APICULTURE NEW ZEALAND

pī·ā·ora BEES GIVING LIFE

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Dear Dr Brenton-Rule

Request for Information – Beekeeper use of flumethrin

This letter has been prepared by the Apiculture New Zealand Science and Research Focus Group to answer some of the questions raised in the New Zealand Food Safety call for information of November 2019.

The Apiculture New Zealand Science and Research Focus Group acknowledges that one of its members sought an official information request for the data used by MPI to justify this call for information. This was received from MPI on 6 December 2019.

NZ Food Safety has specifically asked for information on the following topics;

a) **Potential resistance to flumethrin in New Zealand**
Ever since the requirement to use chemicals to control *varroa destructor* in order to ensure hive survival, beekeepers have been aware of the likely development of pesticide resistant strains of *varroa destructor*. New Zealand beekeepers and bee researchers have been aware of chemical resistance developing in *varroa destructor* overseas, particularly in Europe and North America. As a result, the alternation of chemical treatments has always been a strong recommendation to manage resistance development.

b) **Use patterns of flumethrin based varroa miticide products in New Zealand.**
Apiculture New Zealand and its predecessor organisation the National Beekeepers Association (NBA) have always recommended that beekeepers alternate varroa treatments with a different chemical family to the last one they have used. Note; flumethrin and taufluvalinate (both used as strips to control *varroa destructor*) are from the same chemical family – they are synthetic pyrethroids. This rotation of chemical classes is best practice for pesticide resistance management.

We are concerned that NZ Food Safety is looking at just flumethrin and not considering both synthetic pyrethroids when making this reassessment based on reports of varroa resistance, as resistance to one chemical will confer resistance to the other pyrethroid.

c) Whether there are cultural practices in New Zealand that may affect efficacy, trade in primary produce, risks to public health or animal welfare.

Apiculture NZ is not aware of specific 'cultural practices' that may affect efficacy, trade in primary produce and or risks to public health with respect to the use of miticides to control *varroa destructor*. Beekeepers are very much aware that not introducing miticides into the hive to control varroa that they will lose that hive.

We have the following observations that we can share with NZ Food Safety.

1. There is some anecdotal information (mainly from AFB inspections) suggesting that some beekeepers do alter use rates of miticides to reduce costs of control. This can include limiting the number of pesticide strips per hive and leaving strips in hives longer than the label recommendation; these practices are based on economic grounds we believe. We do not have or collect data to substantiate these practices. AFB hive inspections do not collect data on beekeeper management practices other than for the control of AFB.

2. In 2017 the Apiculture NZ Science and Research Focus Group made a submission to the NZ Food Safety Authority for the reassessment of Amitraz. This outlined concerns in relation to two issues;
    a. The confusing way the Amitraz label had been written explaining the recommended treatment of the hive. We do note that NZ Food Safety have altered the label and removed the table that could confuse beekeepers on the correct application rate.
    b. NZ Food Safety referred to Apiculture Good Agriculture Practice (GAP). To date we are not aware of what reference standard NZ Food Safety is using for Apiculture GAP and there has been no discussion on what this should be for New Zealand beekeepers.

    We note that the Bayvarol Label (P5683) containing flumethrin is much clearer in its instructions then the old Amitraz label (see point 2.a).

3. Many beekeepers are concerned that if resistance to flumethrin develops they have one less option for control of varroa destructor. There have been a few reports of "resistance" developing, where varroa have been present at the end of a treatment period but to date this resistance has not been confirmed with DNA testing (done by Bayer in Spain and also in a New Zealand laboratory) which detects the three mutations associated with pyrethroid resistance.

    Beekeepers though have begun to adopt the use of formic and oxalic acids as an own use control of *varroa destructor*. As a result we support the publication of the MPI guidance document Advertising and own use guidance for compounds for management of disease in beehives, published on 5 November 2019.

4. Please note that insects (including honey bees) are not included in the Animal Welfare Act.

d) Any other information you believe should be taken into account.

1. Varroa destructor arrived in New Zealand in 2000 and its significance as a biosecurity threat to New Zealand's beekeeping industry was quickly recognised. As a result, the NBA, Hort Research and MAF jointly published the book Control of Varroa by Dr Mark Goodwin and Michelle Taylor.

   The first edition was published in 2001 and the revised edition in 2007 (which has recently been reprinted). Apiculture New Zealand is currently working with MPI to update the material.

   It is the beekeepers 'go to book' for varroa control in New Zealand and includes details about ACVM registered and non-registered treatment options including non-chemical control. Chapter 7 of this book is devoted to chemical resistance. This publication has been most helpful to New Zealand beekeepers and we believe has helped delay chemical resistance occurring. Unlike other countries where 'own use' products are made to various (and often ineffective) recipes, New Zealand has been a strong adopter of commercial products which has also likely delayed chemical resistance.

2. In 2009 there were reports that varroa destructor had developed resistance to synthetic chemical treatments then being used. In the February 2010 edition of the New Zealand Beekeeper Journal, Dr Mark Goodwin, Dr Oksana Borowik and Heather McBrydie published a paper on varroa resistance to miticides. The advice given in this paper still stands today. The paper details how beekeepers can monitor their hives by counting mites using either through an alcohol wash or sugar shake method. Beekeepers are still using those methods today. The research for this study was partially funded by MAF Biosecurity.

   Of interest is that this paper mentions reports of varroa resistance, which had not been verified. A request for any information on these reports has been made to MPI.

3. MPI has funded the annual Colony Loss Survey for the past four years. This survey is conducted by Manaaki Whenua. The survey results are published on the MPI website - https://www.mpi.govt.nz/growing-and-harvesting/honey-and-bees/bee-colony-loss-survey/

   The 2015 report details in Figures 18.1 and 18.2 the main varroa treatments used. These were mainly flumethrin and amitraz suggesting that chemical alternation was widespread. Figures 28.1 and 28.2 detail the results of hives infected with deformed wing virus which is carried by varroa, and as expected highest rates were in areas that had long term varroa infestation.

   The 2016 report identifies beekeepers are widely monitoring varroa levels in their hives, either through sugar shake, sticky boards or observation. Similar to 2015, flumethrin and amitraz are the two most commonly used miticides.

In the 2017 report, varroa was the second most important cause of colony loss. This increased in 2018, up 3% on 2017.

Summary

- *Varroa destructor* remains the principle pest of honey bee colonies.
- It is a seasonal job to apply at least two treatments in spring and autumn to control varroa, because doing nothing will often result in colony loss.
- Beekeepers are regularly informed about the risks of developing chemical resistance to existing treatments and the importance of rotating chemical treatments.
- Beekeepers are very aware that they have a limited number of chemical tools suitable to control *varroa destructor*.
- There is no DNA confirmed *varroa destructor* resistance to flumethrin in New Zealand as has been identified overseas
- There appear to be no new chemistry offering a miticide to control varroa in the beehive therefore it is important that we continue using the existing treatments responsibly.

Yours sincerely

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