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The NEW ZEALAND BeeKeeper

Kiwifruit industry acknowledges beekeepers' support
Shane Max, Beth Kyd, Barry O'Neil

Asian mite
Quentin Chollet

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Front cover: This entry, from NBA Bay of Plenty Branch member Jody Mitchell, was judged the winner of the Portrait category in the Ecrotek apiculture industry photography competition, June 2015. The photo is of Jody's husband, Ralph Mitchell of Kaimai Range Honey. Jody was judged the overall winner of the photography competition.

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PRESIDENT'S REPORT

EXCITING TIMES AHEAD

Ricki Leahy, NBA President

We have entered a very exciting time of change. There is so much positive energy building from all quarters, giving us very clear indications that we are heading in the right direction.

Industry unity update

On 4 August, the executive councils of the NBA and Federated Farmers Bee Industry Group (BIG) met in Christchurch. This meeting was the first of what will be bimonthly meetings as we work through the interim period process of reaching a unified industry. I am pleased to report that the meeting was both very congenial and positive.

Both executive councils had previously agreed that this meeting was to be independently chaired, and Bruce Wills was appointed to this position. Bruce must have made an excellent impression on us all, as the meeting agreed that he also chair our future meetings. I certainly hope that Bruce enjoyed the challenge that at times only beekeepers can give.

Bruce was the immediate past president of Federated Farmers. He farms in Hawke's Bay and portrays a genuine interest in bees. Bruce truly understands the importance and value that our bees have to the wider primary sector and, indeed, the country's economy.

One of the final tasks of the Interim Working Group, who have successfully got us to where we are now, was to facilitate the appointments of the members of the interim Apiculture Industry Governance Board (AIGB). This was achieved by seeking expressions of interest from the wider industry.

A final decision was made on our behalf by independent consultants Butler Pelvin & Associates of Wellington, using the written applications and CVs submitted. I suspect that some of you will be pleasantly surprised about the variety and depth of expertise we have within the apiculture sectors. I am excited that the industry now has a group of people with the requisite skill sets to take us through this next stage.

The first meeting of the interim AIGB was held on 26 August. I have written this report in advance of that meeting, but the agenda included a focus on tasks such as working through agreed terms of reference for creating the structure, as well as beginning to research future funding strategies to support the new entity. The agenda also included developing a work plan with timelines to ensure that critical tasks are accomplished to achieve the goal of establishing the new entity on 1 April 2016.

Other tasks of the interim AIGB will include developing sector group structures, management team requirements and voting mechanisms, so they will be a busy group. You can read more about the 4 August meeting and the interim AIGB on page 6.

Founding Members

You can support the development of the new apiculture entity by becoming a Founding Member: it costs just $100. Your support will provide not only a financial boost during this interim stage, but also will give a solid membership foundation to encourage the voluntary work that is and will continue to be done on your behalf.

The point of initiating a Founding Membership is to encourage more people to give a little, rather than placing the burden onto the same people who always tend to contribute. Think about it. If 1000 people become foundation members, that will generate $100,000. That sum would help considerably towards the expected costs that this process will incur. This is an opportunity for us all to contribute.

Visit the www.beeunified.org website, where on the home page you will find a very simple Founding Member Commitment Form that is available for you to download. You also will find information about the industry unity process.

The point of initiating a Founding Membership is to encourage more people to give a little

Remember, your $100 voluntary subscription fee will help fund the costs that are being incurred to design and develop a fully inclusive apiculture industry entity with a revised, modern and future-focused constitution, workable and easily understood operating rules and a structure that, most importantly, represents all apicultural sectors in New Zealand.

Research funding is sorely needed!

One of the important issues that must be sorted within our industry is how we fund research. Many projects concerning bees are ongoing over several years. Security of funding over that time is essential to ensure the best researchers are contracted for the purpose. It doesn't seem very productive if researchers need to spend their valuable time fundraising for the continuation of a particular project.

Many projects concerning bees are ongoing over several years. Security of funding over that time is essential

Several important research projects have been seeking funding recently. It's an embarrassment, to say the least, having to witness how we depend on such an ad hoc process of passing the hat around to find the necessary funding. It's quite unsatisfactory for us to continue treating one of our most important industry functions in this way. Our new industry structure will no doubt address this sort of issue for the future.

One of those important research projects concerns the damage that the Giant Willow Aphid (GWA) may do to willow trees. We beekeepers really need more hard information at our disposal. At first, most of us thought that the dew off the willows was an unexpected gift of extra stores for our bees. But alas, no!

continued...

PRESIDENT'S REPORT *(continued)*

EXCITING TIMES AHEAD

The 'collateral damage' from GWA for our industry is proving to be a real curse. The honey not only won't win any awards for taste, but it becomes like concrete and can't be extracted. And the hard residue left in the comb is barely palatable to the bees, which identify it as having minimal nutritional value, thus leading to debris of one sort or another getting tossed out of the hive. Surely, more research is necessary to find out how we can protect the important springtime pollen and nectar sources from our threatened willows.

The Trees for Bees project also needs ongoing funding. Many of you who attended the presentations at conference will understand the significance of how a few plantings can make all the difference to apiary sites by enhancing the health and strength of the bees. Momentum is definitely developing amongst the farming and landowner fraternity as they learn and understand the value of bees on their land and incorporate some bee-friendly trees amongst their other plantings. It doesn't take much to improve the value of nutrition availability.

It's actually quite fun to extend the beekeeping responsibilities we all have towards our bees by grasping more understanding of the bigger pictures in the cycles in life, especially if that affects our livelihoods.

There are no excuses now. It's back to the bees. The challenge is to keep on top of the workload and not let them get away from you. Happy beekeeping.

The New Zealand BeeKeeper will be publishing regular updates about industry unification as the projected establishment date of 1 April 2016 approaches.

Keep an eye on the journal and on the website www.beeunified.org for the latest information.

INDUSTRY UNIFICATION

INDUSTRY UNIFICATION: CEO UPDATE

Daniel Paul, NBA Chief Executive Officer

The first meeting of the NBA and Federated Farmers' Bee Industry Group (BIG) executive councils was held in Christchurch on 4 August with Bruce Wills, ex-Federated Farmers' Chairman, taking the appointment of independent Chair.

This is the first time the two Boards have met in a co-operative forum. The agenda focused on the work streams and projects that the NBA and BIG need to undertake jointly over the coming year, which included investigation of venues for the 2016 conference. This task is being undertaken by an events organiser and should be finalised in September.

The Management Teams of both organisations will be working closely together to drive the work of the joint Boards and to undertake the 'heavy lifting' of the focus groups. Communication to industry and stakeholders was agreed as a priority from now, so regular updates will be circulated in *The New Zealand BeeKeeper* journal, via e-mail distribution and through stakeholder industry publications.

The joint executive councils of the NBA and BIG.

Left to right: Russell Berry, John Hartnell, Stephen Black, Mike Vercoe, Neil Mossop, Dennis Crowley, Gary Glasson, Ricki Leahy, Barry Foster, Graeme Albon, Roger Bray, Barry Hantz, Peter Bell, Kim Singleton. Seated: Bruce Wills.

Appointment of Interim Apiculture Industry Governance Board (AIGB)

At this meeting, the appointments of members of the interim Apiculture Industry Governance Board (AIGB) were finalised. This was done by independent consultant Butler Pelvin & Associates (BP&A), Wellington.

The twelve members of the AIGB are:
Neil Walker, Acting Chairman (to be confirmed)
Bryan King
Christopher Stuckey
Dave Wrathall
John Hartnell
Dennis Crowley
Kim Poynter
Moira Haddrell
Ricki Leahy
Peter Luxton
Sean Goodwin
Tony Wright

While the list of appointees may have a strong background in the industry, the Interim Working Group determined that for this board, it was necessary to select the best applicants to undertake the tasks that were specific to this development stage of the new industry body. It was acknowledged that the set of skills required in this phase of the industry development may differ from the Sector group voted appointments.

Biographies of the twelve interim AIGB members will be featured in the October issue of the *The New Zealand BeeKeeper*.

The first meeting of the interim AIGB was held on 26 August. This meeting took place after the journal went to press, but the agenda included working through and agreeing to the terms of reference for creating the structure and funding mechanisms to support the new industry entity, which is expected to be established by 1 April 2016.

BUSINESS

KIWIFRUIT INDUSTRY ACKNOWLEDGES BEEKEEPERS' SUPPORT

Shane Max and Beth Kyd, Zespri; Barry O'Neil, Kiwifruit Vine Health

Nearly five years from the introduction of the Psa (*Pseudomonas syringae* pv. *actinidiae*) bacteria to New Zealand, the kiwifruit industry saw fruit volumes back to pre-Psa levels last season. The industry is set for strong growth, particularly in the new gold cultivar, SunGold (Gold3).

It's been a long road and Zespri would like to acknowledge the support we received from the beekeeping industry in helping us get there.

Along with this growth, Zespri is introducing measures to reduce reliance on bactericide products and research is under way to address the impact hail-netted canopies can have on hive health.

Psa response and the beekeeping industry

First, a thank you. The arrival of the deadly bacteria Psa, and the actions we took to prevent its spread and lessen the economic impact on kiwifruit orchardists, created some of the biggest tensions between our two industries. It was an extremely stressful time within the kiwifruit industry as we fought to survive. Many decisions needed to be made urgently, usually based on incomplete technical information. These decisions impacted not only growers but also other associated industries, notably the beekeeping industry.

The incursion affected beekeepers in several ways, impacting hive movement and reuse, new hygiene requirements and the introduction of bactericide sprays for Psa control.

On one hand there was the kiwifruit industry, desperate to do everything possible to save itself. On the other hand were beekeepers, very concerned about the impact some of these practices could have on their industry, especially where there was insufficient information to completely quantify the risks and costs involved.

A number of beekeepers and postharvest representatives stepped up to help Zespri and Kiwifruit Vine Health work through these challenges. Of special mention were Dennis Crowley (local NBA representative) and Neale Cameron (Apata Group Ltd). They were key players in creating the discussions that enabled the beekeeping industry to support the kiwifruit industry through its 'hour of need'. A number of beekeepers willingly gave their time to understand the issues, work through how to satisfy their colleagues' concerns and participate in working groups and joint industry meetings.

Aerial shot of kiwifruit orchards looking across Matapihi, Bay of Plenty.

We received honest and pragmatic advice at a time when there was a lot of raw emotion and irrational behaviour from both industries. Now, five years on, the kiwifruit industry is stronger than ever. Hayward and Gold3 growers have harvested record crops and sales are going well. The fact that we could not have done so without the support of the beekeeping industry has not been well recognised, so a sincere thank you to all concerned.

continued...

Psa management in 2016: reducing industry reliance on bactericides

A toolbox of Psa-protectant products were introduced in 2011, including the bactericide KeyStrepto™. A pan-industry working group has now been set up to reduce long-term industry reliance on bactericide products and ensure we're managing these products as part of an integrated pest and disease management (IPM) strategy for Psa—a best practice approach.

In line with this, the maximum number of applications for the 2015–2016 season has reduced from four to two applications.

Zespri will work with growers and the postharvest sector to reduce reliance on these products in the 2015–2016 season. This includes grower forums on and off the orchard, grower meetings, as well as focused postharvest sessions around the growing regions of New Zealand.

Kasumin™ returned to Zespri CPS

Kasumin™ will be reintroduced into the Zespri Crop Protection Standard (CPS) for the 2015–2016 season, following the results of extensive product trials undertaken last year to understand the optimal application timing.

Kasumin™ is a bactericide used only on plant-based bacteria and fungi in more than 20 countries and has no applications in human or veterinary health. Having two bactericide products in Zespri's Crop Protection Standard will help prevent widespread bacterial resistance developing, and gives growers another tool to manage Psa on their orchards.

Use conditions for 2015–2016 season

The number of permitted applications of KeyStrepto™ and/or Kasumin™ has been reduced to a maximum of two for both producing and non-producing vines. These may only be applied in the pre-flowering period (after dormancy and before the start of flowering).

- KeyStrepto™ can be used on producing and non-producing vines from budbreak until seven days before flowering (male or female).
- Kasumin™ can be used on producing and non-producing vines from budbreak until 21 days before flowering (male or female).

The pre-flowering restriction means there should be no bees exposed to these products.

SunGold (Gold3) kiwifruit on the vine.

Beekeepers and growers are encouraged to keep an open dialogue around this issue during pollination.

A random auditing scheme to monitor best practice will continue as per 2014.

Pollinating SunGold/Gold3 under hail netting

Another key area where our industries are working together is addressing hive quality with covered production. Kiwifruit growers are increasingly installing hail covers over Gold3 orchards to protect the sensitive fruit from hail and wind damage with the added benefit of Psa protection. Hail covers have been installed on around 800 hectares of Gold3 in New Zealand.

Three main designs are being installed in New Zealand: roof-only, partially enclosed (roof plus partial sides) and fully enclosed (roof and full sides).

Some beekeepers have reported significant colony declines in hives used to pollinate these crops, with some reporting reduction in adult bee numbers and reduced brood areas. In some cases, the effects are enough to reduce the hives' honey-producing abilities once they are removed from the orchard.

Preliminary research results

Zespri commissioned Plant & Food Research late last year to undertake a preliminary investigation into the effect of three different cover designs on hive health. The objective was to identify what was happening to the hives rather than leaping to possible solutions straight away.

Hives on 10 orchards were assessed when entering and leaving orchards to determine change in brood and bee numbers. Hives varied in quality, with a disappointing 41 percent not meeting the kiwifruit industry standard of the equivalent of four full-depth frames of brood and 12 frames of bees recommended for pollination.

- In the three roof-only orchards, there was no detectible impact on bee numbers, while a significant reduction was seen on all three fully enclosed orchards. This result, combined with bee activity monitoring observations, suggests bees may become disorientated in fully enclosed orchards.
- The average amount of brood decreased in all 10 orchards, with the most significant impact seen on fully enclosed orchards. This may be due to difficulty in finding food.
- There was a significant correlation between the numbers of bees in hives and the percentage lost from hives in fully enclosed covers. This suggests younger, smaller colonies might lose fewer total bees than the standard large hives.

continued...

Examples of a covered canopy. Photos supplied by Zespri.

Next steps

Zespri is now recommending that any grower considering installing a covered structure should only erect roof-only covers. If sides are required, they should be removed for the pollination period.

Our goal is that there is no negative impact on hive quality during pollination under cover. More research has been commissioned to better understand this issue, including how cover design affects bee behaviour and how hive and orchard management can be altered to eliminate losses.

We have also set up a kiwifruit–beekeeping industry steering group to facilitate this research and extension work. Zespri has set up a blog to enable growers, installers and beekeepers to be kept up to date with current information, observations and ideas. If you would like to participate in this, please contact beth.kyd@zespri.com

The beekeeping industry played an important part of the kiwifruit industry's recovery from Psa. The two industries have a history of working through some significant challenges over the years. A symbiotic need, strong honest relationships and open dialogue have been fundamental to this. Long may this continue.

LETTER TO THE EDITOR

MELEZITOSE SUGAR

John McLean

Further to my article in the August journal entitled 'Have you seen willow honeydew honey this season?', Barry Foster and I were out checking three of his apiaries in Poverty Bay on 1 August and captured this gem. The photo isn't very enthralling at first glance, but close examination of this hive monitoring board shows brown waxy material in the centre from brood comb maintenance by the bees. On the margins, though, there are very noticeable deposits of white crystals of melezitose sugar. Yes, this apiary is on a riverbank and there are willows nearby.

Some hives are heavy to heft, but the bee row count is lower in the heavy hives.

I suspect many more beekeepers in the North Island are going to see this type of thing over the next month or two, so I hope that this photo helps them to recognise it for what it is.

RESEARCH

REPRESENTATIVE HONEY SAMPLING: AVOID UNEXPECTED SURPRISES

Megan Grainger, Technologist, Analytica Laboratories Ltd

You will get the best possible information from laboratory testing by sending a sample that is a good representation of the honey it has been taken from. The better job you can do of this, the lower the risk that future tests from the same batch will give you an unexpected result.

From time to time a laboratory will get a query from a customer about a test result that is not what they expect it to be. Errors can occur within the lab which may explain an unusual result, but in our experience the way that samples are collected, stored, and submitted often provides reasons for the unexpected result.

In this article, I will share a few experiences that may help those who are collecting and sending samples to labs.

Collecting a sample from the honeycomb will **not** give a representative sample for a drum or batch of honey. Bees will fill a frame (and a box) over a period of time, using nectar from a number of flowers. Honey in one section of a frame is likely to be different to other parts of the frame, and different to other frames. Collecting a comb honey sample from a frame may give you a general indication of the honey being collected by the bees at that time. However, once the honey is extracted and blended it is unlikely that the test results for the batch will be the same as the sample taken from the frame.

Drum samples can be collected more reliably, especially if the honey has been well blended (or homogenised) before separating into drums. Even then, our observation is that honey can separate into layers over time and may be different near the outside of the drum compared to the centre. Therefore different results may be produced. The best way of collecting a drum sample is therefore to use a corer and sample from the top to bottom of the drum, then thoroughly mix it before sending to the lab.

Batch samples should only be collected after the batch has been very well mixed. When multiple drums are included in a batch, a sub-sample taken early in the mixing process may well represent one of the drums more than the overall batch. If retested later, you may get quite different results.

Once the sample is in a container for sampling, chemical reactions are still occurring. This is especially important in manuka honeys, where the DHA (dihydroxyacetone) is converting to MG (methylglyoxal), and then MG to other compounds. **Make sure your sample is stored in similar conditions to the drum or batch it has been taken from!** Leaving a sample on the windowsill in the autumn sun for a month while the drums are in a cool shed will give a different result for the sub-sample compared to the drum.

If you want to stop the chemical reactions from taking place in your honey, you need to refrigerate (or even better, freeze) the sample. I recall one situation where a client had collected a sample at extraction, and another sample from the drum after a few months of storage. They sent them both in for testing at the same time to see how the honey had changed over time. The results for HMF (hydroxymethylfurfural) were identical, even though the initial sub-sample should have been much lower. After a few questions, we realised the initial sub-sample had been stored on top of the drum, in the same conditions. No wonder the results were almost the same!

Pictured is a good example of a sample container.

Some recommendations when sending a sample to a lab

Testing laboratories need a minimum amount of sample to test. About 50 g of sample is sufficient for common tests—as a rough rule of thumb, a 100 mL jar will hold about 140 g of honey due to the density of honey.

Samples should be placed in screw-top containers. Avoid using plastic wrap to seal the top of containers, and our occasional experience with samples in snap-lock bags has not been good!

If you want a lab to test your honey, try to send them only honey. Large amounts of wax can cause problems with tests, and in some cases will not be accepted.

Samples should have a unique name or ID written clearly on the side, and match the name or ID written on the submission form.

Labs will usually keep your samples for 4–6 weeks, and then dispose of them. If you want them saved, write this clearly on the submission form. In many cases, your lab will happily return them to you for the cost of postage and handling.

ERRATUM

In the August journal, part of a caption was inadvertently omitted for the photo on page 13. The caption should have read:

Charlotte Hardy of Comvita posing with the hive that Comvita chief executive Brett Hewlett won in the conference auction. Brett's winning bid was $6,900. The hive was painted by a young graffiti artist, and contained a bottle of spirits produced by Joe Peeters. Photo: Frank Lindsay.

NZ COLONY LOSS AND SURVIVAL SURVEY

CALLING ALL BEEKEEPERS: TELL IT LIKE IT IS

Landcare Research Ltd

NZ COLONY LOSS & SURVIVAL SURVEY

Concerns about the health of bees and the outlook for beekeeping in New Zealand are increasing. Even the most reliable information is largely anecdotal and the need for a comprehensive survey has been discussed for several years.

The first **NZ Colony Loss and Survival Survey** of beekeepers will be conducted this spring. The survey will be managed independently by Landcare Research, and the results will help the beekeeping industry and Ministry for Primary Industries build a better picture of the state of bees and the challenges beekeepers are facing.

The information in the survey is only as good as the information provided by beekeepers themselves, and the team at Landcare Research are taking the approach that 'more is better' by encouraging beekeepers, large and small, to have their say. All individual responses will be kept confidential.

The survey has been e-mailed to many **(if you have the e-mail, please respond to the link in the e-mail)** and is available for all other beekeepers online at http://surveys.landcareresearch.co.nz/s3/NZCOLOSS

Do the survey to play your part in building a better understanding of the on-the-ground realities of beekeeping to help the industry move ahead.

Not sure if it's for you?

If you are keeping bees—whether a single hive in the backyard or multiple apiaries across the country—we want to hear from you. If you had an e-mail from Landcare Research, please respond directly to that.

You should complete the survey as soon as you have inspected your hives this spring.

The survey will be online ... at least until the end of October."

When should I do the survey?

You should complete the survey as soon as you have inspected your hives this spring. If you are currently inspecting, take a note of the information below to help you complete the survey.

The survey will be available online until we hear that the last of the southern beekeepers have done their spring rounds—at least until the end of October.

What information is needed?

The survey will ask about:

- the number of production hives in each apiary when you wintered down in the autumn and the number you have this spring
- the number of nucs, splits, and tops in each apiary when you wintered down in the autumn and the number you have this spring
- the number of surviving but weak colonies and the number with queen problems this spring
- key symptoms of problems such as dead bees in front of the hive or dead workers in cells, with or without food
- the nature of losses (if known) in production hives and nucs, splits and tops; are they from AFB, wasps, natural disasters, weather, vandalism, queen problems or colony death?

These questions are asked in the colony loss and survival surveys that have been conducted in over 30 countries, allowing the researchers to make international comparisons. There are also a number of questions specific to the New Zealand industry.

Is the survey about the proposed restructure/unification of apiculture industry bodies?

No, this survey is only about bees and beekeeping.

Who's behind the survey?

The survey is funded by the Ministry for Primary Industries, National Beekeepers Association of New Zealand, Federated Farmers Bee Industry Group and AGCARM. Together, they have contracted Landcare Research to conduct the survey, collate the results, and provide aggregate (anonymous) information about colony loss and survival. The 2015 survey will provide baseline information for measuring changes in the industry over time.

What's in it for me?

With most surveys, it seems that the information disappears into a black hole! We think that it's really important that you can see the information that you and others have shared—and we will make non-identifiable summary information available after the survey is completed. However, for this to be meaningful, all types of beekeepers in all regions of the country must respond to the survey.

Playing your part will help to build this important baseline of information so that the beekeeping industry can start to tackle current and future challenges.

COMING UP IN THE OCTOBER JOURNAL

The October journal is a double issue that goes to all registered beekeepers in New Zealand. Topics will include:

- Industry unification update
- Bee Aware Month coverage
- AFB information
- and many more articles of interest to hobbyists and commercial operators.

SCENES FROM THE CONFERENCE GALA DINNER

NZ APICULTURE CONFERENCE
WAIKATO 2015

Photos: Mary-Ann Lindsay.

PEST AND DISEASE CONTROL

ASIAN MITE

Quentin Chollet, Apiculture Officer, AsureQuality Limited, Nelson
E-mail: quentin.chollet@asurequality.com

The Asian mite is the common name of four species belonging to the mite genus *Tropilaelaps* (Acari: Laelapidae): *T. thaii, T. koenigerum, T. clareae, and T. mercedesae.* These four species look very similar and only molecular methods can definitively distinguish one from another.

Tropilaelaps are native brood parasites of *Apis dorsata*, the giant Asian bee, but they can also be found on other Asian bees such as *Apis cerana* and *Apis florea.* Only T. *clareae*, and *T. mercedesae* are known to parasitise *Apis mellifera*, the European honey bee. In the past 50 years, *Tropilaelaps spp.* have expanded their range but still remain restricted to Asia and Papua New Guinea. They were reported in Kenya in the 1990s but latest findings suggest that this is not the case (Anderson & Roberts, 2013).

Their ability to reproduce quickly and their impact on honey bee colonies are such that they are considered emerging threats to world apiculture.

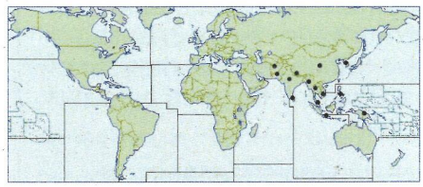

Figure 1. Present distribution of Tropilaelaps. *(Source: CABI, 2014.)*

Biology

Mites have four pairs of legs. Their bodies are elongated and covered with numerous short hairs that give them a light reddish-brown colour. The male's body is less hardened and significantly smaller than the female's, which measures about 1 mm long and about 0.5 mm wide. *Tropilaelaps* are very fast moving, unlike varroa, which make them easier to see in a hive.

Figure 2. Varroa on the left, compared with Tropilaelaps *on the right. Photograph: Zachary Huang.*

Life cycle and impact on honey bee colonies

Tropilaelaps' life cycle is not well understood, as it mostly occurs under the wax capping of brood cells. It is thought to be similar to that of the varroa mite. Before the honey bees cover the cell, a foundress (mated female) enters the cell. After the cell is capped, she lays three to four eggs about a day apart. Nymphs hatch 12 hours later and will develop into adults in six days.

Both adults and nymphs feed on the haemolymph of the developing bee larvae. Light- to moderately infested bees still manage to make it to adult stage and to emerge. However, they may show symptoms such as deformed bees with distorted abdomens, missing legs and shrunken or deformed wings; affected bees often have a shorter lifespan and a lower weight. The mites emerge from the cell as the new bee emerges (refer to Figure 3). Heavy infestation may result in crawling bees, along with dead and malformed larvae, pupae and adult bees, which have been cleaned out of the hive and are visible at the entrance.

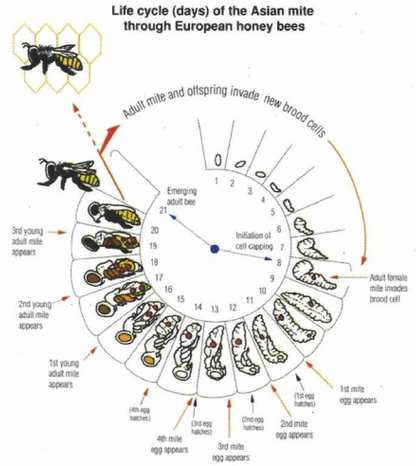

Figure 3. Life cycle of T. mercedesae *on* A. mellifera. *Diagram was constructed from data reported by Saleu (1994). Photo: Denis Anderson.*

Males and females are produced in about the same proportion. When the bee emerges, the adult female mites start a phoretic period of one to two days where they move attached to the back of a honey bee. The reason that *Tropilaelaps* has such a short phoretic period compared with varroa is that they cannot feed on the adult bee. This ultimately means that they are unable to survive more than 72 hours in broodless hives. *Tropilaelaps'* reproduction rate is about 25 times faster than that of varroa.

Brood can also be affected by viruses transmitted by the mites. This has serious effects within the colony as viruses, which are not normally a serious problem, are prematurely introduced to the developing larvae and become far more prevalent in adults. This situation gives rise to the condition termed 'parasitic mite syndrome' or PMS, and is familiar to beekeepers where varroa has established.

The impact of *Tropilaelaps* on *Apis mellifera* is greater than the impact on the host species, as *Apis dorsata* has developed grooming capacities used to fight mite infestation.

Spread of the Asian mite

Internationally

Tropilaelaps is able to spread on adult bees but can be limited if broodless colonies are moving for extended periods. International pathways are limited, but *Tropilaelaps* mites could transit into New Zealand through an established colony of *A. mellifera* or *A. dorsata* that would enter the country by air or maritime freight.

Within a local area

Once introduced, adult *Tropilaelaps* mites are likely to become established. They are very fast and mobile and able to move by themselves within the hive. They spread from colonies to colony when attached on an adult bee: robbing, swarming, lost bees that enter the wrong colony, and even contact between two bees foraging the same flower are ways for the mite to travel.

However, the beekeeper remains the most effective means of spread. This can occur through the transfer of hive equipment between colonies and the transfer of hives between apiaries. Both of these spread vectors accelerate natural spread, particularly when transferring hives between apiaries, which can often be over large distances.

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Impact on the New Zealand beekeeping industry

The impact of *Tropilaelaps* on the beekeeping industry in New Zealand would be significant. Warmer areas of the country, where hives do not experience a brood break, would be more severely affected than those in cooler areas.

The impacts of *Tropilaelaps* would be:

- increased chemical usage and possible residues in bee products
- eventual resistance to miticide treatments
- trade restrictions in live bees
- increased operating costs
- loss of bee colonies
- loss of the ability to produce organically due to increased operating costs.

If a *Tropilaelaps* infestation were found in New Zealand, the incursion response model used for varroa could be followed. This consists of:

- reducing spread by way of a controlled area notice/s, the declaration of restricted places and movement restrictions
- completing a delimiting survey to determine the extent of the spread
- treating colonies with miticides
- depopulating or reshipping managed contaminated colonies to a mite-infested area
- baiting and poisoning feral colonies
- surveillance to determine the success of an eradication attempt if made
- repopulation of the area with managed colonies.

The impact of *Tropilaelaps* on the beekeeping industry in New Zealand would be significant.

Management of *Tropilaelaps*

Tropilaelaps would be reasonably easy to treat in New Zealand. Beekeepers could use a combination of both chemical and non-chemical controls that are already in use in other countries.

Beekeepers' awareness and vigilance are crucial in detecting the mite early enough to attempt eradication.

Chemical treatments include a number of the miticides that are effective against the varroa mite, and are also effective against *Tropilaelaps*. Fumigants such as formic acid are particularly effective against *Tropilaelaps*. There are even suggestions that formic acid is able to penetrate the cell cappings, which could affect the mites within the cells (Goodwin & Van Eaton, 2001).

Non-chemical management strategies are mainly based on the inability of *Tropilaelaps* to survive more than a few days on adult bees. Therefore, creating broodless periods successfully removes all *Tropilaelaps* from a colony. This can be done by caging the queen for nine days and removing all mature brood.

Beekeepers can also create broodless periods by using two-day-old queen cells to re-queen hives. This method creates a brood break but strong colonies are needed to rear good quality cells, and queens may mate in areas where there is no or little control over the drone stock.

In addition, the subspecies *A. mellifera carnica* is now present in New Zealand. This bee, known as the Carniolan bee, is said to be more responsive to nectar and pollen availability, and shuts down brood rearing in dearth periods. This creates a break in the brood and may mean this bee is better able to withstand *Tropilaelaps*.

Conclusion

Asian mite is a serious rising threat to the worldwide beekeeping industry, as warmer climates in the future will allow the species to expand its range.

AsureQuality Limited runs the Exotic Surveillance Programme on behalf of the Ministry for Primary Industries (MPI) each year. Part of this programme includes testing beehives for the presence of *Tropilaelaps*. Beekeepers' awareness and vigilance are crucial in detecting the mite early enough to attempt eradication. It is important that beekeepers stay aware of this risk and keep it in mind when inspecting their hives.

If beekeepers suspect that their hives are infected with *Tropilaelaps*, or other exotic pests or diseases, they should report these findings **immediately** through the **0800 809 966 MPI Hotline.** An AsureQuality Limited Apiculture officer will follow up on every report, if requested to do so by MPI.

Sources

Figure 1: http://www.cabi.org/isc/datasheet/55051

Figure 2: http://entnemdept.ufl.edu/creatures/MISC/BEES/Tropilaelaps.htm Photograph by Zachary Huang, www.beetography.com.

Figure 3: http://www.coloss.org/beebook/II/tropilaelaps/5/1

Bibliography

Anderson, D. L., & Roberts, J. M. K. (2013). Standard methods for *Tropilaelaps* mites research. In V. Dietemann; J. D. Ellis; P. Neumann (Eds.) *The COLOSS BEEBOOK, Volume II: standard methods for Apis mellifera pest and pathogen research. Journal of Apicultural Research, 52*(4). Available online at http://dx.doi.org/10.3896/IBRA.1.52.4.21

Goodwin, M, & Van Eaton, C. (2001). *Control of varroa: A guide for New Zealand beekeepers.* Ministry of Agriculture and Forestry. 119 pages.

Mortensen, A. N., Burleson, S., Chelliah, G., Johnson, K., Schmehl, D., & Ellis, J. D. (2014). *Tropilaelaps mite.* University of Florida, IFAS, Entomology and Nematology Department, Featured Creatures, EENY-604. (October 2014). Available online at: http://entnemdept.ufl.edu/creatures/MISC/BEES/Tropilaelaps.htm

Somerville, D. (2010.) *Tropilaelaps mites.* State of New South Wales through NSW Department of Primary Industries. Available online at: http://www.dpi.nsw.gov.au/__data/assets/pdf_file/0007/390076/Tropilaelaps-mites.pdf

Wilkins, S., Marris, G., Brown, M., Learner, J., & Grant, R. (2013). Tropilaelaps *parasitic mites of honey bees.* The Food and Environment Research Agency, York, UK. Available online at Tropilaelaps_FINAL_web_pdf_2014.pdf

IN THE NEWS

NEW **CEO** AT **EPA**

Media release from the Environmental Protection Authority

Dr Allan Freeth has been appointed Chief Executive of the Environmental Protection Authority (EPA).

Announcing his appointment, EPA Board Chair Kerry Prendergast says Dr Freeth's passion for science and his very strong leadership profile are qualities that will be immensely valuable as the Authority works towards its future vision of being a world-leading regulator.

Dr Freeth's previous roles include Chief Executive positions at TelstraClear and Wrightson and senior management roles in Trust Bank.

Dr Freeth was selected following an extensive recruitment drive after the departure of Rob Forlong to Whangarei District Council in June 2015.

Ms Prendergast says Dr Freeth has a dedicated record in governance, including current roles as Chair of Housing NZ Corporation and Triplejump. He is also active in the not-for-profit sector with roles as Chair of Queen Margaret College and Save the Children NZ, Deputy Chairman of FilmNZ and Crimestoppers, and as a director and advisor for a number of charities associated with child and youth organisations, community, and the arts.

Dr Freeth holds a BSc (1st class Honours) degree in Zoology, a Doctorate in Philosophy in Population Genetics, and a MBA with Distinction.

He will take up his position at the Environmental Protection Authority on 1 September 2015.

Source

Environmental Protection Authority (2015, July). EPA Chief Executive announcement. Retrieved July 23, 2015, from http://www.epa.govt.nz/news/epa-media-releases/Pages/New-EPA-CE.aspx

Dr Allan Freeth, new Chief Executive of the Environmental Protection Authority. Photo supplied by the EPA.

BRANCH REPORTS

FROM THE COLONIES

Waikato Branch

Because I wrote this during Te Reo Māori Wiki (Māori Language Week), I decided to have a look and see what the ancient ones had to say about this month. They talk about when Here-turi-kōkā, the fourth lunar month (August–September) arrives, the warmth of spring is first felt. And that when a supernatural woman called Parearohi appears—e haka ana me e arohirohi ana—dancing about and quivering around the edges of the forest, then this is the first sign of summer.

Right now the kowhai and the first bunch of red kakabeak are out in my garden. This is my sign that spring has sprung. My snowdrops are also flowering and really do smell like honey! It is an ātaahua rā (beautiful day) here today, so the bees have put their socks and boots on and are out there gathering both pale (heather?) and very dark orange pollen (gorse?) So it starts!

From what I have heard, most of us here in the Waikato have had a holiday. Some of us are waiting on RMP audits or results, finishing off the last of the shed/extraction changes, madly painting the last honey box (have you finished, Kyle?), or rewriting/jigging the budgets and just waiting for a few more warmer days before we go and peep under those lids.

And then the next thing you know, we will all be moaning about that woman Parearohi and the heat!

Happy beekeeping everyone, and all the best for this season!

Kia kaha, kia maia, kia manawanui!

- Barbara Cahalane

Bay of Plenty Branch

Spring temperatures have arrived and the bees are making the most of the warmer days. El Niño conditions are forecast with a cold, wet, stormy spring predicted—but with forecasters stating that every El Niño is different. You can read into this what you want, but the weather is pretty good so far.

The Branch has been running a few training days lately. New for this year was a half-day crane operator course, but first we had to certify the crane and operators. Although certification has been a legal requirement for some time, we were unaware of it. Thank you, Russell Berry, for chairing the pollination meeting at Conference and organising a speaker to bring us up to speed.

Bay of Plenty Branch crane operator course. Photo supplied by Barbara Pimm.

The half-day course was useful and the branch is running two more due to demand. A useful qualification and a great initiative from the Bay of Plenty Branch.

We have had more four-wheel drive training days and these are proving a huge success, with all attending learning a lot and also receiving an NZQA certificate.

Beekeepers seem happy with the condition of hives, with good bee numbers and stores. Orchardists are now calling to make sure we still have hives available for their pollination. A few bigger beekeepers have moved away from this industry but I feel we should make an effort to honour our pollination contracts: we don't really want orchardists to have their own hives just for pollination, as this is a recipe for a disease disaster. I wasn't beekeeping in the 1980s but have been told that there was a big spike in AFB due to these part-time beekeepers.

Anyway, we are looking forward to another great season.

- Bruce Lowe and Barbara Pimm

Hawke's Bay Branch

Early stonefruit pollination has started already. Most hives seem to have wintered reasonably well, but I'm getting some reports of major hive losses.

We have had an exceptionally cold but reasonably dry winter and many people are already concerned about drought. With an El Niño weather pattern settling in, I'm afraid both beekeeping and farming are in for a fairly torrid season; still, that is the nature of farming. At least we're not getting stuck all the time like two years ago.

Last week I discovered an abandoned apiary that had been dead for it least two years, and I also had a report of another beekeeper finding the same sort of thing. This is just not good enough. There are far too many people out there buying hives and killing them off through lack of experience. It was impossible to tell if the hives I found were infected but they were at the centre of a bad outbreak two years ago. Through neglect a valuable asset has been turned into some expensive firewood, along with many other hives.

If you really must add hives to the already-overcrowded world of beekeeping, then please at least get rid of them if you lose interest.

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There have been several seminars on planting manuka for honey production and you would think you're going to a revival meeting. They certainly don't mention the fact that on light pumice and red metal soils in Hawke's Bay, native bees take the vast majority of any manuka nectar available, and in some years they eat it all, outnumbering honeybees hundreds (and even thousands) to one.

While manuka plantations may work in some places, they certainly won't work in others. Like all the other Flash Harry get-rich schemes, some people are going to get hurt and the beekeeping industry will be brought into disrepute because of it.

- John Berry

Southern North Island Branch

Around the Wanganui region, we are recovering from the June storm. It appears that around 3000 hives were lost or destroyed through slips and flooding. So it is a major rebuild for some. In several cases beekeepers have lost over 50% of their beehives. They face the huge task of making new boxes and either making new frames or, in most cases, getting new plastic frames and then waxing them up. Fortunately the weather has been wet and cold, so all hands are in the shed making gear.

I have had reports on stronger hives being two boxes and bubbling, so another box has been added. In two of my apiaries I have had to add another box to give the bees room. I wonder if we are going to have early spring development. The long-term weather forecast has not been very good, so it may be a difficult start to the season.

The Branch is considering adopting an AFB spotter dog. One member is keen to take a dog and train it up. We see this as a great asset to the Branch, and to AFB hive checking. We tried to encourage the NBA to get involved with AFB sniffer dogs several years ago without success, so the Branch will proceed—watch this space.

In the August issue it was noted that some of the 'old guard' had stepped aside. Special mention must be made of the more than 20 years that Frank Lindsay has been the Branch Secretary. Frank usually has something new to discuss at each meeting. The many conferences that the Lindsays go to, and Frank's extensive reading, means that there is a huge reference library in Frank's head. We have not lost this resource but rather, we have given Frank more time to trot out new ideas.

- Neil Farrer, NBA Life Member

Nelson Branch

The recent July weather summary indicated that Nelson has had 22 ground frosts and well-above winter chill hours compared with the past couple of seasons. Not surprisingly then, it generally has been too cold to do much opening of bee hives, with most just hefting or lifting hives to gauge food supplies. Most beekeepers are still doing repairs and maintenance on bee equipment, as well as some scrub cutting of apiary sites.

The Nelson Beekeepers Club recently had their annual honey competition, with over 50 jars of the sweet stuff put up for tasting and evaluation. It was a fun night by all accounts, helped by the addition of mead made by some members. The calendar of events for the Club includes presentations on mead making and pollen collection for August, with election of the club president, secretary and treasurer in September. By then it will be spring and the next season of beekeeping will have started for all.

- Jason Smith

Canterbury Branch

This region is experiencing a very cold end to winter. The end of July was very spring-like but that all fell apart in August with a heavy fall of snow throughout the region. Whilst the snow is gone from lower regions, the hill country is still well covered with the white stuff.

We are busy with the inland hives getting protein into them, as there is none available within the hives and little chance of them being able to gather any with the severe weather conditions they are experiencing at this time of year.

The hives are still attempting to brood rear, without pollen available to them. This situation creates huge health problems within the hives; if not rectified, it results in dramatic spring dwindling.

I believe this is caused by the bees' weakened state from producing the required diets for the developing brood. If no pollen is available within the hive, the bees are able to extract the protein from their muscles to create the food required to nourish the developing larvae. The hive will eventually get to the stage of cannibalising brood to extract the protein. This is a no-win situation, usually fatal for the hive.

I live in a pollen-deficient area and have been learning to live with these conditions for 30 years.

Those beekeepers in the North Island who are experiencing difficult conditions within their hives need to look at nutritional levels and not 'new' diseases; e.g., CCD.

Guest speaker at 8 September meeting

Adaire Nicholls from 'Apiary Manager' will provide an in-depth presentation of an online apiary recording system with all the advantages for beekeeper management and tracking.

EVERYONE Welcome to attend the meeting at the Hornby Workingmen's Club, Carmen Road, Christchurch, Tuesday 8 September 2015 at 7.30 pm. Join us for a meal from 6.30 pm in the Club Restaurant.

- Geoff Bongard

Otago Branch

The Branch field day will be held at the Lawrence Golf Club on Sunday 4 October, starting at 9:30 am for a 10 am start, and ending at about 4:30 pm.

The programme will include:

Dr Linda Newstrom-Lloyd speaking on Trees for Bees. Linda will be accompanied by another speaker who will talk about planting issues.

Graeme Bremner, who works for MPI Forensics. Graeme has been working on identifying the geographic origin of honey in New Zealand. He will discuss a number of issues.

We will also discuss progress of the integration of the apiculture industry.

We will address some practical issues of beekeeping for hobbyists as well as for commercial beekeepers.

We will break for morning and afternoon cuppa tea as well as lunch.

Cost: free for NBA members, $10 for others. Please bring your own lunch (or buy it in the village).

- Tudor Caradoc-Davies, Branch Secretary

The four-wheel drive training day organised by the Bay of Plenty Branch. Photo: Jody Mitchell.

HISTORY

C. F. HORN, BEEKEEPER AND EDUCATOR

Greg Wagstaff, with excerpts from the autobiography of the late Chas. F. Horn and his obituary in the New Zealand Herald

According to his obituary (*New Zealand Herald*, 1973), Charles Frederick Horn (1885–1973) was a prominent farmer, beekeeper and Methodist church stalwart in the Waikato.

Mr Horn, also known as Chas, was born in Thames. He and his family spent time gold mining in the Coromandel Peninsula before moving in 1902 to the Elstow district, where they converted land to dairying.

Chas Horn married Ellen Ferguson in 1912. They moved to Eastport Road, Elstow, where they established a dairy farm and raised five children.

The *New Zealand Herald* obituary included specific mention of his experience in beekeeping, as reproduced below.

Noted apiarist

He was widely known as an authority on beekeeping from the age of twelve, when he was given a box of bees, he began a career as an apiarist that lasted all his life.

As early as 1927 he won a medal for his Isaac Hopkins Memorial Essay and as recently as 1969 he was the opening speaker at the North Island Beekeepers' Seminar at Ruakura.

The late Mr Horn was among the first ten members of the Honey Producers Association formed in 1903. During his peak years he managed 200 hives and in the record season of 1938 gathered fifteen tons of honey.

Anecdote

NBA Bay of Plenty Branch member Greg Wagstaff was a neighbour of the Horn family. In the anecdote below, Greg recalls the influence of Chas F. Horn on him and his family.

My introduction to beekeeping was at the age of seven or eight. My family farmed on Eastport Road, Elstow, near Te Aroha.

My great grandfather, A. A. Wagstaff, originally brought 500 acres circa 1912. Our near neighbours, the Horns, had moved to the district about six years earlier. So I was the fourth generation on this land and hobnobbed with the Horn boys that were my age.

Chas F. Horn, then in his 'ninth decade' and still keeping bees on their farm after doing so for many years, gave me my first introduction to bees. He used registration number C10, if I recall correctly. I have memories of playing around his apiary and in the honey shed. It was about that time that Mr Horn set my family up with our first hive.

Our family continued to keep around 25–30 hives for pollinating our Bay of Plenty kiwifruit orchard and to keep us in honey until varroa came along. After nearly 30 years of me pursuing a career in Information Technology, my family and I moved back to the Bay of Plenty. I rekindled my interest in bees and set up BEEWORX Limited, a small commercial business running around 400 hives.

I give thanks to Mr Horn, who was a great influence to many including his grandson, Bryan Clements of Waikato Honey Producers Ltd fame.

Following is an excerpt from *My Golden Century* by Chas F. Horn, circa 1973, briefly describing his beekeeping experience (Horn, 1973?). A copy is held at the National Library of New Zealand. While not included in this excerpt, it was interesting to read that the farms on Eastport Road were covered in 20-foot-high manuka before being "broken in" and converted to dairy pasture.

C. F. Horn's hive/super barrow, circa 1940. It remained in use (as photographed here) for many decades after his death. Photo: Greg Wagstaff.

Excerpt from **My Golden Century**

Amazingly clover honey flows

In 1915 the clover bloom was very profuse all over the Waitoa Estate and the nectar flowed from it so phenomenally that one beekeeper who established an apiary of 100 hives in that particular year got amazing results. He had very poor and inadequate equipment hastily assembled and he collected swarms from near and far yet using only a two-comb extractor he extracted twelve tons of clover honey that season. The same year my apiary was smitten with bacillus larvae, but even so I secured some high returns from the unaffected hives—as much as 200 pounds per hive. It must be frankly stated, however, that despite better methods, better bees, and better equipment, our returns from clover have progressively decreased. It has now almost ceased.

I have one hive on a platfarm [*platform*] scale which like all the others, is requeened every year, thus ensuring a big force of field bees. The honey flow normally starts in November and finishes at the end of January. In the years 1915 to 1925 Pennyroyal yielded honey in February and it was my practice to winter the bees on it, but this has also failed us in recent years. Several theories have been advanced in explanation of the failures. One is that the very heavy growth of grass now being attained prevents the soil temperature from rising sufficiently. Plausible though this argument may be, it is not sound. Even during prolonged spells with high temperatures of 80 degrees [*27° Celsius*] the fields are white with clover and yet we still fail to get clover honey in anything like the quantities we got before.

My own conviction is that long years of topdressing and heavy liming have drained out certain trace elements which are essential to nectar secretions. This conviction is further borne out by the fact that all newly-grassed land yields clover honey profusely for

continued...

some years but this inevitably decreases with the passing of time. I have kept the scale hive records for over 40 years, and am still keeping an apiary of 43 hives which produced a little over 4000 pounds this year. A little of this was clover, but I wonder hopefully if I shall live to see the cause of this mysterious decrease solved.

While I am on the subject of bees it is fitting to refer to the many occasions on which I have derived great pleasure from lecturing to various groups on the big subject of bees. The organisation and co-operation of these social insects and the essential place they maintain in our economy, apart from the production of honey and wax, is intriguing and fascinating to many types of audience—High School boys and girls, men's fellowships, Young Farmers' Clubs, Mothers' Clubs, the Women's Division of Federated Farmers, and Rotary Clubs. A pleasing proof of this popular interest is the lively enquiries at question time. Modern research has enabled us to answer most of the questions asked but it must be confessed that many mysteries remain unresolved. In view of the unique part clover plays in the building up of our soils by storing nitrogen drawn from the air, it should be apparent to all that the pollination of our clover, 95 per cent of which is done by honey bees, is of national importance and therefore an adequate number of apiaries should be maintained if our clover is to thrive.

The most modern menace to the honey bee is the practice of spraying pests and weeds when the clover is in bloom, but spraying is now under departmental control and this is very necessary, especially in the areas where seed is produced. My highest average over the five apiaries was secured in 1927 and was 177 pounds of honey per hive. The Elstow yard that year averaged over 200 pounds per hive.

I had no truck of my own at the time, so was obliged to get a carrier to come in the evening and transport 60 heavy supers of honey which I had taken off between milking times. The honey was stored in a hot room—a radiator was used to circulate heat. It was all extracted the next day and the following day I repeated the procedure, taking off another 60 supers. These supers averaged 45 pounds of extracted golden honey giving me a total of over two tons. This was truly a rare golden flood in my golden century, and one that enabled me to make essential improvements to our home, as well as to the apiary outfit. How ironical to think how often since then, by close attention and requeening, I have succeeded in building up much stronger colonies than I obtained then. Yet I have failed to get half as much honey and this is the most exasperating feature of beekeeping. Although the monetary rewards are so uncertain, the fascination of it all has continued and still remains with me at the time of writing, and as I prepare for season 1964–1965, my 80th year. This surely proves that there is more in life than just monetary gain.

Acknowledgement

Our thanks to Greg Wagstaff for his anecdote, the photograph of C. F. Horn's barrow, and for furnishing the excerpt from *My Golden Century.*

Sources

Horn, Chas. F. (1973?). *My golden century.* Paeroa, N.Z.: printed by Thames Valley News.

Obituary: Early settler passes on. *New Zealand Herald.* (1973, no date).

Jody Mitchell (centre) was the overall winner of the Ecrotek apiculture industry photography competition, held at the New Zealand Apiculture Industry Conference, Wairakei Resort Taupo, June 2015. Jody is shown here celebrating with Dave Wrathall (left) and Stuart Ecroyd (right) of Ecrotek Beekeeping Supplies. Photo: Frank Lindsay.

ABOUT THE APIARY

INSPECTION TIME!

Frank Lindsay, NBA Life Member

I'm writing this while overseas so I can't describe what is happening in my hives, but I have a reasonable idea based on previous springs and observing hives going through the winter.

Before I left, it appeared that some species were flowering a little earlier than usual. Early nectar and pollen sources stimulate brood production, which uses up food supplies very quickly.

Hives surviving the winter will double in bee numbers over the next two months provided they have ample pollen and nectar coming in and the hive has adequate honey stores. A hive should have a minimum of three frames of honey; enough to carry a strong hive through a week of inclement weather. If there are fewer than three frames of honey, feed the hive.

Some rural areas in the North Island are now so crowded with hives that supplementary feeding is required to achieve this growth. Commercial beekeepers will be adding as much as five litres of sugar syrup to feeders and 500 grams of pollen supplement every few weeks during this growth period. It's only strong hives that gather a honey crop.

You can tell when a hive has abundant nutrition, because drone brood development begins.

You can tell when a hive has abundant nutrition, because drone brood development begins. It's a very good sign, but those hives producing drones much earlier than others can also be an indicator that they are likely to swarm in mid-October (when the first real flush of nectar comes in) unless action is taken to prevent this.

Lighting the smoker

In September on warm days (15°C or higher), you should start inspecting your hives. Light the smoker. It's an art that experienced beekeepers make look so easy. I use dry pine needles that have been stored in a sack for a few months to really dry them out. Empty the smoker completely, making sure the lugs holding up the grate are not covering the bellows hole at the bottom.

Take half a handful of pine needles and press them into the bottom of the smoker. Take another handful and light the bottom so you have flaming needles. Put them gently into the smoker and begin working the bellows so the flame is maintained. As the flame gets bigger, push this handful gently all the way into the smoker while continually puffing the bellows. This should generate much more smoke. *[Editor's note: see page 16 of the August 2015 journal for a good example demonstrated by the late Andrew Beach.]*

Press the needles down harder, making sure the smoke continues. Then add another handful on top and press down, while continuing to work the bellows. The smoker should still be producing lots of smoke. Then place another handful in, pressing them down hard while puffing the smoker, until the smoker is full of compacted needles. You now have a decent ash bed on top of the grate, which should keep the smoker going for half an hour or more.

Close the smoker and you are ready to start beekeeping. No matter what you intend to do with a hive, whether it's just a peek or fully opening the hive, have your smoker lit and ready to use. Smoke allows you to control the bees if required.

Undertaking the first inspection

The point of the first inspection is to clean up the hive. Replace old, dark comb and frames with more than 10% drone brood, if you are going to use drone brood removal to assist with varroa control.

Assess the queen's laying pattern, the number of bees in the hive, the brood pattern, and look for signs of disease, and if required, put an empty super full of drawn frames on top for the bees to expand up into.

Approach the hive from the side and observe the comings and goings of bees at the entrance. Good amounts of pollen and bees with distended abdomens coming into the hive indicate that brood development is well under way. Give the hive entrance four puffs of smoke and repeat after another two minutes. This allows time for the smoke to work, overwhelming the guard bees' sense of smell. The bees around the entrance cannot detect alarm pheromone given off by those bees that normally alert the hive to danger, so remain calm.

If there are a number of hives in the apiary, smoke these also. At the first hive, remove the roof and place upside down on the ground in front of the hive. Gently prise up the crown board 25 mm and waft a little smoke over the top of the frames. Proceed to remove the supers and place them on the roof. Before removing the bottom super, observe whether it's full of bees. If so, tilt the super back and look underneath for bees hanging below the frames. If they are hanging underneath the middle three frames and most of the other frames are full of bees, the hive is ready to have another super put on top. Placing the removed supers in front of the hive helps collect incoming workers.

You must inspect ALL frames for diseases, especially for AFB.

Then inspect the bottom board and clean off any debris. Brother Adam (Buckfast Abbey, UK) used to change his bottom boards for clean ones, but generally cleaning them with a hive tool is sufficient unless the board is extremely dirty, in which case I would replace it for a clean one. At the same time, check the pallet the hive is standing on. Is it in good condition, and will it survive a 200-kilogram weight?

Next, return the bottom super to the bottom board. Starting from an outside frame nearest you, remove it to give space to work through the rest of the frames, inspect it and place it leaning up against the hive. You have now created space for you to inspect the other frames. Remove them one by one, inspect and replace against the one nearest you to give space to remove the next frame without rolling or disturbing the bees on the frame.

You must inspect ALL frames for diseases, especially for AFB. We start by inspecting the bottom super, as it's easier and quicker

continued...

because it generally contains fewer bees. If you start from the top super, the bees are forced down into the lower super(s), which causes crowding in the bottom super. You could end up squishing bees when removing the frames, and one of these could be the queen.

Shake off any bees on the frame by lifting the frame halfway out, then giving it a quick downwards jerk to dislodge most of the bees off the frame on to the bottom board. This is done by holding the end of the frame in both hands with your thumbs on each lug so you have control. With the sun behind you, look over the surface of the frame and into each cell. Flick off the capping on any oddly capped cell and check what's underneath. There could be a dried-up larva or a developing bee. If it's an old dried-up larva that's easy to flick out with the tip of the hive tool, it's generally of no importance: just chalkbrood or sacbrood left capped when the bees moved up.

What you are looking for is scale or larvae in cells that are black and don't come out. (Check your reference book beforehand, or go to the AFB website www.afb.org.nz to see photos and other information about symptoms. For those of you with smartphones, download The AFB App to use as a reference.)

After inspecting the first frame, put it back into the super, placed hard against the side of the super nearest you. Then move the next frame over towards you and check it, after shaking off the bees. In good sunlight, it takes about 30 seconds per frame. If there is no brood in this super, remove the super from the baseboard and place it on its end beside the hive (this is going to be part of your first swarm prevention measure).

If you haven't encountered any problems, give two puffs of smoke over the top of the frames of the next super on the upturned roof to control the bees, then look down between the frames for capped brood. If the hive is two supers high and contains the majority of bees, put the second super immediately on the bottom board. Remove the outside frame and stand it aside as before and start inspecting the frames, but be gentler as there are more bees (and possibly the queen) in this super. There is no need to look for the queen unless you intend to mark her: just look for eggs. The presence of eggs tells you that she has been there within the last three days.

Put the frames back in the same order unless you find ones that are dark (i.e., you can't see light through when held up to the sun) or have excess drone cells or brood in them. If no brood is present, remove immediately and replace. If there is brood, move it to the outer edge off the brood area to be removed on the next inspection. Don't split the brood nest, as this can slow down the growth of the hive. The bees will increase the size of the brood nest as more bees emerge. Bees like to move up as the season progresses, so you will have given them room when the hive is re-assembled.

If the feeder is now in the bottom super, remove it and reposition the remaining frames into the centre of the super, pushed up tight. Replace the feeder with frames from the bottom super, preferably with frames that contain pollen in outside frame positions. The reason for pushing frames together tightly is to maintain the correct bee space between the frames. If there's too much space, the bees put propolis along the self-spacing edges, making the bee space wider. This requires more bees to maintain the heat of the brood nest, making it inefficient.

If propolis has built up, use the hive tool to remove it by sliding the sharp edge of the tool down the edge of the frame while the frame is still in the hive. Continue the inspection frame by frame after shaking off the majority of the bees.

Checking brood pattern, disease symptoms and food stores

When looking at frames of brood, you are looking at the conditions the brood has been developing over the last 24 days. Sometimes during periods of wet weather the bees might not have stored sufficient pollen, so spotty or patchy brood could be followed by or surrounded by a perfect brood pattern. The difference can be nutrition or could be disease related.

Check the condition of the queen's laying pattern in the newer areas of brood.

Check for diseased cells by flicking off the cappings of cells in the middle of a patch of emerging brood. Normally these capped cells contain a healthy, developing larva that the queen laid a bit later. Provided you haven't touched the developing larva, it will emerge as a healthy bee.

Sometimes these cells remain capped because the larva was infected by sacbrood or chalkbrood, which is another sign of stress. Assess the queen's laying pattern and the number of brood frames in the hive. The best way to assess the queen's laying performance is to look at the age of uncapped brood in an area. If the larvae are all the same size (i.e., the same age) this proves the queen is laying well and any earlier spotty brood (in the centre of the brood) was a nutrition-related issue. If there are fewer than 15 cells missed in a 75 x 75 millimetre square of brood, you have a good queen. If the number of missed cells exceeds this figure, consider replacing the queen.

Assess the amount of food in the hive. As stated above, I like to have at least three frames of honey reserves in the hives at all times during the spring build-up. This will carry a strong hive for three days during inclement weather. Any less and the hive will need feeding, and you will need to continue feeding right up to the first honey flow.

The difference between an average hive and a strong hive is nutrition.

The difference between an average hive and a strong hive is nutrition. Look at the colour of the frames. Frames become darker with each round of brood rearing. To repeat, you should move old frames (ones you can't see light through when held up to the sun) and any broken frames to the outside of the super, or out of the hive completely if they don't have brood in them. Replace them with frames drawn during the last honey season. One clean, empty frame (no wax) can be placed in each hive on the outside of the brood area for the bees to draw out drone comb.

Varroa mite populations can be assessed by using an alcohol wash or a cappings fork to remove 100 drone pupae at the pink-eye stage. If the mite population is low (one to two percent), the drone brood can be left for queen production. If higher, it can be cut out between days 18 and 22, thus trapping the mites in the brood. You can melt out these frames to recover the wax, feed the drone brood to chickens, or just bury it to turn into compost. If the night-time temperatures are above 10°C, you can start formic acid treatments to knock down mite numbers

continued...

or put in strips. Whichever method of mite control you choose, use the same method on all hives in the apiary.

Strong hives with six frames or more of brood should be reduced to prevent possible swarming next month. Boost weak hives with the excess brood or unite with another weak hive, *but do your disease inspection first.* If all hives are at the same developmental stage and bee numbers, they are easier to work as a whole as the same procedures are done at the same time.

For the stronger hives, add the odd super and if the mesh bottom boards are dirty, replace them with clean ones that have been soaked in a 5% sodium chloride solution for an hour or more to sterilise. Brother Adam used to boil his in lye to clean them. I like the idea of having clean floors as with the design of hives we use, the bees have to walk through the hive debris, something feral hives in a tree never do.

Some recent observations

Those with more hives and experience might be interested in reading about some of the things I learned while inspecting hives and nucs during July.

It still amazes me that nucs all set up the same way, but placed in different apiaries can be so totally different in their size and make-up after four months. Nucs placed within 100 metres of a drone-congregating area failed miserably to mate, perhaps because the queens don't mate close to their hives to stop inbreeding. It just so happened that the nucs and bees introduced had not come from this area to prevent inbreeding, but instinct took over. Queens perhaps went further afield than necessary, getting lost through a change in the weather or something, but the result was that only a third mated successfully. In other apiaries, I had between 85–100% mating success. Different apiaries, different results.

This year I also put a square of fly screen stapled over the entrance on three sides, with an entrance to one side or the bottom to prevent robbing. It seems to have worked, as I hadn't lost any to robbing, and there was a long robbing season earlier this year. That being said, I transferred some into full-size supers and left off the guard. Some were immediately robbed out, so another lesson learnt.

All queens are different in their egg-laying ability, but this can also be influenced by the conditions within and outside of the hive. The number of healthy young bees available

Queens, and consequently hive performance, follow a bell-shaped curve

to feed the brood and the hive's location are important. Hives in the shade require a lot more honey to maintain brood temperature than those in all-day sun. The availability of good-quality pollens made up of several different species, all with a high crude protein level above 25%, and the availability of nectar close by, are important factors.

Queens, and consequently hive performance, follow a bell-shaped curve: some are not good brood producers, the majority fit in the middle, giving hopefully a better-than-average crop and a few are exceptional, booming ahead from the start and outproducing nearly all other hives.

Then when checking these hives you find two queens (mother and daughter both laying in the hive). Not all bees follow the rules. I have seen and photographed three queens in a hive, two on the same frame within centimetres of each other and the third on the next comb over. The third looked like a newly mated queen.

In beekeeping, as with everything we do, most things follow an 80/20 bell curve; i.e., we spend 80% of our time on 20% of the hives. It's hard but most commercial beekeepers eliminate the queen in the lower 10% and split the high 10% in order to end up with hives with even populations. As I mentioned earlier, these hives become easy to manage because the same thing is done to all the hives in the apiary at the same time.

In the interval between late June and late July, I have been checking hives for weight. I was both surprised and a little shocked that some four-frame nucs that I had placed into full-size supers a little over two months ago had grown to cover all frames and had used all their honey reserves. I fed them to keep them going for a month, but they could have easily died if I hadn't checked.

I must admit to playing with some hives to find out why they are not performing, putting the odd bee boost into a weak hive to see if there is a sudden increase in vigour. This often works, but not always. There's usually something wrong but it's not obvious, and there are just so many variables that influence a hive's performance.

In digging the garden, some rhizome plants are already sending up shoots, but spring is still a long way off. Is this telling us something? Is spring going to be early? I don't know but everything associated with beekeeping is interesting and ever changing.

Selecting a good site

Hive placement and positions in the apiary also count. I have a site where I just can't place a hive on the back of a pallet because that hive will usually die during winter. I don't know why—it could be over an underground stream or something—but hives in that position just don't produce and die during the winter. Moving an apiary 50 metres can sometimes influence things but often we commercial beekeepers are visitors on properties. We don't get to have the choice spot in the lambing paddock. We have to settle for second best and being out of the way of daily farming activities.

Some people are better at selecting sites than others. Perhaps they are more in tune with the environment, or is it observation? Look where animals bed down at night: it's usually the warmest spot. Visit the site during different wind conditions to judge the best place, and check in winter for shaded areas. Those with a bit of technology at their disposal can put the winter sun over Google Earth and see the results without leaving home.

We also have diverse soil types. Papa clay (a very sticky, grey mud clay found from the Whanganui River to Taranaki) is OK to drive across until you break through the grass layer, then you are stuck; it's so slippery, especially after rain. Rich loam can hold a lot of water in the winter, making access for heavier vehicles almost impossible. For apiary sites, you want easy access that a truck or ute can drive to in all weather. Some beekeepers have to add a little bit of round river shingle to tracks to improve winter access. Others carry chains in case the area gets slippery.

River flats are tempting sites, but it's a risk using them as the 'one-in-100-year' floods seem to happen every 10 years nowadays, and coming into an El Niño could mean more rain or much drier than normal, depending whether you are on the west or east coast.

Have a great spring. It's one of the most interesting times in the beekeeping year. What we do now determines our honey production.

continued...

Watch your lifting techniques. So many of us pull a muscle when we're not warmed up. You can't afford to be off work at this time of the year.

Things to do this month

Do an AFB check. If you find any, separate off the stored supers that came from that particular hive and destroy them. If you can't identify the individual supers but know which supers came from that apiary, put an apiary quarantine on that particular apiary for 18 months using those supers only in that apiary.

Feed hives if necessary: hives should have a minimum of three frames of honey in them at all times.

Spray or weed whack the vegetation surrounding hives.

Check stored supers for wax moth. Cull old frames from the brood nest or work them gradually to the outside if they contain brood so they are replaced within a month.

Get the wax dipper going to dip new and reconditioned supers so that replacement hive parts are ready for another season.

Put in early mite treatments or check mite levels using a cappings fork, sugar shake or a strip in a jar for 30 minutes or natural fall over a week with mesh bottom boards. Check your varroa manual to calculate mite numbers and treatment options. Don't forget to rotate treatments to prevent resistance developing.

Mite resistance could compromise your varroa treatments. Consider doing a 'Pettis test'. Place a small piece of strip in a jar of 300 bees for 24 hours, then follow with an alcohol wash.

SOME OF THE SPONSORS' WARES DISPLAYED AT CONFERENCE

Photos: Frank and Mary-Ann Lindsay.

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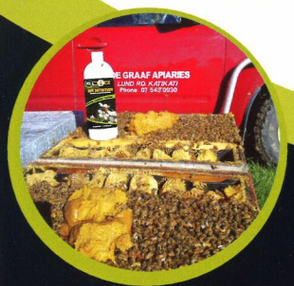
Sodium 1701.83	Iron 0.703	Copper 0.064
Manganese 0.041	Iodine 454.50	Molybdenum 0.01
Selenium 0.01	Zinc 0.360	Boron 6.060
Cobalt 0.010		

Vitamins Vitamin A, Vitamin C, Vitamin E, Vitamins B1, B2, B3, B5, B12, Fucoxanthin, Choline, Folic Acid

Amino Acids (µmol g dwt)

Aspartate 5.171	Histidine 0.548	Glutamate 0.74
Phenylalanine 0.717	Arganine 0.583	Glutamine 0.733
Asparagine 1.141	Proline 0.683	
Alanine 3.974	Serine 0.621	

Phlorotannins 8-10% g dwt
Mannitol 3500 µmol g dwt



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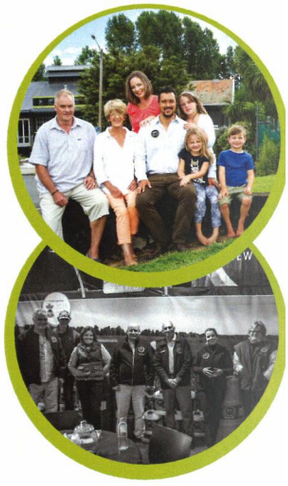

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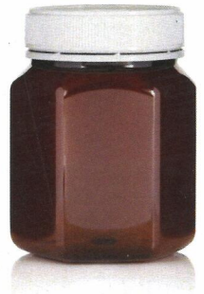
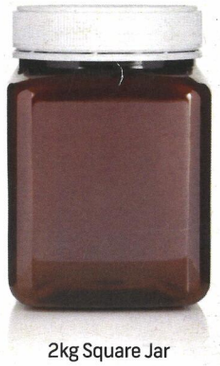


1kg Hex Jar

500gm Hex Jar

250gm Hex Jar



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