# Véto-pharma Committed to apiculture



#### 3 VARROA MITE MONITORING METHODS USING THE ONE TOOL – VARROA EASYCHECK!



**Alcohol wash** 



CO<sub>2</sub> injection

#### WWW.VARROA-EASYCHECK.COM



## Why monitor honey bee hives?

Monitoring: An important practice that can save your colonies





#### AVOID A CRITICAL LEVEL OF VARROA MITE INFESTATION THAT COULD LEAD TO COLONY LOSSES:

- 1. Estimate the degree of varroa infestation
- 2. Optimize the time and the strategy of treatment
- 3. Confirm that a treatment was successful



The main enemy in the fight against varroa mites is the force of habit.

#### Mite infestation in one apiary varies from one **hive** to another

Infestation variation within the same apiary at the end of the 2014 season in France (2014 was a year of high varroa infestation)<sup>1</sup>



1 - Data from the Véto-pharma apiary in 2014 in Chaillac – Total mite fall of each hive recorded during a 10-week conventional varroa mite treatment, followed by a control treatment.

2 - BALLIS A. (2015) Varroa infestation in Alsace, Speech at the ADA Franche Comté General Assembly. Alsace Regional Chamber of Agriculture.

of the hives in a single apiary can reach infestation levels far above the apiary average.<sup>2</sup>



# Mite infestation in one apiary varies from one **year** to another

Case on infestation variation in the same apiary in the Alsace Region (East of France) between 2010 and 2014<sup>1</sup>



Mite infestation in 2013 and 2014 required different management in the same apiary.

A fix treatment on the same calendar date **does not work for all beekeeping years.** 

1 - BALLIS A. (2015) Varroa infestation in Alsace, Speech at the ADA Franche Comté General Assembly. Alsace Regional Chamber of Agriculture.

The threshold of 3,200 to 4,200 varroas was described in the literature as a level of infestation triggering a financial loss for the beekeeper (lower production and increased mortality risk). DELAPLANE, K S; HOOD, W M (1999) Economic threshold for Varroa jacobsoni Oud. in the south-eastern USA. Apidology 30: 383-395.

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#### Impact of varroa mites on the colonies



1 - KOTWAL S, ABROL DP (2009). Impact of *Varroa destructor* infestation on the body weight of developing honeybee brood and emerging adults. *Pak. Entomol.*, 31, 67-70

2 - WEINBERG KP, MADEL G (1985). The influence of the mite *Varroa jacobsoni* OUD on the protein concentration and the haemolymph volume of the brood of worker bees and drones of the honey bee *Apis mellifera* L.. *Apidologie*, 16, 421-436.

3 - SCHNEIDER P, DRESCHER W (1987). Einfluss der Parasitierung durch die Milbe Varroa jacobsoni Oud. auf das Schlupfgewicht, die Gewichtsentwicklung, die Entwicklung der Hypopharynxdrüsen und die Lebensdauer von Apis mellifera L.. Apidologie, 18, 101-110.

4 - SCHNEIDER, P; DRESCHER, W; RATH, W (1988) Die Folgen eines unterschiedlich hohen Varroa-Befalls während der Puppenentwicklung auf die erwachsene Biene, Teil 2: Einfluss auf Gewicht, Verweildauer im Volk, Ausflugaktivität und Spermienzahl der Drohnen. Allgemeine Deutsche Imkerzeitung 22: 54-56.

5 - [Baker, A. C., and D. C. Schroeder. 2008. «Occurrence and genetic analysis of Picorna-like viruses infecting worker bees of Apis mellifera L. populations in Devon, south west England.» J. Invertebr. Pathol. 98:239-242.]

6 - Dr. Pia Aumeier & Dr. Gerhard Liebig (2015). «Kopf hoch». Article in «Deutsches Bienen Journal



#### Mite infestation does not only affect bee health



A NIAR\* study indicates that only a 3% infestation of phoretic varroa mites can cause an average production loss of 5 kilos (11lbs) in a summer lavender honey flow or as much as 13 kilos (28lbs)per year.<sup>1</sup>

\*National Institute of Agronomic Research

1 - Maisonnasse, et al, 2014.



### Mite monitoring...

- Limits damage to colonies
- Improves winter survival
- May reduce honey production losses

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### How to monitor hives?

Monitoring: An important practice that can save your colonies



## When to monitor?

Modeling of the development of the varroa population In a colony without treatment and a single brood-free period during wintertime.



Honey Bee Health Coalition, Varroa guide 6th edition (April 2017):

« Generally, a beekeeper should perform Varroa monitoring assessments at least four times during the year »



## When to monitor?

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Time of monitoring	e of monitoring Objective	
Early spring	Early detection makes it possible to <b>plan effectively and</b> <b>assess the need for an early springtime treatment</b> without honey supers.	B
During a honey flow*	<b>Detect a massive varroa build-up</b> and plan possible intermittent treatment between honey flows.	
Late July – August	<b>Choose the best-suited late-season treatment</b> depending on the level of infestation. <i>This check is really important, as it will help you to compare the</i> <i>infestation rate before/after treatment, and thus the efficacy or</i> <i>your mite treatment.</i>	
September – October - December	Ensure effectiveness of autumn treatment and assess the need for additional treatment in winter (when brood is absent) or early next spring.	
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\*Particularly in areas where there are large number of hives belonging to different beekeepers.

## How many colonies should we sample?

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Size of apiary	Number of colonies to test*		
≤ 10 hives	All colonies	*It is recommended to	
≤ 20 hives	6 to 10 colonies	sample colonies from the center and the edges of the apiary.	
> 20 hives	25% minimum (at least 8 colonies)		
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#### How to calculate the mite infestation (%)?





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## Monitoring results and treatment decisions

	Infestation level		
Time of the year	Alcohol wash Powdered sugar CO2 gasing Average sample: 300 worker bees	Natural mite falls on sticky board Number of mites per day	
Early spring	≥ 1%	0,5 mites	
Between two honey flows	> 2 %	5 mites	
End of season: July – August (before treatment)	> 3 %	10 mites	
Winter (after the end-of-season treatment)	≥ 2 %	1 mite	

Note on interpretations of infestation levels: The thresholds may vary with geographic area due to variations in bee and varroa populations. Local experts, like bee inspectors or extension specialists, should be consulted. In some situations, even if infestation levels fall below these thresholds, it is better to treat immediately rather than wait. If treatment is required, it is best to treat the entire apiary to minimize reinfestation and robbing.

Treatment

required!





## Varroa EasyCheck

Monitoring: An important practice that can save your colonies



#### Innovative design



Designed for quick, easy and reliable sampling of varroa infestations





- Designed by Véto-pharma in 2016 for alcohol wash monitoring. The goal of the VEC was to provide a ready-to-use tool for a quicker, easier and more accurate mite monitoring.
- Increasing demand from beekeepers to use the VEC with sugar.
- **Successful trials to test the VEC with two additional methods (sugar and CO<sub>2</sub>).**

Varroa EasyCheck is now ready-to-use with 3 methods, suitable and adaptable to the choices and practices of the beekeepers.



Alcohol wash

Sugar roll

CO<sub>2</sub> injection

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Alcohol wash consists of immersing a sample of bees into alcohol and then gently shaking the EasyCheck to detach the phoretic mites so they can be counted.

✓ Fast, easy and inexpensive.
The liquid can be re-used for up to 10 counts.

 The most consistent in terms of delivering accurate results. Recognized as the most accurate, reliable, and economical option for beekeepers.<sup>1-2</sup>

1 - Honey Bee Health Coalition - Tools for Varroa Management 7th edition, Page 7

2 - Efficiency of Varroa monitoring methods, the benefits of standardized monitoring devices. Ludovic de Feraudy, Dr. Ulrike Marsky& Ph.D. Jiri Danihlik. - Apimondia 2019 proceeding.



# Collecting a sample of bees: impact on the colony?

- The bee colony is made up of tens of thousands of individuals forming a "super-organism".
- The sample taken generally represents less than 1% of the overall hive population, and the bees are quickly replaced (the queen can lay more than 2,000 eggs a day at the peak of laying).
- The sacrifice of 200 to 300 bees serves to improve the colony's health management and more generally the health of the entire apiary.
- The practice of alcohol wash gives an accurate diagnosis to adopt the appropriate treatment strategy, and therefore serves to avoid potential colony mortalities.





With this method, the bees are rolled with powdered / icing sugar, causing the mites to separate from the bees.

The EasyCheck is then gently shaken, causing the sugar and the mites to pass through the white basket's holes.

✓ Inexpensive.

✓ Keeps the sample of bees alive.



The monitoring result may vary depending on the experience of use and air humidity (agglomeration of sugar).





In the CO<sub>2</sub> method, bees and mites are anesthetized by exposure to carbon dioxide gas.

The sample of anesthetized bees is then gently shaken in the EasyCheck, causing the mites to fall from the bees.

✓ Fast.

 $\checkmark$  Keeps the sample of bees alive.

 Research conducted in Europe indicates results similar in accuracy to alcohol wash.<sup>1</sup>



Requires the purchase of the Varroa EasyCheck Injector + CO<sub>2</sub> cartridges refills.

1 - Efficiency of Varroa monitoring methods, the benefits of standardized monitoring devices. Ludovic de Feraudy, Dr. Ulrike Marsky& Ph.D. Jiri Danihlik. - Apimondia 2019 proceeding.



CO<sub>2</sub> injector

#### The Varroa EasyCheck CO<sub>2</sub> injector is now available from Véto-pharma!

- Packaged in a box with one 16g threaded CO<sub>2</sub> cartdrige, so you can perform your first mite count as soon as you get it.
- The refills can be easily bought from various suppliers.
- One cartridge can make between 3 and 5 counts.

16g CO<sub>2</sub> Cartridge/Cartucho CO<sub>2</sub> 16g/Cartouches CO<sub>2</sub> 16g CO<sub>2</sub> small cylinder(16g/bottle)



#### Video tutorial for each method





Alcohol wash

Sugar roll



CO<sub>2</sub> injection



#### CHECK OUT OUR VIDEO TUTORIALS ON WWW.VARROA-EASYCHECK.COM



Roll the Varroa EasyCheck gently for 1 minute until the bees are evenly coated with the powdered sugar.

Roll the Varroa EasyCheck gently for 1 minute until the bees are evenly coated with the powdered sugar.









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Merci ! Thank you! Danke! ¡Gracias!

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