



beehealth

APIGUARD® and Oxalic Acid three-year monitoring trial (2021 – 2023, North East Italy)

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Introduction:

Since 2003, beekeeping groups in the region of Friuli Venezia Giulia, in North Eastern Italy, have worked on plans to control Varroa, taking into account the alternating use of synthetic active ingredients.

In the last few years, organic treatments used according to an organic Integrated Pest Management (IPM) protocol, started to be introduced. For the success of this strategy, a slow release product should be used as main tool, but potentially supported by a different organic active ingredient with a flash action.

In order to extend to all the beekeepers this new tool to fight varroa mite, a large study with more than 413 hives and based on APIGUARD® was performed for 3 years in a row. APIGUARD® is a sophisticated, patented slow release gel that ensures correct dosage of its active ingredient, thymol.

Materials and methods:

The objective of this monitoring was to verify at different times of the year the strength and vitality of bee colonies subjected to a well-defined plan of varroa control with organic treatments in North East Italy.

In 2021, 413 hives were monitored, of which 36 were managed according to an organic Integrated Pest Management (IPM) protocol, where APIGUARD® (thymol) and oxalic acid were used in different combinations and times of the year.

- GROUP A**
- 1 tray of APIGUARD® (2/03/2021)
 - No treatment with Oxalic acid at the end of May
 - Full dose of APIGUARD® (summer treatment 5/08/2021)
 - 1 tray of APIGUARD® (22/09/2021)
 - Oxalic acid in December

- GROUP B**
- 1 tray of APIGUARD® (2/03/2021)
 - Treatment with Oxalic acid at the end of May (23/05/2021)
 - Full dose of APIGUARD® (summer treatment 5/08/2021)
 - 1 tray of APIGUARD® (22/09/2021)
 - Oxalic acid in December

- GROUP C**
- No treatment of APIGUARD® (2/03/2021)
 - Treatment with Oxalic acid at the end of May (23/05/2021)
 - Full dose of APIGUARD® (summer treatment 5/08/2021)
 - 1 tray of APIGUARD® (22/09/2021)
 - Oxalic acid in December

In the following two years, we increased the number of hives monitored, reaching 424 in 2022 and 479 in 2023, and the protocol was adjusted in group B.

- GROUP B**
- 1 tray of APIGUARD® (2/03/2021)
 - Treatment with Oxalic acid at the end of May (23/05/2021)
 - Full dose of APIGUARD® (summer treatment 5/08/2021). **5 days earlier, a treatment with Oxalic acid was performed.**
 - 1 tray of (22/09/2021)
 - **5 days earlier, a treatment with Oxalic acid was performed.**
 - Oxalic acid in December

Results:

- In 2021, the group where both active ingredients were used during the year had no colony losses, and saw a smaller reduction of strength at the end of autumn compared with the control groups.
- In 2022 and 2023, colonies receiving the full IPM treatment were stronger in spring than the other 2 groups where only 1 of the treatments was used.

Conclusion:

After 3 years of using APIGUARD® + oxalic acid in an IPM protocol, **none of the colonies were lost**. The Varroa population was controlled over the 3 years. The colony strength was higher than the other groups.



The spring treatment and post acacia harvest are decisive to keep the varroa load low, and reduce the reinfestation in September.

An IPM programme based on an organic product like APIGUARD® in combination with Oxalic acid, can be used safely and effectively for organic and conventional beekeepers.

Outline for Varroa control plan

MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOV/DEC
1 Apiguard tray per hive	Production of Nucs	Oxalic acid		Oxalic acid		Oxalic acid		Oxalic acid
Removal of an average of 3 frames per hive				Full Apiguard dose per hive	1 Apiguard tray per hive	Half dose of Apiguard for nucs		
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The objective of this monitoring was to verify at different times of the year the strength and vitality of bee families subjected to a well-defined plan of varroa control with Organic treatments in Nord East Italy. In 2021, 413 hives were monitored, of which 36 were tested according to organic IMP protocol, where Apiguard® (thymol) and oxalic acid were used in different combinations and times of the year. In the following two years, we increasing the number of hives monitored, reaching 424 in 2022 and 479 in 2023 and the protocol was adjusted. In 2021, group where both active ingredients were used during the year, there was not lost hives, moreover the reduction of strength at the end of autumn was more contained.

In 2022 and 2023, regarding strength in spring, again there was a difference between full treatment and other 2 groups where at some point of the year only 1 of the treatment was used. The conclusion after 3 years of using Apiguard® + oxalic acid in a IPM protocol, none of the colonies were lost. Varroa population was controlled over the years. The colony strength is higher than the other groups. The spring treatment and post acacia harvest are decisive to keep the varroa load low, and reduce the reinfestation in September. An IPM based on organic product like Apiguard® in combination with Oxalic acid, can be used safely and effective for organic and conventional beekeepers.