Varroa Mites

FIONA O'BRIEN

®BEELINE APIARIES®

Varroa Mite Planning and management

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Varroa Population

What happens seasonally?

How do we know if we need to treat?

Surveillance/testing

What are our varroa levels…… pre and post treatment?

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Treatment

Do we have to treat?

As opposed to

Treatment free

Mite Bombs

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Treatment – type

What is our treatment regime made up of – toolbox!

Integrated Pest Management (IPM)

Chemicals, Organics

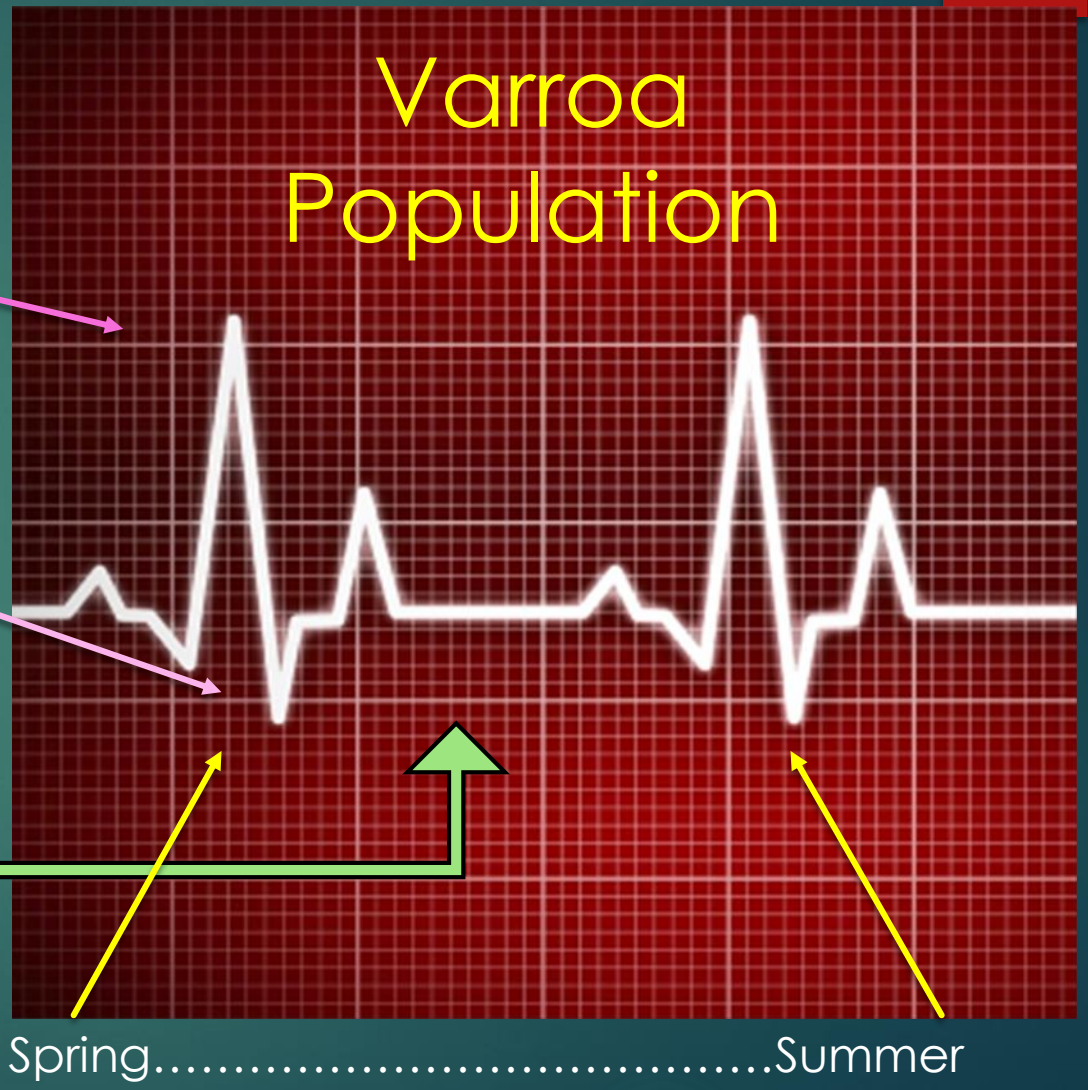
New treatments – Fat Body

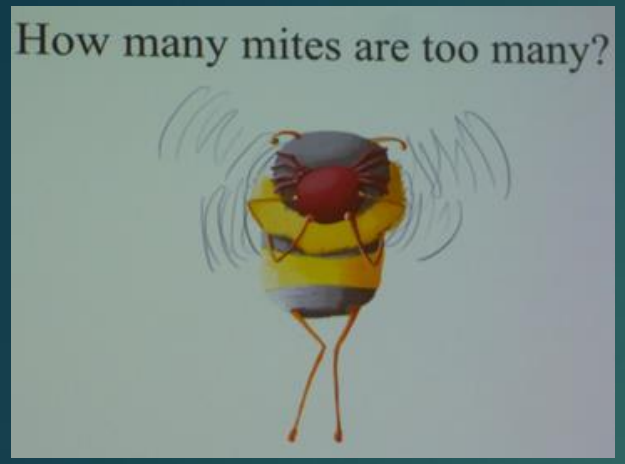
Looks something like this in your hive!

The peaks are when varroa is reproducing - either without treatment, or resistance to treatment.

The dips when mites are low in numbers, either after brood constraints (winter) or following successful treatment.

The flat lines could represent a time of dearth; (no honey) a time when you can ask yourself "can i get a treatment in/out" legally.





it's a numbers game!

Do my hives have Varroa?

How many do I have?

How do I know, how many?

How many tests ?..

- the eye ball test
- the cappers scratcher test
- the sugar shake
- The alcohol wash……

If you can pass the first three tests with flying colours then you have serious varroa problems
In fact your hive is closer to death
it just doesn't know it yet

A Test that kills the mite, rather than dislodges them!

gives you more certainty about the varroa population in your hive.

Why is testing important? -

I take varroa to the DCA's

Questions I ask myself

Do I have to treat or not?

1. Have I got Varroa yes/no?
2. How many do I have?

Mite surveillance before and after helps to assess treatment efficacy – .....did my treatment work?.....

Testing

Gives you a picture or trend over years.

You will be able to see any major changes in Varroa numbers.

More questions than answers?

The treatment may have worked ..... but why have I still have Varroa?

Is that scenario possible?

- Reinvasion
- Robbing and/or absconding bees
- 'mite bombing'? From with in the apiary
- 'mite bombing'? From another apiary/swarms

Only you can find your resistance

Finding out after winter, is a lot of hard work – Think .....dead mouldy gear.

Testing - shaker required

- Adult bees off open brood, but not the queen
- Adult bees off honey supers will give good data on a honey flow
- Rubbing alcohol, (isopropyl) or methylated spirits
- 300 bees = ½ cup
- Divide result by 3 to get the number of mites found per 100 bees

Thresholds

Thresholds

0/100 Bees = Good
1-2/100 bees = Treatment
10 +/100 = colony could potentially be
…… ..dead but not know it yet.

Alcohol testing –
Spring 2/100 & Summer 3/100

Sugar shake test –
Spring 1/100 & Summer 2/100

Whatever method of testing you decide to do….stick with this, then when any major change happens you will see it!

How many hives do you test

10-20% (Random)

or

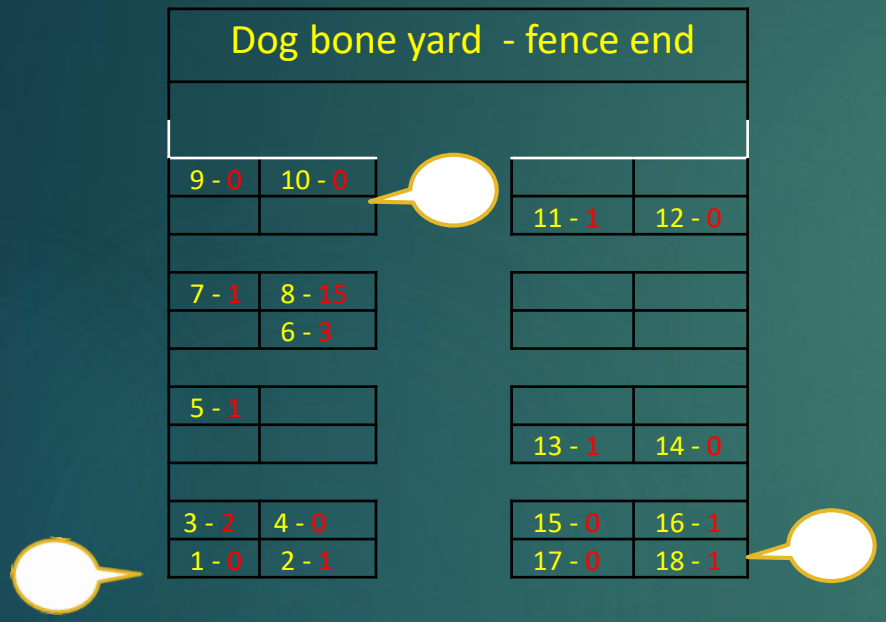
All the hives in the apiary?

How many apiaries in your business?

Our Varroa Story ……

- When varroa came to NZ……we wanted to find out when we first got varroa. Random wasn't going to work
- We found that one or two hives in the apiary will have higher mites – others none or low.
- in effect those hives "mite bomb" the others – normally as beekeepers we don't see this.
- Second mite bomb – surrounding apiaries – beekeepers see this…….
- We found that with the mite washing and stats we had kept we could plan to deal with the higher mite hives, earlier
- Would we have voluntarily mite washed?
- We were forced to do washing doing package bees for Canada. So every year we had mite wash records.

Working it out for yourself!



Date: .....Treatment.....

Our Varroa Story .....

- simple computer diagram. 4 on sheet
- We allocated numbers to all hives in the yard
- Then we picked our random 10-20% ones and circled those numbers
- Then we did the mite wash.....
- Results.....we proved we would miss the high ones.
- How many hives do you test.....up to you.....we recommend to do at least one lot of "whole of apiary testing"
- Even if you think that you have bees resistant to Varroa – check your confidence with a mite wash.
- This applies to beekeepers who want to be treatment free. Understand the responsibility you undertake when you choice to go treatment free.

Questions to think about!

Mite Bomb #1

A high varroa load in one hive?
Is varroa transferred by bees drifting to and from other hives in the apiary?

Mite Bombs # 2

Where do the mites and bees go when they are absconding from a hive or whole apiary – varroa is at peak levels?

What happens to anything left at the hive site?
Is it attractive to other bees or pests?
What about virus's and or AFB?

“We don’t seem to be able to control our Varroa”

- Horizontal (robbing/drifting) and vertical (phoretic/reproductive) transmission of mites
- bigger yards around you - Your hives are being robbed
- you have a sick hive - Your hives are being robbed
- your bees robbing other weak hives
- mite bombs - absconding untreated bees in the environment

- There can be complications with treatments – ie: temperature/placement in the hive
- We can create chemical resistance
- Sometimes we need to have conversations with people who sell treatments – they have a chemical company army behind them! - Things can go wrong

How did you get your bees/hives? - You may have received/bought resistant mites

Life cycle of *varroa* mite

(ectoparasitic brood mite)

Phoretic

Reproductive

DWV – Deformed wing virus

IPM for managing varroa

(IPM – integrated pest management)

- a combination of:
  - **Hygienic bees or different subspecies of bees ie: carniolan vs Italians**
  - **Split hives and or requeen to create brood breaks**
  - **Mite floors**
  - **Drone brood trapping**
  - **Keeping your swarms to a minimum**
  - **Good nutrition**
  - **Rotating treatments**
  - **Strips, gels and organics**

Varroa numbers double every 21 days

When should you treat?

- Performance of a colony is linked to levels of infestation
- Consider length of time for treatment (2, 6, 8 weeks)
- Spring – count back from when you honey flow will start.
- Summer – just as the flow finish's – off come your supers and get mites under control by February for healthy winter bees
- Autumn – make sure that you mite numbers are low for going into winter.
- Treatments must go in and come out/be finished as per conditions of use.
- Consider when you might have a period of dearth, and how long it may be for….can I get a treatment on?
- Think not just about varroa but about the nutrition side of things as well…do I need to feed the bees as well? After supers are removed, and before replacing new ones…migratory bees.

What do you do if the summer harvest is in full swing

- Options become limited
- You start to weigh up pros and cons
- Do I Use product or lose my colony
- Do I sacrifice the Honey crop to treat
- Some chemicals are more toxic
- Even natural products have side effects

Before we get to this 'decision making point' we need to have a plan….
a
Varroa Management plan.

Stick to label conditions;
If you want to be able to sell your honey!

Is big always best…..
How many hives should you run?

Are you running too many hives to get around all of them in time for their treatments.

Nice fine spring….zip around all of your hives twice….wet spring….warm/wet spring you can't manage the work load. Are you loosing swarms by the bucket load?

Honey crop is late, or large and you are trying to get it all off.

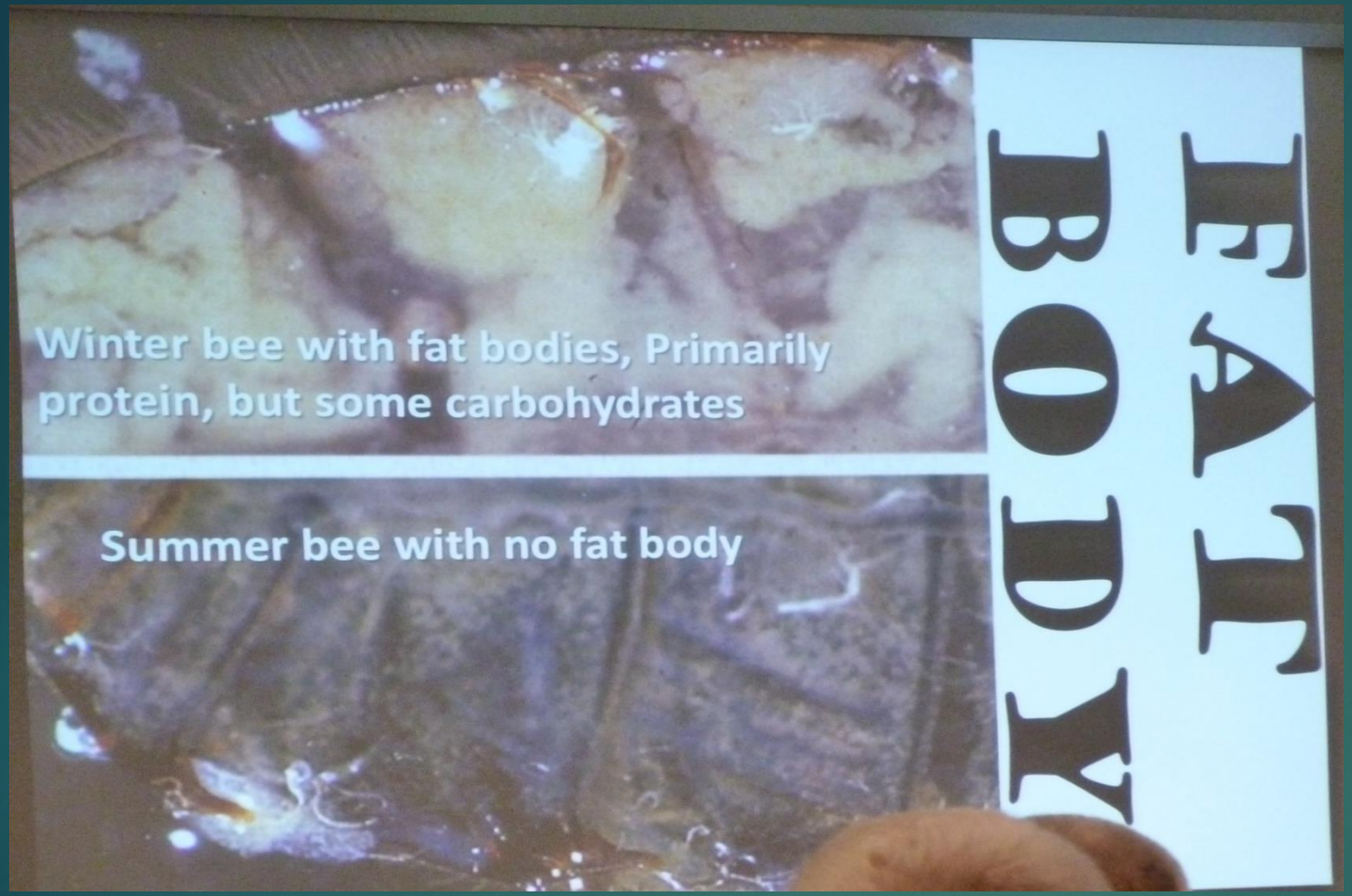
or maybe you cant get staff to help.

Too much work to keep in control of your business, and therefore your varroa gets out of control.

Recent Research

- V. Destructor affects behaviour and memory of bees
- Nutritional loss or lack of diversity affects bees
- Natural food is always superior to supplement feeding
- Unhealthy bees are more susceptible to illness
- Virus, pathogens, shorten the live of bees – just discovered another 27 virus when they sampled bees = +-40?
- Wasps really clean up the leftovers; hives aren't guarded as well
- Varroa steals the good diet of the autumn bee, your spring starters
- Varroa is the bridge between virus and the bees

it is important to note that there is worldwide research happening paid for privately and by government research programmes to try and understand impacts on the bees, whether it be by varroa, virus or environmental impacts. These projects can take 4-5 years to complete.



Dr Samuel Ramsay – Uni of Maryland aka Doctor Buggs
(varroa destructor feeds primarily on honey bee fat body tissue and not hemolymph)

When mites fed on haemolymph they produced no eggs

When mites fed on fat bodies they produced eggs

Mites damage bees by feeding on their fat bodies

We will have new treatments stemming from this research. Its just a matter of when and how to deliver the treatment

On reflection

- In spring did you open hives to find them dead ?
- What did they really die of?
- How much did varroa play a part in it?

Beekeepers who treat for mites lose fewer
colonies
than those who do not

Varroa Management Plan – summary

- Which method of surveillance – soft (icing sugar) or hard (alcohol test)?
- What levels are your mites before and after treatment?
- Are you using a good toolbox of things to reduce varroa?
- Are you able to get around all your hives in time?
- Do you have all the tools on hand to do the job?

Knock mites down in autumn for a better spring chance of survival!

And if all else fails

Varroamite

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