Biosecurity New Zealand
Tiakitanga Pūtaiao Aotearoa

The New Zealand Honey Bee Longitudinal Study

Series title: Apicultural practice and disease prevalence in Apis mellifera, New Zealand: a longitudinal study

Scientific paper available at: https://doi.org/10.1080/00218839.2021.1936422

We followed **60** beekeepers nationwide. They managed over **100,000** hives among them, or **13%** of New Zealand's beehives.

We inspected **2,356** hives from **297** apiary visits to check for signs of pests and diseases, as well as collecting information about the hives. We also collected samples from the hives to test for pests and diseases.

This work was done between **2016** and **2019**, every spring and autumn.

Tracheal and Tropilaelaps mites have never been detected in New Zealand.

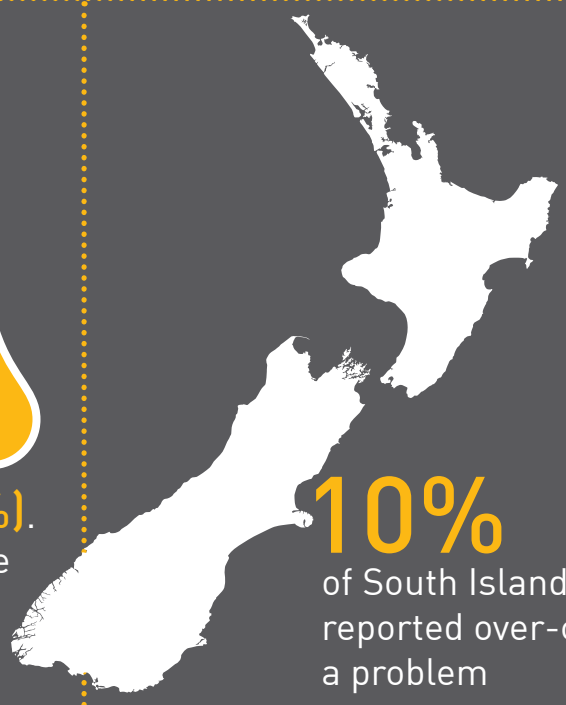
European foulbrood has never been detected in New Zealand and was not detected in any of the study apiaries.

Israeli acute paralysis virus (IAPV) has never been detected in New Zealand and was not found during the study.

The average beekeeper in the study had **22 years** of beekeeping experience and managed on average **940** hives.

70% of these beekeepers employed staff to assist their business in some way.

80% of beekeepers gave supplements to their hives, most common was sugar syrup **(77%)** and pollen substitute **(39%)**. North Island beekeepers were more likely to feed pollen substitutes



25% of the North Island beekeepers thought there was over-crowding near their apiary site

10% of South Island beekeepers reported over-crowding as a problem

South Island beekeepers were more likely to sell live bees as a product from their apiary

13% of apiaries had pollination as the main purpose of their apiary

New Zealand Government

Ministry for Primary Industries
Manatū Ahu Matua

June 2021

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Varroa in New Zealand honey bees

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9% of the time, beekeepers had their mite-levels **above** the damage threshold for treatment (more than **3** mites per **100** bees).



We detected varroa in:



45% of apiaries in the spring, and

65% of apiaries in the autumn

80% of beekeepers said they relied on visual inspection to detect varroa



Less than **20%** of the beekeepers used an alcohol-wash or drone-uncapping as a varroa monitoring method.

Every beekeeper used at least one treatment for varroa each season, however, many beekeepers used multiple treatments including:

- Flumethrin (Bayvarol®) was used **48%** of the time
- Amitraz (ApiVar®, ApiTraz®), **52%**
- Oxalic acid (own use), **19%**
- Formic acid (own use, MAQS®, FormicPro®), **9%**
- Fluvalinate (ApiStan®), **8%**

However, we found that visual inspection would miss seeing varroa **50-70%** of the time if it was there.

There was no preference for treatments specific to spring or autumn.

Most beekeepers used synthetic miticides, and rotated treatments between autumn and spring.

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Viruses, bacteria and parasites in New Zealand honey bees

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Viruses

Deformed wing virus and Black queen cell virus were found in almost every apiary, in every season, although some samples only had low amounts of virus.



Chronic bee paralysis virus persisted at low levels, affecting different apiaries in different seasons.

Kashmir bee virus showed a big surge in prevalence in the Spring of 2017 but it is not clear why.

Deformed wings on bees were more common in the autumn, coinciding with the peak in varroa levels (see varroa infographic).

Bacteria: American foulbrood (*Paenibacillus larvae*)

Many beekeepers incorrectly consider that there are American foulbrood spores (*Paenibacillus larvae*, AFB) in every hive. This was not found to be the case. Composite samples (i.e. eight hives pooled together) taken from apiaries showed:

Out of **297** apiary visits, qPCR only found AFB DNA on nine occasions.

During all our apiary visits, AFB was only found in **0.47%** of the hives (**11** hives out of **2,356**) inspected over the three years.



Nosema (*Nosema apis* and *Nosema ceranae*)

Nosema ceranae was found in two-thirds of North Island apiaries, but was only found twice in the South Island.

Nosema apis was found in almost every apiary.

Both nosemas were often found together in the North Island.

Nosemas were much higher in the spring, than autumn.

Looking for spores using a microscope was not as reliable as using qPCR tests.

Lotmaria (*Lotmaria passim*)

Lotmaria was present in nearly every apiary

Lotmaria was more common in the autumn, the opposite of what is seen for nosema

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