

# Primefact

## Varroa Mite Integrated Pest Management

September 2026, Primefact 13184, 3<sup>rd</sup> edition

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### Disclaimer – Varroa chemical control products

- Varroa chemical control products mentioned in this fact sheet are not formally endorsed until they are registered for legal import, supply and use in Australia.
- All chemical control products for Varroa management can have negative effects on honey bee health. Additionally, some chemical control products can have significant, negative human health impacts if they're not used according to the product label.
- To ensure beekeeper and bee safety, always use chemical control treatments according to the product label.

### Chemical control treatments for Varroa mite in Australia

Table 1. Varroa control treatment active ingredients and registered trade names permitted or registered for use in Australia as of publication date

| Active ingredient     | Registered trade name |
|-----------------------|-----------------------|
| Amitraz               | Apivar                |
| Amitraz               | Apitraz               |
| Fluvalinate           | Apistan               |
| Flumethrin            | Bayvarol              |
| Formic acid           | Formic Pro            |
| Oxalic acid dihydrate | Api-Bioxal            |
| Oxalic acid dihydrate | Aluen CAP             |
| Thymol essential oil  | Apiguard              |

## Introduction

*Varroa destructor* (Varroa) mite is a parasite that feeds on honey bees and reproduces in honey bee brood cells. Varroa was first detected on mainland Australia in NSW in June 2022. Where Varroa is established, its numbers must be regularly monitored and reduced to prevent colony death.

Failure to manage Varroa numbers below a damaging threshold will make the colony more susceptible to pesticides, viruses, and other stressors and reduce population and production. Without timely and appropriate Varroa control, infested colonies will weaken and eventually die. This can happen quite suddenly.

Where Varroa is newly established, large numbers of feral colonies and neglected colonies are a major source of mite invasion (also known as reinfestation) into actively managed colonies. This invasion results in rapid increases in mite numbers in managed colonies, making monthly monitoring of mite levels across all apiaries critical.

As Varroa is still establishing, we don't have good information about the population development of Varroa in Australian honey bees and conditions. With time we will understand Varroa population development in Australian honey bee colonies given our unique climates, length of brood rearing and honey production season.

Until then, we are guided by New Zealand and North American resources on Varroa monitoring, decision-making and control, as they are most applicable to the conditions and management styles of beekeeping in Australia.

Although the mites detected in 2022 were confirmed to be susceptible to synthetic miticides, a different population of mites was detected in 2026 which were confirmed resistant to pyrethroid (tau-fluvalinate and flumethrin) and amitraz-based miticides. This means that synthetic miticides will be less effective where the resistant mite is present. It is ever more important to learn a variety of Varroa control strategies. Varroa populations can be reduced through knowing your Varroa levels and applying preventative, cultural, mechanical and chemical control tools as much as necessary. These monitoring, decision-making, and control methods are all part of the beekeeper integrated pest management (IPM) toolkit, which will be described in this factsheet.

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## Integrated Pest Management (IPM) and Varroa control

Integrated pest management (IPM) uses a variety of techniques to keep Varroa numbers below a level where they cause economic damage to the colony and beekeeper. IPM involves:

1. **Understanding** the Varroa life cycle
2. **Rigorously monitoring Varroa levels** every 3-6 weeks depending on conditions. Remember, it is better to sacrifice 300 bees regularly than to lose the whole colony; therefore, more frequent monitoring is recommended. Monitoring should be conducted both before and after treatment to determine if further action is necessary. Where miticide resistance has not been

confirmed, and synthetic treatments are being used, it is recommended to conduct monitoring mid-treatment to check efficacy

3. **Applying integrated pest management controls** appropriate to your beekeeping operation, environment and colonies' developmental phase if Varroa levels are too high
4. **Repeat monitoring and management** as much as necessary, rotating different types of chemical controls to prevent Varroa from developing chemical resistance

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## 1. Understanding the Varroa life cycle

Varroa's life cycle and development follow the seasonal development and breeding of its honey bee host. Where there is a brood break, honey bees and Varroa typically cycle through four phases over time. The length of each phase can vary widely between climate types.

For example, timing and type of control measures required in cold temperate versus tropical beekeeping conditions may be different. In some locations, there is one cycle of the four phases per season, while in other locations, more than one cycle may occur, or a cycle may be skipped altogether.

Four life cycle phases of honey bees and Varroa (Figure 1):

- **Dormant** (occurs only if there is a broodless period)
- **Population Increase**
- **Population Peak**
- **Population Decrease**

Varroa populations increase and decrease with the seasonal changes in colony population. Mite populations reach their highest levels soon after the brood and adult honey bee populations reach their peak. When the bee population and the amount of bee brood decline, mite numbers drastically increase on adult bees. Where Varroa has been established in a state or country for several years, Varroa numbers may eventually decrease. The size of the mite population at the start of the bee 'Population Decrease' phase is critical because the colony needs to be healthy enough to survive the 'Dormant' phase. During broodless periods, all mites are carried on adult bees. However, many locations in Australia will not have the 'Dormant' phase. When the 'Dormant' phase is skipped or absent and there is reduced, continual brood rearing, mite reproduction will be uninterrupted. This is likely the case in most mainland Australian conditions.

Understanding the seasonal changes your colonies go through, particularly around brood production, will inform the best management control tools for your situation.

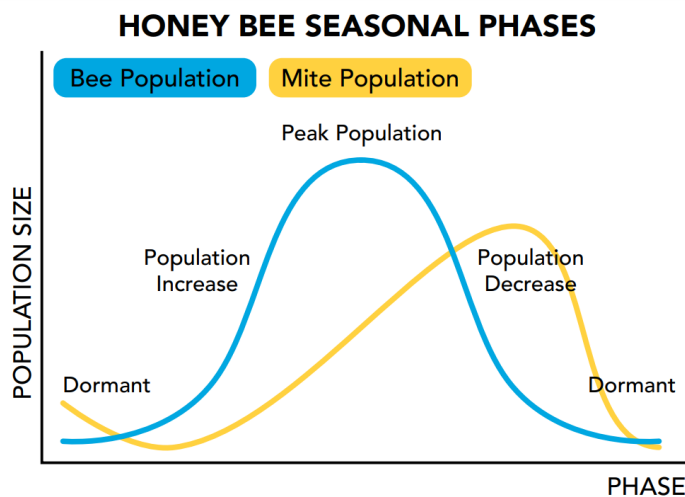


Figure 1. Seasonal phase of honey bee and Varroa population. Credit: Honey Bee Health Coalition 2022.

## 2. Rigorously monitoring Varroa levels and evaluating results

Routinely monitoring Varroa levels in a portion of your colonies in each apiary is critical to making good Varroa management decisions.

In NSW, monitoring mite loads is recommended once a month, except during winter in very cold climates that cause a broodless period. Monitoring should be done by alcohol wash, soapy water wash, or sugar shake of 300 bees (~1/2 cup measure) per colony. You can learn more about these methods at <https://www.dpi.nsw.gov.au/animals-and-livestock/bees/varroa-mite/monitor-for-varroa-mite>.

Monitor post-treatment to check if the miticide reduced mite populations below threshold. If you use pyrethroid or amitraz products, it is best practice to monitor mite loads 2-4 weeks into treatment to ensure they are working.

### How many colonies should I monitor?

- **Small apiary**
  - Fewer than 10 colonies at an apiary = all colonies should be monitored for Varroa
- **Medium to large apiary, multiple apiaries**
  - Greater than 10 colonies per apiary = Sample 10 or more colonies in each apiary

Where beekeepers are only monitoring a portion of their hives, it is recommended to sample colonies both from the centre and outer edges of the apiary because hive position can influence mite levels. Varroa infestations will vary between colonies, even in the same apiary, so the more colonies that can be monitored, the greater accuracy you'll have evaluating your mite levels. In the early years of Varroa establishment, where populations have not stabilised and reinfestation is common, sampling more than 10 colonies per apiary and rotating which colonies are monitored is highly recommended.

## Evaluating mite numbers

The number of Varroa you find will depend on your location, how long Varroa has been established in the surrounding environment, the time of year, your previous Varroa IPM, and other situation specific considerations.

When your colony needs chemical treatment depends on the brood rearing phase your colony is in and the number of Varroa you find in the results of your monitoring (i.e. alcohol wash, soapy water wash, sugar shake).

To simply evaluate Varroa infestation levels in the field, you can count the number of mites detected per 300 worker bee sample and reference the following table for control guidelines.

Table 2. Varroa control thresholds

NOTE: These thresholds are based on information from overseas, typically from countries with a brood break over winter. Our understanding of the mite load at which economic and health impacts will occur in Australia is still developing as Varroa spreads and beekeepers learn to manage it.

| Season                                               | Mites / 300 or ½ cup of bees | Treatment decision |
|------------------------------------------------------|------------------------------|--------------------|
| Autumn / Winter / Spring                             | 1-4                          | Plan               |
| Autumn / Winter / Spring<br>(1 March to 30 November) | 5+                           | Control            |
| Summer                                               | 1-8                          | Plan               |
| Summer                                               | 9+                           | Control            |

## 3. Applying integrated pest management (IPM) controls

IPM involves many different control methods for a beekeeper to use throughout the season. IPM encourages the use of non-chemical controls first, known as cultural and mechanical controls, to minimise chemical use and residue risk, and the risk of Varroa developing chemical resistance.

Cultural and mechanical controls are used to prevent or delay Varroa levels reaching the treatment threshold, where chemical control is required to ensure colony survival. The IPM cultural, mechanical and chemical controls described (Table 3) will vary in effectiveness in Australia depending on local climates and seasonal specifics. Seasonal control recommendations for Australian conditions are outlined below (Table 4).

Table 3. Effectiveness of common Varroa controls (adapted from Jack and Ellis 2021 by Nadine Chapman, E. Noordyke, E. Frost).

| Level                      | Type                                  | Treatment (trade name) or trait                                 | Effectiveness |
|----------------------------|---------------------------------------|-----------------------------------------------------------------|---------------|
| <b>Cultural Controls</b>   | Breeding for Varroa-resistance traits | Low mite population growth                                      | High          |
|                            |                                       | Grooming/mite-biting behaviour                                  | Moderate      |
|                            |                                       | Mite non reproduction (which includes Varroa sensitive hygiene) | Moderate      |
|                            |                                       | Hygienic behaviour                                              | Low           |
|                            | Brood Interruption                    | Queen caging or splitting hives and requeening with cells       | Moderate      |
| <b>Mechanical Controls</b> | Hive Equipment                        | Screened bottom boards                                          | Low           |
|                            | Drone Removal                         | Drone brood trapping, culling                                   | High          |
|                            | Hyperthermia <sup>1</sup>             | Elevated temperature on brood only                              | High          |
| <b>Chemical Controls</b>   | Non-synthetic                         | Formic acid (Formic Pro)                                        | High          |
|                            |                                       | Thymol essential oil (Apiguard)                                 | Moderate      |
|                            |                                       | Oxalic acid (Api-bioxal <sup>2</sup> , Aluen CAP)               | High          |
|                            | Synthetic                             | Amitraz <sup>3</sup> (Apivar, Apitraz)                          | High          |
|                            |                                       | Fluvalinate <sup>3</sup> (Apistan)                              | High          |
|                            |                                       | Flumethrin <sup>3</sup> (Bayvarol)                              | High          |

<sup>1</sup>More research needed on hyperthermia. <sup>2</sup>Less effective when brood is present. <sup>3</sup>Less effective where Varroa populations have developed resistance.

## DORMANT PHASE (broodless period, harsh winter or summer conditions)

Broodless in cold temperate winters or extreme weather events (i.e. drought/monsoon); reduced brood in mild temperate or subtropical winters. Most Varroa on adult workers.

Table 4. Varroa control options by seasonal phase (adapted from Honey Bee Health Coalition 2022 by E. Frost and E. Noordyke)

| Control effectiveness                                                                                                                                                                                                                                                                           | Reason                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Highly effective controls:</p> <ul style="list-style-type: none"> <li>• Apistan</li> <li>• Apitraz</li> <li>• Apivar</li> <li>• Bayvarol</li> <li>• Apiguard</li> <li>• Formic Pro</li> <li>• Api-Bioxal</li> <li>• Aluen CAP</li> </ul>                                                     | <ul style="list-style-type: none"> <li>• Varroa mortality is high over long broodless periods in conjunction with a chemical treatment.</li> <li>• Apiguard, Formic Pro effective only if temperature right to release sufficient dose to kill Varroa.</li> <li>• Bayvarol, Apistan, Apivar, Apitraz less effective where Varroa populations have miticide resistance.</li> <li>• Aluen CAP is a slow-release, long duration treatment.</li> </ul> |
| <p>Least effective options:</p> <ul style="list-style-type: none"> <li>• Any management practice risking hive/queen survival in this phase (e.g. queen caging in weak colonies, major hive disturbance to apply treatment)</li> <li>• Screened bottom boards</li> <li>• Hyperthermia</li> </ul> | <ul style="list-style-type: none"> <li>• Screened bottom boards only remove a small percentage of Varroa that falls off adult bees. Use them in combination with other techniques. In cold climates beekeepers may prefer to close screened bottom boards, making them ineffective.</li> <li>• Hyperthermia is performed on capped brood.</li> </ul>                                                                                               |

## POPULATION INCREASE PHASE (spring or after any broodless period)

Hive build-up; brood and adult worker population increasing rapidly; Varroa population increasing; biosecurity checks, and pre-honey flow supering of hives may occur.

Table 4 cont. Varroa control options by seasonal phase (adapted from Honey Bee Health Coalition 2022 by E. Frost and E. Noordyke)

| Control effectiveness                                                                                                                                                                                                                                                        | Reason                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Highly effective controls:</p> <ul style="list-style-type: none"> <li>• Apistan</li> <li>• Apitraz</li> <li>• Apivar</li> <li>• Bayvarol</li> <li>• Apiguard</li> <li>• Formic Pro</li> <li>• Aluen CAP</li> <li>• Drone brood removal</li> <li>• Hyperthermia</li> </ul> | <ul style="list-style-type: none"> <li>• Apivar must be removed two weeks prior to adding honey supers, but no sooner than 6 weeks minimum treatment period.</li> <li>• Bayvarol can be used with honey supers in emergency situations.</li> <li>• Bayvarol, Apistan, Apivar, Apitraz less effective where Varroa populations have miticide resistance.</li> <li>• Apiguard, Formic Pro effective only if temperature right to release sufficient dose to kill Varroa.</li> <li>• Apiguard should be removed prior to adding honey supers.</li> <li>• Formic Pro and Aluen CAP can be used with honey supers.</li> <li>• Aluen CAP is a slow-release, long duration treatment.</li> <li>• Drone brood removal may be used continually on strong, populous hives as seasonal conditions allow.</li> <li>• More research is needed on hyperthermia.</li> </ul> |
| <p>Moderately effective options:</p> <ul style="list-style-type: none"> <li>• Making divides/splits</li> <li>• Requeening with cells</li> <li>• Allowing colonies to self-raise queens</li> <li>• Requeening using Varroa-resistant stock</li> </ul>                         | <ul style="list-style-type: none"> <li>• Dividing hives, requeening with cells, or allowing colonies to self-raise queens can temporarily reduce brood production which curbs Varroa reproduction.</li> <li>• Varroa-resistant/tolerant stock has not removed the need for treatment overseas.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <p>Least effective options:</p> <ul style="list-style-type: none"> <li>• Screened bottom boards</li> </ul>                                                                                                                                                                   | <ul style="list-style-type: none"> <li>• Screened bottom boards only remove a small percentage of Varroa that falls off</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

| Control effectiveness                                          | Reason                                                                                                                                                                                                                                          |
|----------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• Api-Bioxal</li> </ul> | <p>adult bees. Use them in combination with other techniques.</p> <ul style="list-style-type: none"> <li>• Api-Bioxal has low effectiveness when brood is present. Highly effective if the beekeeper creates a complete brood break.</li> </ul> |

## PEAK POPULATION PHASE (typically summer)

Peak brood and adult bee population reached; Varroa populations still increasing, nearing peak; honey production common before, after, and at peak population.

Table 4 cont. Varroa control options by seasonal phase (adapted from Honey Bee Health Coalition 2022 by E. Frost and E. Noordyke)

| Control effectiveness                                                                                                                                                                                                                                                                     | Reason                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Highly effective controls:</p> <ul style="list-style-type: none"> <li>• Bayvarol</li> <li>• Formic Pro</li> <li>• Aluen CAP</li> <li>• If no honey supers on hives Apiguard, Apistan, Apivar, or Apitraz can be used</li> <li>• Drone brood removal</li> <li>• Hyperthermia</li> </ul> | <ul style="list-style-type: none"> <li>• Bayvarol can be used with honey supers in emergency situations.</li> <li>• Bayvarol, Apistan, Apivar, Apitraz less effective where Varroa populations have miticide resistance.</li> <li>• Apiguard, Formic Pro not suitable for use in all temperatures. Read the detailed product labels for temperature ranges for the use of these products.</li> <li>• Apiguard should be removed prior to adding honey supers.</li> <li>• Formic Pro and Aluen CAP can be used with honey supers.</li> <li>• Aluen CAP is a slow-release, long duration treatment.</li> <li>• Drone brood removal is restricted by availability of sufficient drone brood production and difficulty of accessing brood box beneath honey supers.</li> <li>• More research is needed on hyperthermia.</li> </ul> |

| Control effectiveness                                                                                                                                                                                                                        | Reason                                                                                                                                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Moderately effective options: <ul style="list-style-type: none"> <li>• Making divides/splits</li> <li>• Requeening with cells</li> <li>• Allowing colonies to self-raise queens</li> <li>• Requeening with Varroa-resistant stock</li> </ul> | <ul style="list-style-type: none"> <li>• Varroa-resistant/tolerant stock has not removed the need for treatment overseas.</li> <li>• Requeening, dividing/splitting hives will negatively affect honey production. Dividing hives, requeening with cells, or allowing colonies to self-raise queens can temporarily reduce brood production which curbs Varroa reproduction.</li> </ul> |
| Least effective options: <ul style="list-style-type: none"> <li>• Screened bottom boards</li> <li>• Api-Bioxal</li> </ul>                                                                                                                    | <ul style="list-style-type: none"> <li>• Screened bottom boards only remove a small percentage of Varroa that falls off adult bees. Use them in combination with other techniques.</li> <li>• Api-Bioxal has low effectiveness when brood is present. Highly effective if the beekeeper creates a complete brood break.</li> </ul>                                                      |

## POPULATION DECREASE PHASE (late summer/autumn/early winter)

Adult bee and brood population decreasing; hives rearing 'winter' bees. Varroa population peaks and starts to decline (unless Varroa reinfestation occurs). Majority of Varroa transitions onto adult bees as bee brood quantity decreases.

Table 4 cont. Varroa control options by seasonal phase (adapted from Honey Bee Health Coalition 2022 by E. Frost and E. Noordyke)

| Control effectiveness                                                                                                                                                                                                                  | Reason                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Highly effective controls: <ul style="list-style-type: none"> <li>• Apistan</li> <li>• Apitraz</li> <li>• Apivar</li> <li>• Apiguard</li> <li>• Bayvarol</li> <li>• Formic Pro</li> <li>• Aluen CAP</li> <li>• Hyperthermia</li> </ul> | <ul style="list-style-type: none"> <li>• Bayvarol, Apistan, Apivar, Apitraz less effective where Varroa populations have miticide resistance.</li> <li>• Bayvarol can be used with honey supers in emergency situations.</li> <li>• Apiguard, Formic Pro not suitable for use in all temperatures. Read the detailed product labels for temperature ranges for the use of these products.</li> <li>• Apiguard should be removed prior to adding honey supers.</li> </ul> |

| Control effectiveness                                                                                                                                                                                                                | Reason                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                                                                                                      | <ul style="list-style-type: none"> <li>Formic Pro and Aluen CAP can be used with honey supers.</li> <li>Aluen CAP is a slow-release, long duration treatment.</li> <li>More research is needed on hyperthermia.</li> </ul>                                                                                                                                                                                                                                               |
| Moderately effective options: <ul style="list-style-type: none"> <li>Making divides/splits</li> <li>Requeening with cells</li> <li>Allowing colonies to self-raise queens</li> <li>Requeening with Varroa-resistant stock</li> </ul> | <ul style="list-style-type: none"> <li>Varroa-resistant/tolerant stock has not removed the need for treatment overseas.</li> <li>Requeening, dividing/splitting hives will negatively affect honey production. Dividing hives, requeening with cells, or allowing colonies to self-raise queens can temporarily reduce brood production which curbs Varroa reproduction.</li> </ul>                                                                                      |
| Least effective options: <ul style="list-style-type: none"> <li>Screened bottom boards</li> <li>Drone brood removal</li> <li>Api-Bioxal</li> </ul>                                                                                   | <ul style="list-style-type: none"> <li>Screened bottom boards only remove a small percentage of Varroa that falls off adult bees. Use them in combination with other techniques.</li> <li>Drone brood removal may not be possible during population decrease phase when drone production is typically low or non-existent.</li> <li>Api-Bioxal has low effectiveness when brood is present. Highly effective if the beekeeper creates a complete brood break.</li> </ul> |

#### 4. Holistic approach to Varroa management

Varroa progress rapidly through their life cycle. Timely monitoring and management is essential. Implement cultural and mechanical controls where practical to reduce reliance on chemical treatments. Manage other pests and diseases and ensure good nutrition to keep colonies more resilient to Varroa. Avoid treatments that lack sufficient evidence to support their efficacy or safety to bees (i.e. unregistered or homemade treatments).

When your apiary reaches your treatment threshold, choose a miticide considering colony phase, seasonal conditions, honey super presence, and presence of miticide resistant mites. If you have resistant mites and synthetic treatments (Bayvarol, Apistan, Apivar, Apitraz) are no longer effective, use a rotation of non-synthetic treatments instead. If you don't yet have resistant mites, rotation of chemical controls with different modes of action is still critical to ensure Varroa doesn't develop resistance. When Varroa is repeatedly challenged with the same active ingredient, it's likely to develop resistance. Removing treatments early, leaving treatments late,

increasing/decreasing dosage, or using more frequent applications may result in quicker development of miticide resistance. This reduces the number of options for effective mite control. Use a holistic, IPM approach to Varroa management to increase your chances of success.

For more help in selecting Varroa control methods for your situation, visit the Tocal College [Varroa Management Tool](https://tocalcollegecourses.z26.web.core.windows.net/courses/Varroa%20Management%20Tool/story.html)

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## Acknowledgments

This fact sheet has undergone critical internal and external peer review, including by Dr. Nadine Chapman, Dr. Ben Oldroyd and Dr. Doug Somerville and during the National Varroa Mite Management Program.

## References

Jack, C.J., Ellis, J.D., Integrated Pest Management Control of *Varroa destructor* (Acari: Varroidae), the Most Damaging Pest of (*Apis mellifera* L. (Hymenoptera: Apidae)) Colonies, *Journal of Insect Science*, Volume 21, Issue 5, September 2021, 6, [doi.org/10.1093/jisesa/ieab058](https://doi.org/10.1093/jisesa/ieab058)

Goodwin, M., Taylor, M. (2007). *Control of Varroa: A Guide for New Zealand Beekeepers*. New Zealand Ministry of Agriculture and Forestry.

The Keystone Policy Center on behalf of The Honey Bee Health Coalition (2022). Tools for Varroa management: A guide to effective Varroa sampling and control. [honeybeehealthcoalition.org/wp-content/uploads/2022/08/HBHC-Guide\\_Varroa-Mgmt\\_8thEd-082422.pdf](https://honeybeehealthcoalition.org/wp-content/uploads/2022/08/HBHC-Guide_Varroa-Mgmt_8thEd-082422.pdf)

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ISSN: 1832-6668

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