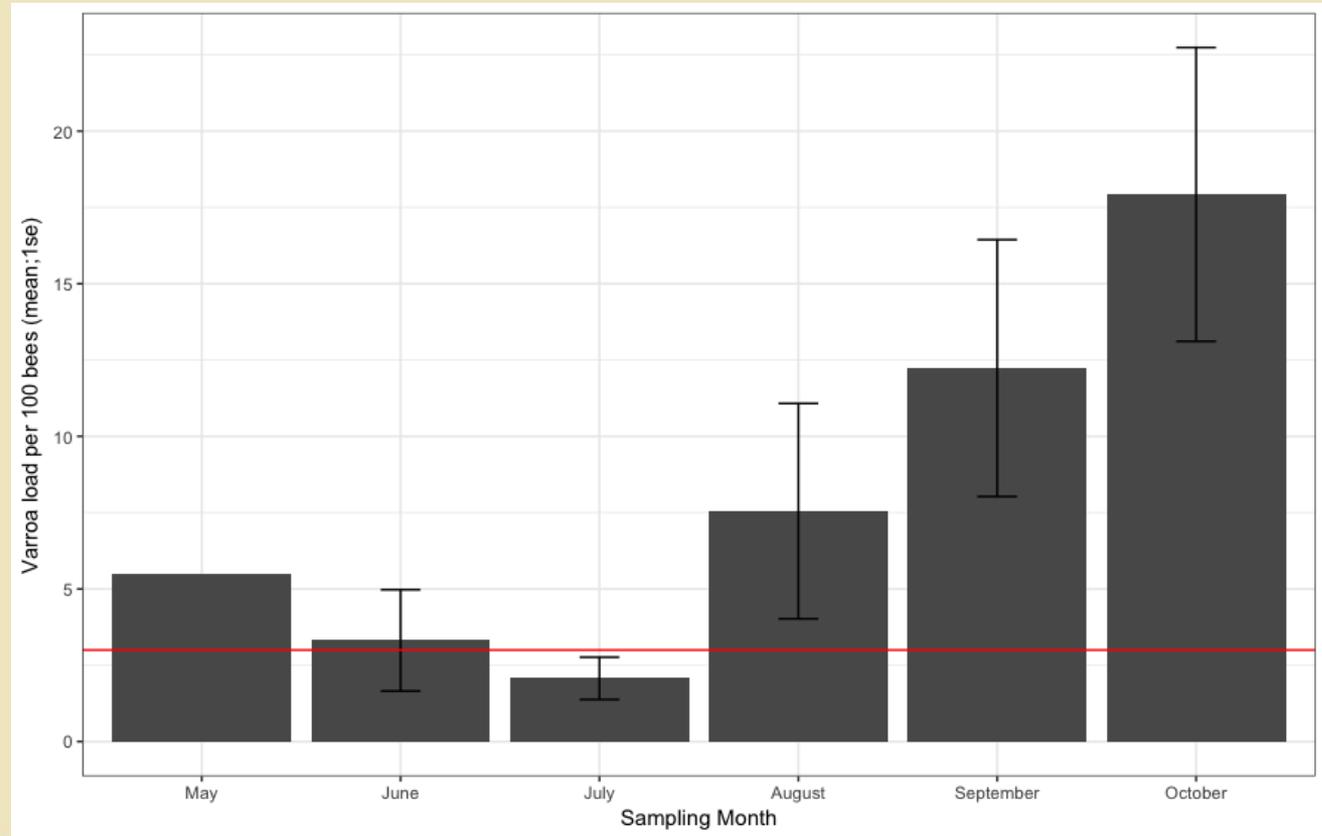
# 2019: 106 Sentinel Apiaries



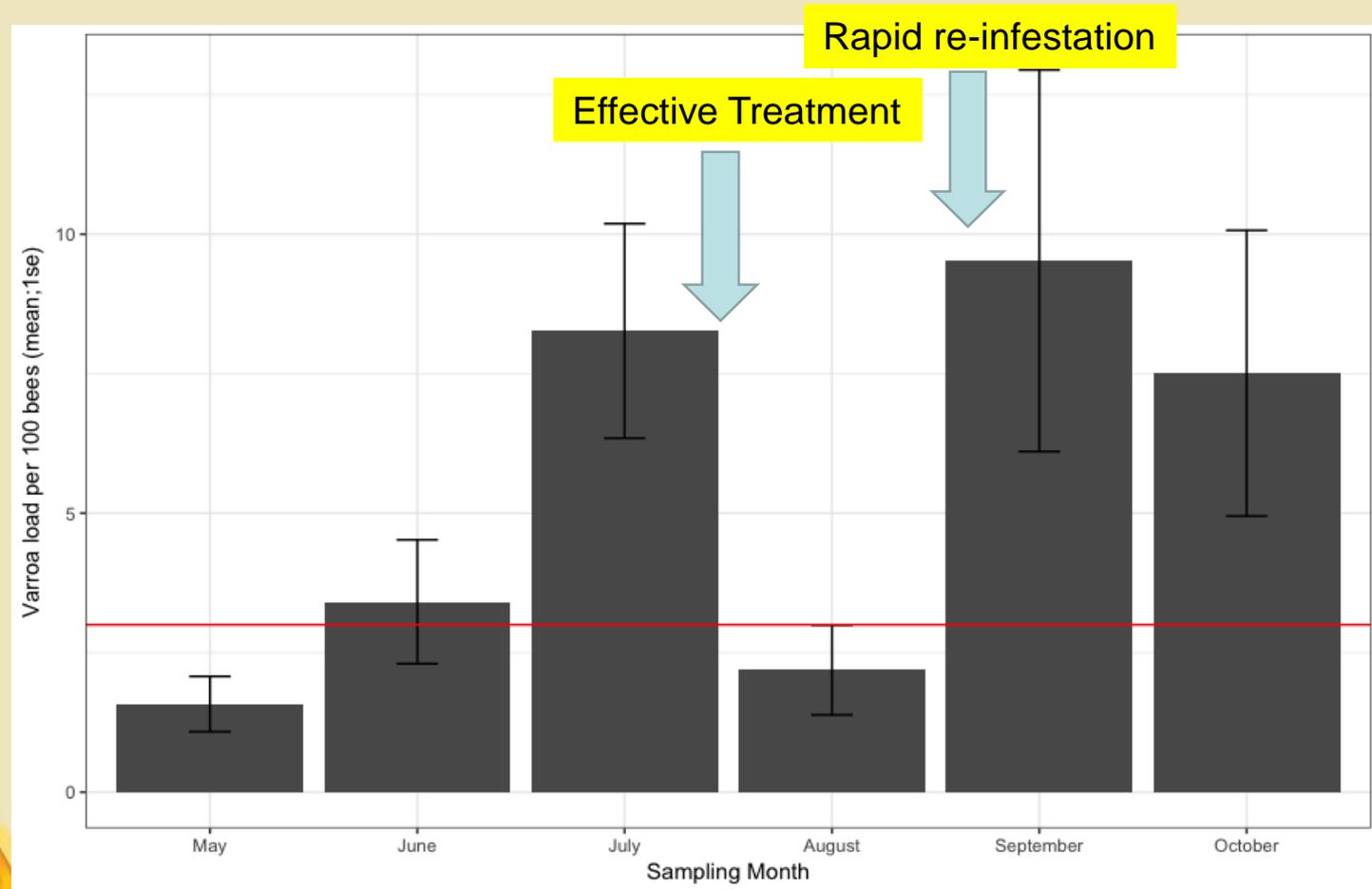
# 1. Successful Treatment



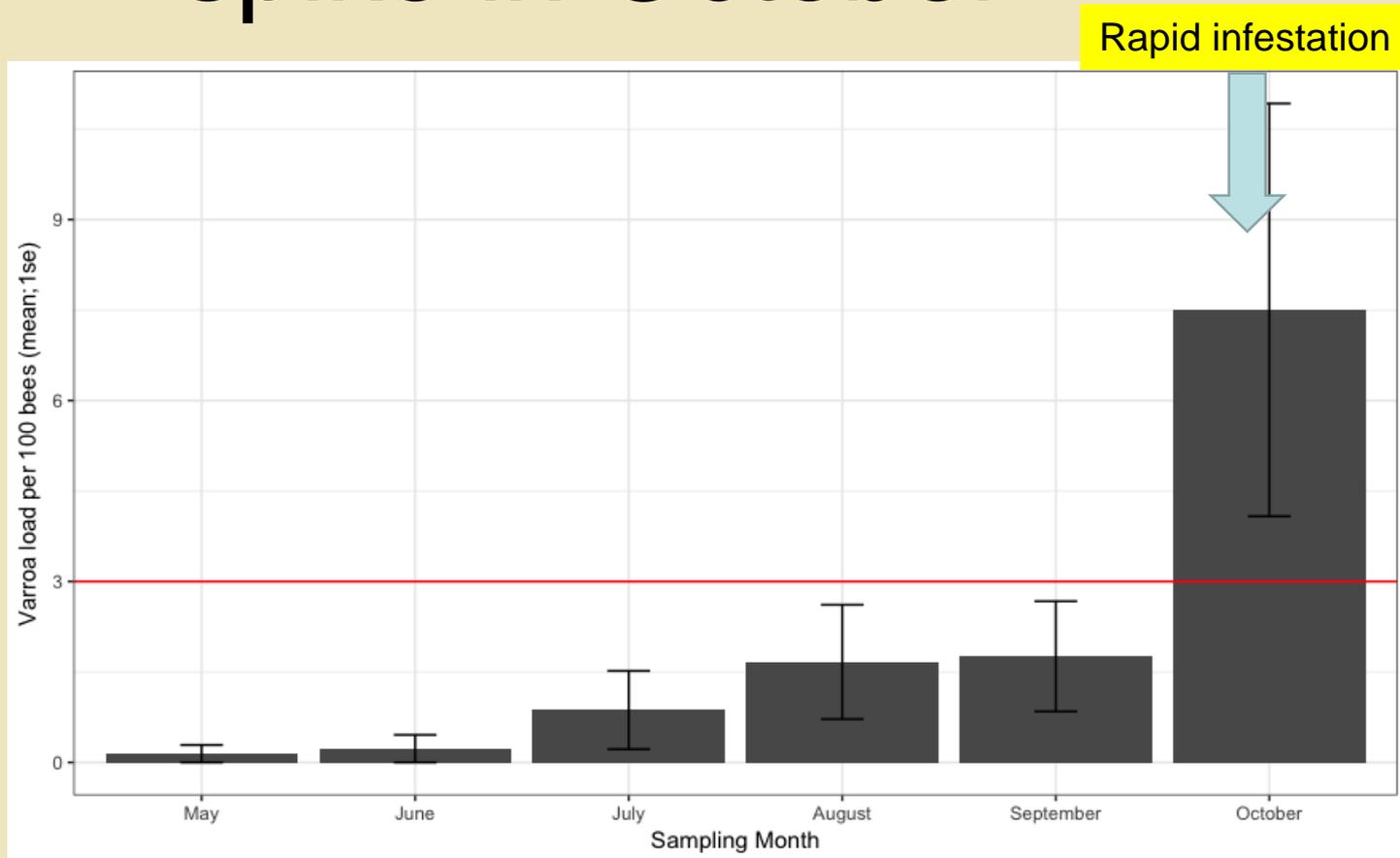
## 2. No treatment or unsuccessful treatment



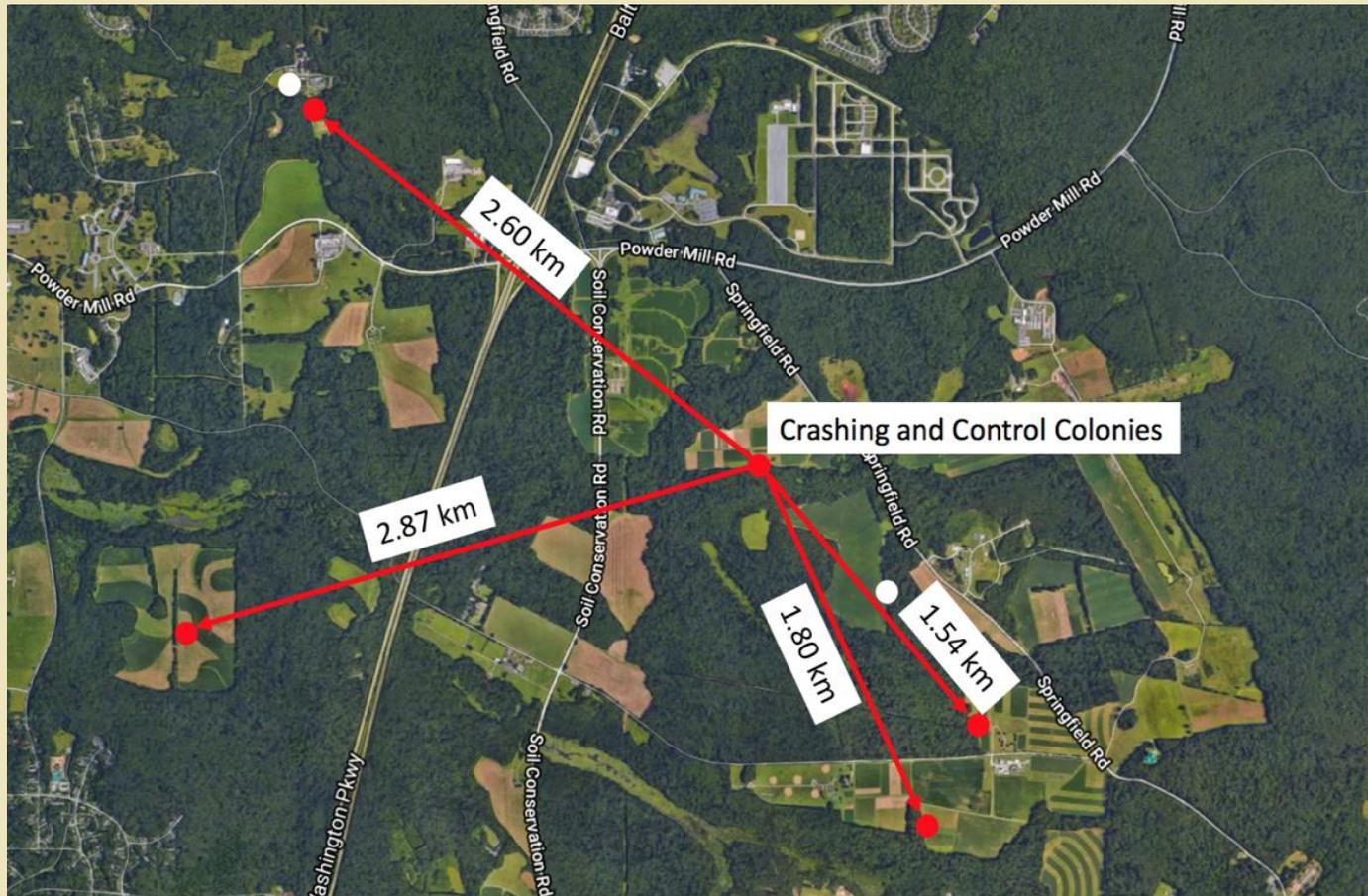
# 3. Successful treatment followed by rapid re-infestation



# 4. Low levels followed by a spike in October



# Inter-Apiary Varroa Transmission



# Must Have



# To Summarize:

- Monitor for mites!
- Monthly or before AND after treatment
- Rotate products and only treat when necessary
- You need to know your mite situation all the time

