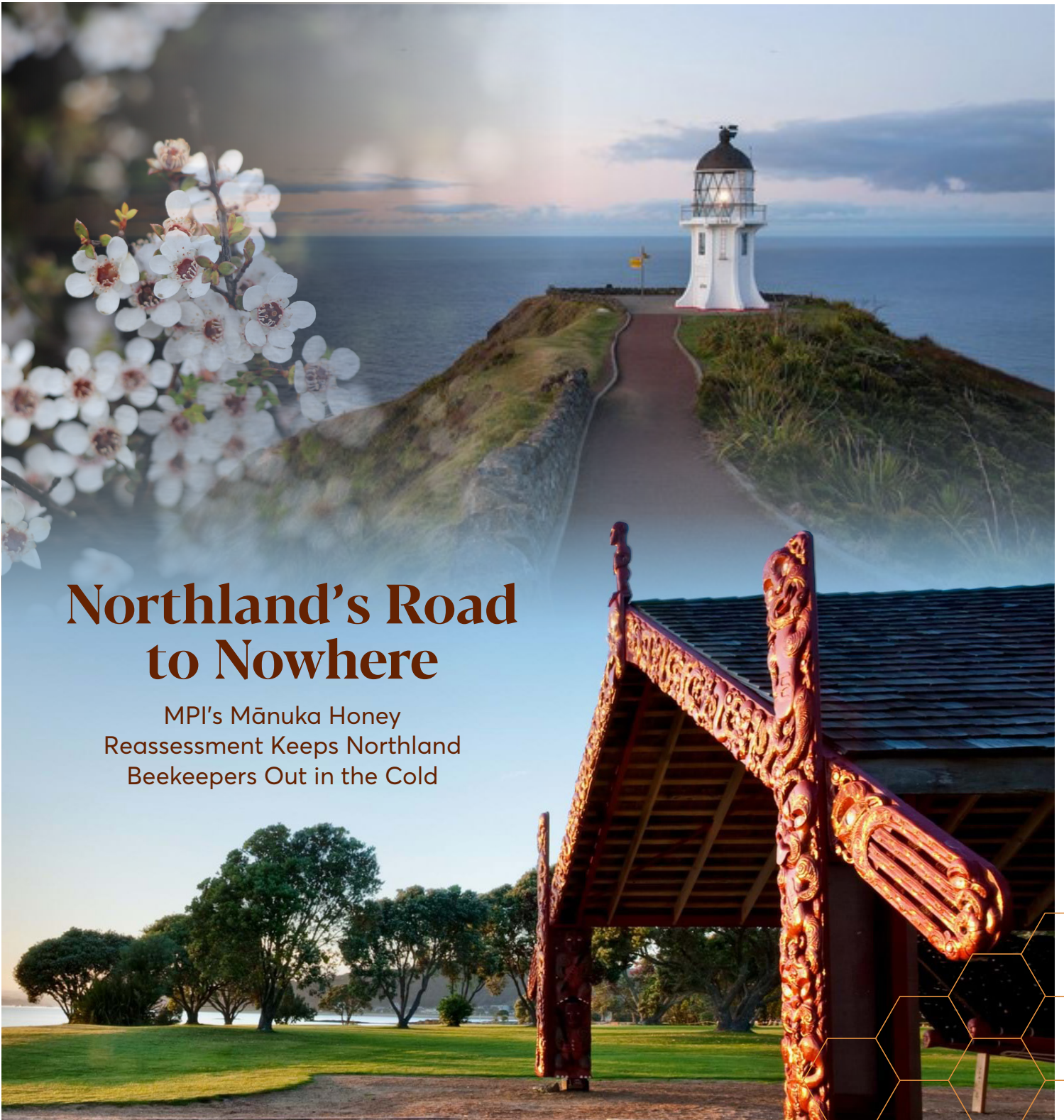


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APIARIST'S ADVOCATE



News, Views & Promotions - for Beekeepers - by Beekeepers



Northland's Road to Nowhere

MPI's Mānuka Honey
Reassessment Keeps Northland
Beekeepers Out in the Cold



Anger and Frustration in Northland at Mānuka Honey Reassessment

Ever since the Ministry for Primary Industries (MPI) introduced a chemical standard for mānuka honey exports in 2018, Northland beekeepers have cried foul as much of their honey has failed to meet the new grade. They hoped a reassessment of the standard, which commenced in 2020, would see improvements put in place. However, last month MPI announced that the two-and-a-half-year process would result in no changes, leaving Northland beekeepers angry and frustrated over what they see as a drawn-out and “secretive” process which lacked Māori involvement.

“The result of this review has been totally disappointing,” says Pita Tipene, chair of Te Rūnanga o Ngāti Hine.

The Northland iwi, with beekeeping interests, were instrumental in bringing about the review of the mānuka honey standard imposed on exporters by MPI in 2018. While the change to a chemical definition, as apposed to pollen counts, meant many batches that might previously have been marketed as mānuka honey now fell outside the new standard, no single region was as hard hit as Northland. With one of the key chemical marker levels, 2'-MAP (2-Methoxyacetophenone), regularly testing below the grade in Northland honey, what was once an abundant mānuka honey producing region has seen huge retrenchment in beekeeping operations, and many go out of business.

Therefore, they pushed for a review and change, thus MPI committed to collecting more samples and analysing regional variations, as well as looking into further concerns from the industry, such as blending and adulteration risks, DNA stability, the value of DNA markers and alternative markers.

On June 2 – just hours before the result of the review was publicly released – a hui was held at Waitangi, attended by Ngāti Hine and other Northland beekeepers and stakeholders. An MPI delegation announced there would be no change to the export standard.

While that decision was clearly not what the Northlanders had pushed for, it was the process used to get there which wrangled too, and Tipene says the mood of the meeting reflected that.

"We clearly expressed our disappointment, our anger, our frustration at how the Ministry for Primary Industries has gone about this."



Pita Tipene, chair of Te Rūnanga o Ngāti Hine. The Northland iwi was instrumental in calling for a reassessment of the mānuka honey export standard only to be "totally disappointed".

THE REVIEW

The findings were a long time coming, with the review committed to in November 2020 and a call put out for honey samples and test results, which were collected up until July 2021. A period of standardising, cataloguing and collecting more information about the samples followed, before analysis from NZ Food Safety. Those findings then went through an independent peer-review process, completed in late 2022, the recommendations of which were then subject to more scrutiny, this time an internal NZ Food Safety and MPI review process to ensure "that we not only got the science right, but that how that science relates to our role as the regulator was well-considered", says acting deputy director-general of New Zealand Food Safety, Jenny Bishop.

"Good science does take time. There was a big amount of data to work through and during Covid times, those interruptions do have an impact on our work programmes," Bishop says.

Ultimately, the independent review panel put together by MPI found that on all four areas of the honey standard to be assessed "it is difficult to test the topics with a high degree of rigour". Reasoning for this was the unsuitability of the honey sample collection reviewed and a lack of "metadata" around many honey samples. Therefore, MPI's original assessment from 2018 stands, with its conclusion that "there were not regional differences in 2'-MAP concentration that would discriminate against a particular region's ability to produce monofloral manuka honey".

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The panel of scientists advised MPI that "to improve the analysis, it would be necessary to collect detailed and accurate metadata for the samples". Given the multi-year review – all while Northland beekeepers were going out of business – why did MPI not make greater efforts to ensure the suitability of the data to reach a conclusion, one way or the other?

HOLES IN THE DATA

Dr John Craig, a retired Professor of Environmental Management at The University of Auckland, as well as the former head of Ngāti Hine's beekeeping operations, believes, for MPI, it is "convenient" they didn't have adequate data to draw conclusions.

"It was really just an exercise in how to take as much time as possible, and convey as little information as possible to come out with what, politically, you would expect them to come out with," Craig says.

"If they wanted to actually have a real investigation, they should have handed it over to an independent body to do all of the work and then made the information available. There are no numbers which have been made available. So, I have no idea what they found and how many samples they ended up accepting."

MPI manager of operational research Dr Claire McDonald has overseen the original manuka honey science programme that led to the 2018 standard and also the latest review. She says there were around 70,000 "datapoints" used as part of the review, gathered from the honey collected ahead of the 2018

Dr John Craig. The retired professor of environmental management contributed "hundreds" of honey samples to the reassessment programme, which he condemns for being "secretive".

standard, honey test results from laboratories and those submitted by stakeholders as part of

the reassessment. However, a "very minimal" amount of the honey samples provided by beekeepers for the purposes of the review had the full scope of data required to overturn the standard in place. That being, GPS location of hive sites, age of the honey, existing test results and details of storage or processing.

MPI went back to beekeepers when data was missing, but still the required information was not forthcoming in many instances they say.

"Apiary sites and locations are commercially sensitive and so it can be difficult to get the level of information required to assess that. We often get the region, or the rough area, but not the

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specific apiary site to drill down into the level of detail we might want to," McDonald says.

As MPI see it, in the case of the reassessment process, the onus was on those wanting change to provide adequate new data to overturn the existing manuka honey standard.

"We have had people go out and take samples straight from the apiary sites and work with beekeepers to get them direct as part of the MPI science programme [for the 2018 standard]. That's why we went out to industry – to know what was out there that we didn't previously have access to. That is what we built into the reassessment process," McDonald explains.

However, Craig says his experience with the process involved limited communication from MPI's end regarding the hundreds of samples he submitted following their own scientific and statistical analysis.

"Graham Wood, a former statistics professor at Otago University, and I put together a collection of samples that I managed to get from people from Kaiwaka through to the Bay of Islands area. Hundreds of them. He analysed those against MPI's original samples, after they gave us all the samples they had. He showed that the 2'-MAP was significantly lower in Northland, but the other three chemicals were not significantly different. So, we submitted that to MPI and no response whatsoever. I know many others in Northland submitted information. We have no idea how it was used, or discarded, or anything," Craig says.

It is that lack of transparency that really rankles the scientist, as it leaves the out-of-pocket Northland honey producers without an understanding of where they have gone wrong.

"What faith can you have in something which is secretive? That's not the way you do science. Science is very open," Craig says.

MĀORI INVOLVEMENT

Failings of the sample collection process are not the only area of MPI's review to draw criticism from the far north though. Among those to voice their frustrations at the Waitangi hui was Blanch Morrogh, CEO of Kai Ora Honey, a Kaitiāia based beekeeping business and exporter. Morrogh says she is concerned that the review was "an internal audit on themselves (MPI)" and she questioned the MPI delegation about the Māori representation in the process.

"During the meeting they made it sound like they had consultation with Māori by referring to a Treaty partner in the Mānuka Charitable Trust," Morrogh says.

However, Tipene, who chairs the Trust, reports that when that level of consultation was questioned, it became apparent there

had not been consultation and the MPI team apologised for giving the wrong impression.

"It took a lot of probing to come to the understanding that there was zero Māori representation and consultation throughout the review. When I asked, specifically, 'out of the 10 expert scientists, how many were Māori and how many were from Tai Tokerau?', only one was Māori and none were from Tai Tokerau," Morrogh says.

Bishop identified Dr Nikki Harcourt of Manaaki Whenua/Landcare Research as the Māori research expert on the review panel.

Morrogh and Tipene both believe mātauranga Māori (Māori knowledge) considerations should have been included in the review process.

"If they had more Māori scientists in the review they would have seen things differently, asked different questions and carried out more analytics on specific regions," Morrogh says.

It appears mātauranga Māori scientists have not been fast to get involved though, with MPI claiming an appropriate person "could not be identified".

"We prioritised it, but sometimes you can't find the right person to help with the work. It's a shame and something we want to keep building on. I don't know how we could have done it any different, given there was no one identified to be available," Bishop says.

ON THEIR OWN?

While the decision not to alter the MPI mānuka honey standard may be angering those in Northland, there appears to have been little reaction from other parts of the country to the announcement.

Apiculture New Zealand chief executive Karin Kos says the general consensus is it has taken too long to get to a decision of no change, and they will take a closer look at the review when their Standards Focus Group meets in July. For now, their sense is that most in the industry are "well across the existing definition".

In Northland though, the reality of what they deem an unjust standard continues to bite with Morrogh claiming Kai Ora Honey – which has had to drop from almost 2000 hives in 2018 to now under 500 – has 40 drums of honey from the past season in the shed, all of which tested as non-mānuka as per MPI, despite some having up to 20+UMF ratings. That has dropped its value from approximately \$120,000 to about \$50,000, she says.

As for anyone who says they should just get in the blending game, the Kai Ora chief executive says it "ain't that easy" as they are limited by a lack of facilities and, for the most part, the economics of buying in appropriate blend honey, transporting honey, re-heating and blending costs just don't stack up.

They hoped that the multi-year reassessment would offer a lifeline, but instead have been left with conclusions they deem unfairly reached.

"They paid somebody to do all this, so why didn't they pay someone to be on the ground in the far north, to work with far north beekeepers, to ensure there was enough representation, to ensure adequate honey samples were provided, to ensure a fair analysis? There was none of that. If they want to do a review, why would they do it behind a desk and not out in the field?" Morrogh asks.

"If you are going to carry out consultation which is fair to Northland beekeepers. You get out on the ground and be fair to Northland beekeepers," she says, adding "Don't leave the onus on beekeepers, who are struggling to find time and money to scramble through the mess that MPI have made." 🐝



Blanche Morrogh's Kai Ora Honey business gathers honey from a range of sites in Northland which she claims can return high UMF ratings, yet fail MPI's mānuka honey standard.



The Blundered Mānuka Honey Definition



While the decision from the Ministry for Primary Industries' (MPI) to stand fast on their mānuka honey definition has drawn howls of protest from Northland, there appears to be very little noise from other areas of beekeeping – that's a big mistake writes Ian Fletcher as the current standard risks exploiting smaller producers, misleading consumers and failing Māori.

BY IAN FLETCHER

MPI's decision not to propose changes to the existing mānuka honey export definition is more than a mistake; it is a blunder. It leaves MPI's reputation in tatters in many parts of the beekeeping and honey industry, and looks to have gratuitously favoured big operators over small, at a time when the industry is under serious economic pressure.

Before saying why I think that, I should note that I don't usually write on beekeeping – I don't keep bees or deal in honey, and I generally think it's better to write about things I know. But so many people have expressed reactions to this decision, and I think it so ineptly handled, that I've decided to tackle it directly.

As regular readers will have detected, I'm no fan of MPI. This time, I think they've managed to win a nasty trifecta: making serious errors of science, of policy, and of politics. All at once. Maybe they have more talent than I thought. Let's consider each in turn, and then look at the bigger picture.

SCIENCE – FAIL

On science, the MPI report (and the accompanying review report) makes clear that the evidence they had available was incomplete and not really fit for purpose. But rather than go and get better evidence (as their political commitments and policy responsibilities would have required), they drew the comfortable conclusion that inadequate evidence was itself enough to draw a meaningful conclusion.

This is confirmation bias (looking to prove what you already believe).

It compounds the existing bias in the data used when the definition was first

developed, as that was based then on the provider's assessment of samples, so it confirms the beliefs of the 'original' sample providers. And the existing definition was in part a result not of any science, but of negotiation between MPI and NZ Beekeeping Inc (who had brought legal proceedings that looked likely to succeed).

Secondly, on the question of blending, the conclusion is that blending to create qualifying mānuka honey was "statistically unlikely". Wrong tool for the job here: this is not a statistical question, as blending events are not independent of each other (like coin tosses or dice throws). Rather, blending is an economic question: it is commonplace as honey is put together for the market, so the real question is about blending for the purpose of creating a product that gains value as a result of the definition, but at the expense of either consumers (who pay more than they should) or suppliers (who receive less than they should). There is widespread belief that both these outcomes are occurring. That's a charge that deserves a serious look, not superficial dismissal.

POLICY – FAIL

On policy, MPI has taken a fragmented approach: the whole industry needs to be regulated as a coherent supply chain, so as to ensure that it comes through the current downturn without unnecessary damage. This is especially important as there are positive spillovers for the rest of the economy and environment that need to be protected: the pollination service that managed bees provide, and the ready-made biosecurity network that skilled beekeepers provide. Both are at more risk than they need. Tackling the mānuka definition in the absence of a coherent policy towards the whole industry is damaging. MPI may say grandly that the market will provide; they may not have noticed that the rest of the world has moved towards using regulation to support and nurture important industries, i.e those that offer environmental and economic benefits.

POLITICS – FAIL

And on politics, MPI made promises they haven't kept. Two issues are important: regional differences in the way honey is performing



Ian Fletcher. "MPI have managed to win a nasty trifecta: making serious errors of science, of policy, and of politics" with the latest mānuka honey reassessment.



against the definition (especially in Northland), and blending. In agreeing to look at these issues, MPI implicitly promised to take them seriously, and to at least consult. It looks like neither has been taken seriously, and rather than consult, a fait accompli has been presented. Māori groups involved in beekeeping in Northland may feel especially let down: claims about te Tiriti partnership look to me to have been just brushed aside. This cavalier approach will alienate many, and undermine confidence further. Doing it in the run-up to an election looks tin-eared and plain dumb.

DOING ACTUAL HARM – PASS

So, overall? A missed opportunity to demonstrate a more coherent approach, integrating science and policy to show understanding and support for an industry that is struggling, having to change rapidly, and yet plays an important wider role in the environment and economy.

Is actual harm being done? I think so: firstly, consumers. There has long been a belief that the reason plans to have a domestic (ie within New Zealand) definition of mānuka honey were abandoned was because the multifloral category would not fit within the Fair Trading Act rules on misleading consumers. Sticking with this definition means that belief is neither confirmed, nor firmly refuted, nor effectively fixed by amendment to the definition. That will sap confidence over time, potentially in export markets. And if consumers are being misled, that is unconscionable.

Secondly, producers. If larger producers are able to buy good honey at low-ish prices, blend that down to just meet the definition

and sell at a profit then the smaller producers suffer. Does that matter? Yes: we need smaller producers to maintain skills, industry resilience, provide pollination, and to underpin a response to the inevitable biosecurity emergencies of the future. An industry dominated exclusively by large producers will be de-skilled, excessively focused on mānuka, and may be so highly geared (ie have borrowed against assets) to be financially vulnerable when interest rates rise (as it seems they do). And this sort of exploitation of smaller producers is an abuse of market power, and should be looked at by the Commerce Commission.

Finally, regional producers, including Māori in Northland and elsewhere. Treating these groups with contempt (which is how it looks, whatever the science) is just plain wrong. But there is another point: these groups may be right, and there may well be significant regional differences in mānuka plants and how the resulting honey develops. We live in a long, thin country and latitude matters. Just saying the data wasn't enough is no reason to stop looking.

Two out of 10, MPI, and that's being generous. Do the exercise again, properly. And treat people decently. They deserve it.

Ian Fletcher is a former head of New Zealand's security agency, the GCSB, chief executive of the UK Patents Office, free trade negotiator with the European Commission and biosecurity expert for the Queensland government. These days he is a commercial flower grower in the Wairarapa and consultant to the apiculture industry with NZ Beekeeping Inc. 🐝

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ApiNZ Conference Shines Despite a Gloomy Beekeeping Season



In an industry where many are feeling the bite of a bad honey production season, poor honey prices and disruptions from natural disaster, Apiculture New Zealand (ApiNZ) and beekeepers put on a brave face for two days at the National Conference and Trade Show in Rotorua, June 29-30.

The turnout of just over 700 attendees was the smallest in recent times, nevertheless ApiNZ chief executive Karin Kos said she was "really happy" with the showing, considering the tough year many beekeepers had been through.

Energy Events Centre saw fewer trade displays than in previous years too, but a wide range of the beekeeping industry suppliers was still represented. With a series of social events in the evenings following the expert presentations, workshops and various competitions, there was still plenty going on for the two days. Conversations around lacklustre honey demand and prices and the ever present threat of varroa dominated conversations. Some of the key 'takeaways' follow...

- **Good start** – Among the dignitaries welcoming conference attendees was local MP Todd McClay, who is also the National Party spokesperson for Primary Industries, and who came with a promise to beekeepers (should National be successful in this year's general election) of a \$3 million investment "to expand New Zealand honey into markets internationally, by removing barriers to our honey marketers".
- **Does the boss know?** – The following day political commentator Patrick Smellie took the stage to put some context around the performance and policy of our major political parties, which involved comment on McClay's \$3million announcement. "I don't know where that came from



From the stage of the Energy Events Centre, National Party MP Todd McClay makes apiculture a promise of \$3million to assist the marketing of New Zealand honey, should they win power at this year's general election.

Photo: ApiNZ.



Both the amount of attendees visiting the trade booths and the displays themselves was less than in previous years, but ApiNZ is still happy with the turnout of 700 people to their latest conference in Rotorua. Photo: ApiNZ.

and I don't know if he does either, or if Chris Luxon knows about it."

- **Zooming in** – Dr Peter Neumann dialled in via video from Switzerland with a description of how COLOSS operates internationally to track colony losses, improve knowledge around bee research and advocate for bees. The scientist compared their work to a "superorganism", "which achieves things which are impossible to achieve by individuals".
- **The real loss** – Beekeeper-scientist Oksana Borowik pointed out that although colony losses were reported at 13% in New Zealand's most recent survey, 20.9% of colonies were considered weak, and so the real loss of good honey producing colonies was more than 30%.
- **Failing queens** – David Tarpay from North Carolina State University reported on "a lot of anecdotal evidence" regarding reduced queen viability in many countries, however "we don't have the empirical baseline data to show it". He also reminded beekeepers when handling queen bees it is not just high temperatures that can reduce sperm viability, but chilling too. As for overall hive performance, Tarpay advised that too often beekeepers blame queens when problems are perhaps in the wider colony environment: "Bad queens are more of a symptom than a cause".

- **Hidden danger** – The American scientist also had a warning for those beekeepers who think their hives are varroa-free because they 'can't see any mites'. "Research has shown that, for every one mite you see on the back of a bee, there are 49 others hidden underneath bees. Therefore, you are only seeing 2% of varroa in your colony".
- **1 + 1 ≠ 2?** – Another recommendation from Tarpy was, as the population of a hive increases so too does the proportion of nectar foragers. Therefore, a beekeeper seeking honey production is better off with "one hive of 60,000 bees than two of 30,000".
- **Keep it Kiwi** – Betta Bees breeding programme owner Frans Laas warned the New Zealand beekeeping industry against importing any more bee genetics from overseas, saying "the grass isn't always greener" while Tarpy said genetic bottle-necking shouldn't be an issue in New Zealand, but vigilance should still be taken.
- **Are you a star?** – Clifton King, in his last conference as national compliance manager for the AFB PMP asked beekeepers, have you agreed to a DECA? Do you know it? Are you implementing it? "If you can answer 'yes' to all three of those then you are a star. If not, I recommend you go home, download your DECA, read it and make a commitment to do it."
- **Hard to read** – King also shed some light on AFB honey testing, saying the tests are useful when a negative result is achieved, to confirm there is no AFB present, and a spore count of 4000 or more is a major concern, but anywhere between 0 and 4000 and it is difficult to interpret the data.
- **Honey vault** – Researching the properties of honeys is an expensive process advised Dr Megan Grainger of University of Waikato, who outlined three important pieces of equipment used and valued at \$250K, \$500K and "more than a million dollars", plus expensive disposables. However, the industry could be better served by establishing a comprehensive "honey vault" of samples for researchers to draw on – but beekeepers would need to be more committed to submitting samples to make that happen.
- **Mite Mutation** – A panel of varroa experts led some informative discussions, including the likelihood that there is New Zealand specific mutation in varroa which causes resistance to flumethrin, as all tests on the common resistance mutations found globally are not showing up in New Zealand mites, despite strong anecdotal evidence of failing treatments.
- **Simple answer** – Asked why more research hasn't been carried out on oxalic acid staples in New Zealand, Michelle Taylor of Plant and Food Research replied "to be brutally honest it's funding. That's why there is no research, because there is no funding. It's devastating."
- **ApiNZ AGM** – After consecutive years of financial losses (\$28,094 in 2022 and \$19,809 this year) Chair Nathan Guy said, although the losses were budgeted, the industry body was "grappling" with the change and sent the warning to members that, without an improved financial position, "we may not be able to deliver the same level of services you have come to expect".

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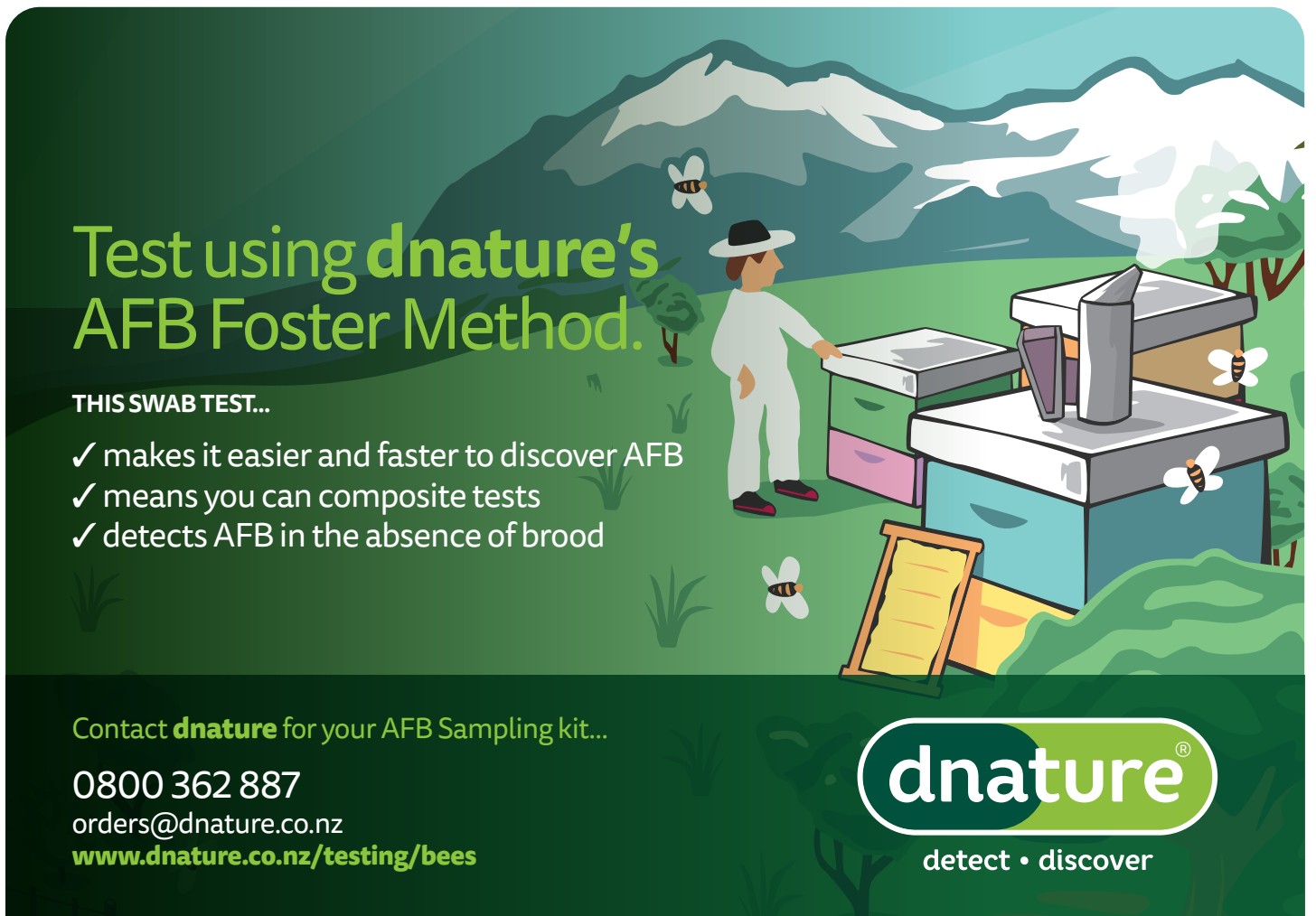
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- **Plucking the Goose** - ApiNZ life member Ricki Leahy addressed the AGM with his concerns around the continuing existence of a multifloral mānuka honey standard which he called "an absolute nonsense" and left the meeting with, "we have a golden goose in mānuka and we might not be quite strangling it, but let's just say it is being plucked".
- **Varroa be gone** - Chief executive of the Australian Honey Bee Council Danny Le Feuvre outlined the Aussie plan to eradicate varroa, which he believed was promising given that they were 99.99% confident varroa have not established outside the hot zones, based off their surveillance. Inside those zones, hives, domestic and feral, continue to be destroyed if varroa is found. The eradication success does rely on their ability to kill off all feral colonies in many areas though, Le Feuvre says.
- **Confusion** - The panel of honey market commentators discussion was not as insightful as previous years and almost solely centred around mānuka honey. The now well-worn line of needing to make our mānuka honey labelling less confusing to the consumer was wheeled out once again by the packers. A topic I'm sure the honey producers are sick of hearing going unsolved.
- **Glasson's Apiaries** - This year's winner of the Sustainability Award for beekeeping business was Glasson's Apiaries in Blackball, with owner Gary Glasson not present to accept the award. You can read all about the intergenerational West Coast business in our story from the September 2021 issue though! 🐝



The seats of the Events Centre fill up on day one to the ApiNZ conference, June 29. Photo: ApiNZ.

Beekeepers' Online Chat with Sam Whitlelock

All Black rugby player and Farmstrong ambassador Sam Whitlelock will host a free, online session on July 20 where he will tackle issues around dealing with pressure, setbacks and challenges. The event, which will begin at 7.30pm, is hosted in partnership with ApiNZ for beekeepers anywhere in New Zealand in an aim to help them be physically and mentally prepared to perform at their best. Beekeepers are invited to register [here](#).

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Biggest Crowd Yet for Science Symposium



In the largest showing in its short history, the 4th N.Z. Honey Bee Research Symposium drew a crowd of about 120 people to Energy Events Centre in Rotorua on June 28.

A day before the Apiculture New Zealand conference kicked off proper, a collection of beekeepers and scientists were treated to updates from the latest in research into not just honey bees in New Zealand, but related topics such as native bees, honey research, and varroa control. The latter was a prominent topic, as it has been at previous Symposiums, with researchers from a mix of private agencies and the tertiary sector looking to bring advancements to understanding of the honey bee parasite and new methods to control it.

Each of the 25 speakers had 15 minutes to present their research and field questions. For consecutive years, Victoria University of Wellington student Rose McGruddy, speaking on her study of gene silencing to control varroa, took the award for best student presentation.

Some of the key takeaways from the symposium follow.

- Ministry for Primary Industry scientist Richard Hall was keen to impress on the researchers that the New Zealand Honey Bee Collection of frozen bee samples from all over New Zealand, including Stewart and Great Barrier Islands, was open to applications for use in future research. He can be contacted via richard.hall@mpi.govt.nz
- Chatham Islands honey has a phenolic content of greater than mainland New Zealand clover honey, but less than most mānuka honey according to University of Waikato research by Simon Winship which offers "promise that there is a unique trace element profile of Chatham Island honey", as the project continues.

- Native bees can survive in combination with avocado orchards, but pesticide use can have a negative impact on their survival according to Plant and Food Research from Felicia Kueh Tai, who also found the bees like to nest in soil slopes. With this latter point in mind, event organiser John Mackay floated the



Claire McDonald, left, and Evan Brenton-Rule, back row, of MPI are joined by winners of the awards for best student presentations at the Honey Bee Science Symposium in Rotorua. From left, Anya Nobel, Rose McGruddy and Alex Maan.

concerning thought, "with recent flooding events wiping out the soils of mud banks, I wonder how many of our native bee nests have been lost?"

- Anya Nobel's University of Waikato PhD research into the microbiomes present on mānuka leaf surfaces always interests, and the latest update is that, compared to other species, mānuka's collection of leaf microbiomes are much more closely related. Whether that influences qualities of honey produced is still an unknown but, the following speaker, Manpreet Dhami of Plant and Food Research, presented research showing microbes in nectar can determine the level of attractiveness of a flower to a honey bee. "If you want to make monofloral honey, this is a most interesting finding," Dhami believes.
- There is already a product in use in the United States which harnesses the use of RNA interference, AKA gene-silencing, to control varroa. 'Vadescana' introduces gene silencing to colonies through a sugar water solution and McGruddy has been testing its efficacy in New Zealand field settings where results varied between two different apiaries, but great potential was shown to interfere with mite reproduction.
- Queen breeder Rae Butler invited fellow beekeepers to join up to the newly established New Zealand Bee Breeders Association, which aims to improve breeding techniques and knowledge transfer. www.nzbbba.co.nz
- Lithium Chloride has been proven to be a varroa killer, but determining just what the best and safest way to deliver it to a hive was the focus of a study by Kueh Tai using gels and liquids either directly to the mites or via bees. Results varied and so trials are continuing. Audience members suggested pollen patty type solutions or via vaporising as potential modes of actions, but both had severe limitations fellow researcher Michelle Taylor answered.
- While Waikato and Wellington University research teams had a strong presence, Lincoln University's Alex Maan held the batten for South Island students. His research into obtaining organic varroa treatments from microbes sourced from New Zealand fungi has shown some ability to reduce varroa in hives. Four promising compounds have been generated from the fungi ... mushrooms, who would have thought?
- Dr Megan Grainger of University of Waikato presented her research into the presence of metal elements in New Zealand and international honey, with one conclusion being that specific metal profiles could be a way of differentiating New Zealand honey from that of other countries, with some tests showing a 90% accuracy as a method to identify NZ as country of origin. Fellow Waikato scientist Brittany Jane also looked into the impact of such metals on hive health, identifying cadmium and mercury as present and having a negative impact on bees in NZ.
- Argentine Ants are not found everywhere in New Zealand, but when they occupy a beehive their presence is "really, really bad" according to Antoine Felden, from Victoria University of Wellington. His research has shown they can not only greatly disturb a hive and rob honey, but significantly increase the presence of deformed wing virus. 🐝



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From Dawn to Dusk – Whitestone Honey’s Slick Waimate Operations



In May we met Shane Rawson and his team at Whitestone Honey Ltd in Oamaru and this month Maggie James travels up the road to the company’s Waimate branch to meet brother Craig Rawson, who, for the most part, is a one-man-band operator of the queen bee rearing and honey extraction side of the business. The beekeeping season sees Craig working six days a week, utilising time and workflow management to ensure high productivity both in the queen rearing operation and the honey house.

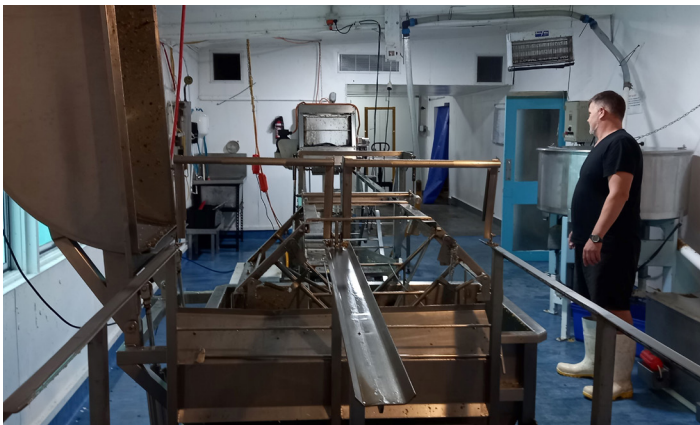
BY MAGGIE JAMES

“We are always willing to change procedures and roll with the times, however we don’t do any more than is necessary,” Craig Rawson points out, as he welcomes me to Waimate.

“We are always looking at ways to diversify what we are doing, as we know that we just can’t be a one crop industry. If it wasn’t for queen and pollen production, we would have had to shut the doors”

Of the 3640 Whitestone hives, 450 Waimate hives are for queen bee production. With some splitting, these 450 increase to nearly 1000 each spring. Add to that, later in the season, the extraction of 200 honey supers daily, six days a week, and that’s Craig’s busy domain. The Waimate hives are sited from Makikihi to the Waitaki River, an area of about 35km north to south. Below this you enter territory of the company’s Oamaru branch.

In 2011 Craig’s father Allan and brother Shane purchased the Waimate arm as a going beekeeping concern with extraction plant, and adjoining paddocks to house, the grafting yard and 450 nuc hives.



The Whitestone Honey extraction line, looking from the horizontal extractor end, with camera-shy Craig Rawson at side. Photos: M James.



The honey line feeding into the extractor.

QUEEN PRODUCTION

Craig Rawson has 20 years’ experience running grafting yards.

“I start grafting the last week of August, to get the volume of cells needed to reach our goals,” he explains.

Pre-selection of breeder stock has been undertaken in autumn, with temperament and production value of high consideration. Rawson prefers a Carniolan/Italian cross, obtaining a “Tiger” bee. These are well suited to the South Canterbury/North Otago climate.

Early spring pollen sources include willow, tree lucerne, gorse, broom and five finger. Then late September dandelion yields.

“In the past we have bought in pollen patties, but next winter we will trial our mix of raw sugar and Whitestone produced pollen. If we produce our own acceptable blend, we can absorb the previous patty cost.”

Stimulation syrup feeds are implemented at the end of July/ beginning of August. This initial inspection round takes two weeks, during which information is obtained on which units to split. Rawson then needs to look towards filling queen production requirements.

In mid-August all suitable hives are decreased down to three frames of queenless brood. The remaining frames of brood are transferred with their queen into nuc boxes, and fed, and by the end of August it is anticipated these colonies will boast five frames of brood. Following this first round, the queenless units raise their own queen. This is the only time of the year hives are split in this manner and these queens are sold.

These self-raised queens will more than likely mate with Whitestone stock. The home base apiary is the key yard in the middle, with radiating fringe sites of similar genetic strain within 6km. The approximately 450 nucs with queens are brought back to the Waimate home base, and these autumn queens are caged for sale, plus the approximately 450 self-raised laying queens as soon as the first lot of day 10 cells are ready to replace them.

Miticide treatments with strips are undertaken in September, when there are no mated queens in the split hives or nucs. This gives a good kill rate, with no brood for reinfestation for approximately four weeks. The first 450 newly-mated laying spring queens that are sold have not been exposed to a full miticide treatment.

"Grafting starts mid-August and I undertake this until December. After the first approximately 900 caged queens are sold I produce another 3000 queens to be used solely for the Whitestone operation." Rawson explains.

His grafting room is in a controlled area at the end of the extraction plant hot room, immediately adjacent to the grafting yard. This spring, niece Madisyn will learn grafting techniques at Waimate, and thereafter will be based at Oamaru undertaking grafting from December in that branch.

The grafting yard comprises 100 hives with five breeder queens selected in autumn. Full depth queenless brood boxes are used, with additional frames of brood introduced weekly from the 450 nucs.

Cell bars hold 28 queen cells per bar, staying in the hive until day nine. There is only one bar per hive, and there are ten of these per graft, using plastic Bozzi cell cups without lugs. The Rawson grafting frame utilises the underside of the top bar.

"My last job at night, or first thing in the morning, is to run the blow torch underneath the top bar, then place the 28 cups on each frame. This is a quick method and works well for me."

New cell cups are used, or recycled cups that have been immersed in hot water just below boiling; enough to melt wax debris but not damage the cups.



Another IBC nears full as the homogenising, left, and holding, right, tanks look on.



Weekly during extraction season Whitestone Honey produce six wheelie bins full of wax which are delivered to NZ Beeswax for processing.

Grafts of 400 cells are undertaken twice weekly Monday and Friday, working on the proviso of 800-1000 cells weekly will yield 700 quality cells. Carricell incubators hold 288 cells in double layer of 144-holed sponges which have been dipped in water; creating humidity in the portable incubator.

"I prefer the Chinese bamboo grafting tool. These are less likely to damage larvae. The queen cage of my choice is Beetek with its one piece, and vents on all sides," Rawson explains.

"The Waimate home apiary is not for honey production. It is for keeping our own genetics and queen rearing."

The last "pull" of queens in Waimate are caged in January. The 450 nucs will be overwintered or used as supplementary hives in the Oamaru operation.

No grafting is undertaken in Waimate once the main honey flow starts, sometime in December. Rawson is now onto his next major task.

THE ONE-MAN HONEY HOUSE

This building is a pole bearing shed with rafters which enables easy removal of internal walls, if required, for alterations.

As soon as the main honey flow starts, Rawson turns to running an extraction plant as a busy and productive one-man band, six days a week, processing 200 full depth honey supers of pasture honey daily. He happily leaves all paperwork and admin to brother Shane in Oamaru while he concerns himself with removing the honey from the frames.

Honey is sold in bulk in 1000L Intermediate Bulk Containers (IBC), which generally hold 1400kg.

Whitestone Honey have a few mānuka and kanuka sites in South Otago, but these thixotropic honeys are contract extracted in that region.

Craig arrives on site from Timaru at 6.00 a.m. to switch the recycled hot water on for the knives. It is also his job to weed out "rummy" frames. As they gradually move over to all plastic frames, there are less hold ups with broken lugs.

TRUCKING BAY & HOT ROOM

Six days a week the "honey pulling team" based in Oamaru (see May article) arrive at Waimate with 200 supers for extracting, retrieving the previous 200 now extracted 'sticky' boxes.

In the delivery bay on one side of the shed a narrow roller door to enable fork lift access has been installed. Immediately outside boasts a refrigerated container for honey super storage, to be utilised for any future small hive beetle or major wax moth infestations.

The 10x4 metre hot room, capable of holding 1000 full-depth nine-frame supers, is run at 36°C. Generally, freshly pulled honey only requires an overnight stint. At other times up to three days may be required.

During my visit, Craig Rawson holds a full-depth and jumbo frame up and explains the jumbo frames are "inherited" with a recent large hive purchase. These frames and boxes are a half depth larger than full-depth with a box of full frames weighing 40-50kg (which includes 11-15kg of woodware). The Whitestone crew dislike this weight, and the brood frames are too big for their hive system and so all wooden jumbo and full-depth frames are gradually being phased out, in preference to plastic full-depth frames.

AUTOMATING THE HONEY LINE

The Whitestone extraction process relies heavily on automation for their high level of production, with the only real manual aspect of the process when Rawson takes less than one minute to lift frames onto the deboxer. It then takes six minutes for 76

frames to be uncapped and travel to the extractor "can".

In the past, empty boxes on pallets, using a barrow are moved to the end of the extraction line. However, to further speed the workload, this winter the wall next to the baffle tank will be removed, making way for empties to be forklifted to the extractor end.

To save plant space, the extractor is horizontal, with capacity for 76 frames. Loading the extractor is manual, 19 frames per section, with four sections, and total spinning time of six minutes.

From the extractor, honey is piped to the Bell Valencia wax separator then onto the baffle tank. The baffle tank, with seven compartments and double baffles, picks up any of the "alluvial" wax, missed by the separator. Honey is then piped to the holding and homogeniser tanks, both holding at least 2000L. One holds honey overnight, during which any remaining wax debris float to the top, while the second tank homogenises.

Each week Craig pokes his head out of the shed for the hour-long drive to NZ Beeswax in Orari with six wheelie bins, each containing 240kg of fine particle beeswax.

It's a slick operation, both in the highly efficient extraction operation and the queen rearing unit, and that fits in with the overall business mantras that is keeping them operating through a honey price downturn.

"The times of beekeeping being a one crop industry are gone," Craig Rawson says, adding, "Here at Whitestone Honey we believe in moving with the times and diversification".

For more information on Whitestone Honey Ltd. contact Shane Rawson, shane@whitestonehoney.co.nz



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UMF Members Call for Review of Trademark Funding



Unique Mānuka Factor Honey Association (UMFHA) members have called on the Board and management of the association to have greater transparency and accountability around their part in funding of New Zealand's 'Manuka Honey' trademark bid.

The UMFHA AGM was held in Rotorua on June 28, a day prior to the Apiculture New Zealand conference, where Russell Berry, director of Arataki Honey, presented five motions, of which three were carried, one amended and carried and another narrowly voted down.

Berry believes members of the UMFHA are not being well informed of goings on pertaining to the Association's relationship with 'Manuka Honey' trademark efforts. Following the meeting he was hopeful that, if the motions passed were carried out as agreed, then the membership would be better placed to understand the goings-on of the association.

One motion agreed to was a review of UMFHA's governance, with Berry noting that the Board has overseen funding and, in some cases, management of, trademark defeats in UK and New Zealand which he described as "disastrous", which required accountability. Another pertained to making it known to members what funding the Association has made to Te Pitau Ltd, Mānuka Charitable Trust and Mānuka Honey Appellation Society, the three groups carrying out the, thus far, unsuccessful trademark applications. Plus any future obligations to the groups.

Greater transparency around funding of science projects, and the value of any patents or patent applications owned or licensed by UMFHA was also agreed to.

Another motion to form a committee to investigate the whole plan to protect 'Manuka Honey', whose findings could then be approved by members, was rejected.

Following the AGM, acting CEO Campbell Naish said meeting the requirements of the various motions would be a priority and, going forward, improving communications between board, management and the members would be a consideration.



Unique Mānuka Factor™
Honey Association



Why Can't We Move Away from a Jar of Mānuka Honey?



BY SRI GOVINDARAJU

The honey industry and, more specifically, mānuka honey is certainly a sticky hot mess right now; with the latest result of the mānuka honey trademark application being turned down on our own turf, making it very unappealing and unsexy. How did we get here?

We all undoubtedly celebrate the growth that the mānuka honey industry has experienced in the last couple of decades, from grassroots level to making us leaders in the global honey sector.

The anti-bacterial discovery in mānuka honey is one of the top innovations in our industry. Dr Peter Molan of Waikato University, a prominent biochemist, started his research to find out the potential of mānuka honey in the 1980s and discovered the antimicrobial activity in the honey. His preliminary research set the foundation for what would eventually lead to one of New Zealand's most commonly used rating systems, Unique Mānuka Factor (UMF).

Another significant discovery in our industry is by Dr. Thomas Henle of Dresden University, Germany, who discovered the unique bioactive ingredient methylglyoxal (MGO). Both ratings, UMF and MGO have contributed to the growth of our mānuka honey export industry. Leading on from these

The Experiment Company is bringing innovation to honey research, and founding director Sri Govindaraju is challenging the apiculture industry to think deeply about the challenges in front of mānuka honey and how real innovation can be best nurtured to overcome them.

discoveries, one would think that we would have churned out more research, and innovative applications of honey, yet we seem to have, pretty much, plateaued.

I concur that there has been heavy investment made by companies like, Comvita, Mānuka Med and Mānuka Health in exploring more about our native honeys. Though they may have made some inroads, we haven't had any significant breakthroughs in how else this wonderful honey can be applied and used. Otherwise we wouldn't be here today, troubled with not being able to shift the bulk of our honey from the warehouses.

Sure, there are some punters who have dabbled in combining two or more New Zealand grown high value ingredients, and calling it product development. Honey is mixed with propolis, ginseng, chocolate or spices to entice wider audiences, but can we really call that novel innovation? It may have created a small window of opportunity, but is it ground-breaking enough where an entire industry's future can be secured?

Let's take a look at other primary sectors who have adapted themselves to the changing tide of consumer's needs globally. The dairy, plant based milks, and meat industries, with the new disruptive precision fermentation technology, are constantly evolving, changing and inventing new products, not only suited to the consumer's needs but also driven by the need to address climate change and securing the planet's future. Sure, some are more successful than others, yet the failed products teach us what we could do better next time. New trends in these sectors seem to pass one another before we even realise that it was a thing!

What has not changed however, in more than a decade, is our New Zealand honey industry and, more specifically, our mānuka honey growers. There is a strong need for the industry to diversify its honey sector, away from our total economic dependence on mānuka or honey alone in a jar/bottle and toward a more sustainable future with different honey applications. In a recent NZTE quarterly market report it was identified across the six markets reviewed for mānuka honey, the market is saturated in its current format and current consumers. And this perhaps can be shifted with new investments, product formats and product innovation.

It has been said that the definition of insanity is doing the same thing over and over again while expecting different results. It is evident that we need to do something different. We need a fresh new approach to solving our problems for a more secure future. It may sound all doom and gloom, however I can reassure you it is not.

We can turn this around by investing in research and development, finding novel product applications, scaling up and commercialising it. The sooner we accept that innovation plays a critical role in the future prosperity of the honey industry, only then can we move forward to formulating a strategy and securing opportunities for New Zealand in the global honey space. The questions we need to ask; is this important? Is this relevant? Can this be transferrable? Can it be scaled? How much impact will this create? Will this contribute to securing the industry's future? Not all innovations are the same and nor will all be successful. The ones that didn't work out will be the paving stone to only getting better.

When we started The Experiment Company, we wanted to play a part in creating conversations about what else can be done with New Zealand native honeys, not just mānuka. When we think of innovation, it has to be



something lead with a purpose, where you are not only uplifting the primary industry itself but an entire supply chain, whilst creating secondary and tertiary industries generating revenue streams.

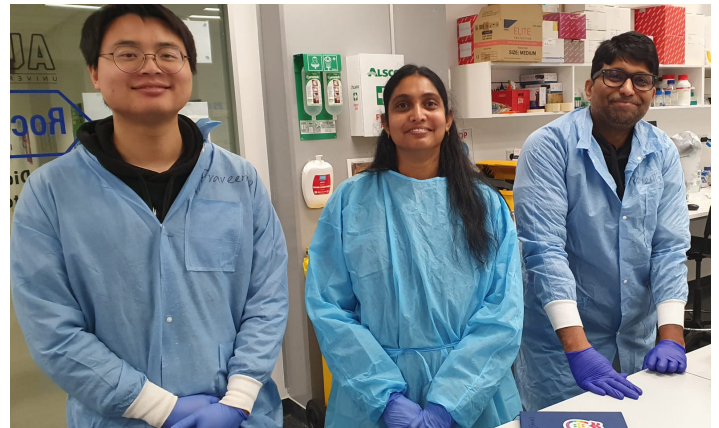
Whether the R&D is done together as a collective or individual companies is the million-dollar question. I want to reiterate that we in New Zealand have immense talent, be it in the universities or small start-ups like ours, working tirelessly to demonstrate possibilities, economic opportunities in exploring the science, manipulating the good stuff in it, so that we can secure our future in this industry.

The points I want to drive home are; think about our children and the future generations, what will globalization look like in 20-30 years? What challenges will consumers face in terms of their core dietary needs including health; will they have more diverse preferences? What role will tech play in honey? How will the climate events and geopolitical shocks affect decision making? How will the existing markets evolve both in terms of population and wealth and how will the growth markets take shape, namely Asia and Africa? Can we piggy back on the adaptations, and successes of other primary sectors? Closer to home, can we contribute to food resilience, equity and security here in Aotearoa?

A fabric will stand the test of time depending on the quality of the fibres used and how well the threads are woven together. We as producers, exporters and researchers of honey share a common responsibility to strengthen the fabric of Aotearoa New Zealand,

and ultimately the choice is yours, you need to pick one and run with it. In this country we pride ourselves for having the number-8 wire mentality. What are we waiting for?

Sri Govindaraju is the founding director of food research lab The Experiment Company, as well as Taupō-based honey exporter Zealandia Honey, and has worked in the honey and science industries since 2016. 🐝



The Experiment Company science team in the lab. Founder Sunil Pinnamaneni, right, along with lead scientist Dr Swapna Gannabathula, centre, and Ye Liu.

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Hill Labs – New Name, Same Reliable, Supportive, Responsive, Local and Trusted Honey Testing

What started out as simply “the right way to do things” for Hill Labs founders Roger and Anne Hill, has – over the past 40 years – become an embedded culture, resulting in five qualities that embody their way of doing business: reliable, supportive, responsive, local and trusted.

With six locations and up to 700 staff across the country, Hill Labs services a range of industries – including honey. So, how do the core values of Hill Labs play out in practice for beekeepers?



Jonno Hill is leading Hill Labs into a second generation of family owned and operated analytical testing across a wide range of Aotearoa New Zealand's industries, including honey – where they aim to be beekeepers' preferred provider.

Known for the best part of 40 years as Hill Laboratories, since its launch by his parents in Hamilton in 1984, managing director Jonno Hill says the company's recent rebranding and renaming to Hill Labs is simply a small change, to reflect growth in what is still very much a family-owned and run business.

“Those things that we really care about remain unchanged,” Hill is quick to point out.

“It's the detail of scale and scope which evolves over time, and giving the business a new ‘skin’ periodically helps to reflect that ongoing journey.”

Hill Labs started out with just the two founders – Roger and Anne Hill – whose initial aspirations for success were to add two more technicians to the team. Back then they never envisioned the company

being as successful as it is today. Jonno says that his parents are still sometimes astounded, and always humbled, by the size that the business has grown to. Most of that growth has been due to the way that services are provided to customers across a range of industries, driven by a set of values and culture that Jonno and brother Geoff, who will soon become the latest addition to the Board of Directors, are keen to maintain.

“Retrospectively, you can see it clearly. At the time, our parents were just operating on intuition, and it would have just felt like the right way to do things. It wasn't like they had a 40-year business plan up there on the wall with a big box saying ‘culture’ and what they were going to do. But, by virtue of their own personal values, and the way they cared about the work they did and their sense of responsibility towards their customers, all that good stuff has flowed naturally from it, and over time has become embedded in the way that we do things,” Jonno Hill says.

Reliable

In the honey testing business reliability is critical, Hill acknowledges, and for their labs, that means providing accurate testing in a timely manner.

“We understand that often the services we deliver are in the compliance space for customers, to enable market access, or to support transactions involving the buying or selling of honey. So beekeepers need to be able to know when they can expect

results, and to be confident in those results when they arrive, to enable them to manage their businesses, whether it's sending honey offshore or getting a deal done domestically.”

Supportive

Of course, client needs are not always as simple as turning around a honey test quickly and accurately. So, for Hill Labs, being approachable and offering extra support is also an essential part of their service.

“It's about understanding that things aren't always going to go smoothly for clients and maybe, sometimes, something a little bit unusual crops up. Maybe a test just needs to be done urgently, a sample gets submitted but then something has to be changed with the requested testing, or there is a question relating to some results. Adapting to those situations and supporting our customers is what we strive to do,” the Managing Director says.

Responsive

“A culture of agility” is how Hill describes their lab's aspiration to respond to the changing needs of the industry.

“If something has gone wrong for someone and our services are needed to fix it, or maybe it's a new compliance or market access requirement, then we will be there to respond accordingly.”

In recent times, for beekeepers, that has meant quickly providing honey testing for glyphosate at ultratrace-levels, to maintain export access into Japan.

"When things are changing in the market then you may need a lab partner who is agile and responsive, and we really aim to be that. We've got a decent sized R&D team, we've got a good arsenal of equipment, and we have a culture of agility in the business," Hill says.

Local

It doesn't get much more local than the Hill family maintaining almost 90% ownership in the analytical laboratory, with the remaining 10% also New Zealand-owned, largely by staff. Roger, Jonno, and shortly Geoff, all hold Board of Director roles, meaning, while the business may now be large, it is still firmly owned and operated by Kiwis. For the honey industry in Aotearoa New Zealand, partnering with a locally owned testing provider for the highly-valuable and unique mānuka honey makes sense.

While the majority of honey testing takes place in their Hamilton lab, Hill Labs is well represented across Aotearoa New Zealand, with facilities in Auckland, Wellington, Christchurch, Tauranga and

For 40 years Hill Labs have provided local and trusted analytical testing to a range of industries across Aotearoa New Zealand, and that continues as a second generation of the Hill family guide the 100% Kiwi-owned business.

Blenheim, to service a wide range of industries.

Trusted

"After 40 years, it would seem that the first four attributes have combined to create a sense of trust among our clients", the managing director says.

"It flows from doing things well, and operating with honesty and integrity over time. We are playing a long game. Our reputation is really important to us, and that means that we work hard to get things right."

These are values that will surely resonate with beekeepers right now, many of whom are refining their businesses to remain committed to a struggling honey industry.

"We've always stayed committed to honey testing, through ups and downs,



and we've been investing quite heavily in this area over the last year in particular. Strategically, it's a really important market for us," Hill says, adding, "we are strongly committed to the honey industry in New Zealand, and we want to be the preferred provider of testing services". ■

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King Abdicates, Warns of Beekeeper Complacency



“Complacency” is the biggest challenge facing beekeepers in their mission to eliminate American foulbrood (AFB) from managed colonies in New Zealand, warns Clifton King as he leaves his role at the head of the National AFB Pest Management Plan. The departing national compliance manager reflects on five and a half years at the head of the Management Agency and the AFB challenges that lie ahead for beekeepers.

“We need to change our focus,” King says, with the benefit of having led delivery of the AFB PMP since November 2017, until stepping away from the role following completion of the Apiculture New Zealand (ApiNZ) national conference last month.

“By ‘we’, I mean the Management Agency and beekeepers, not just beekeepers by themselves. We are too focused on the presence, or absence, of AFB and there’s not enough focus on the implementation of good elimination practices and, in particular, the implementation of good AFB elimination practices by DECA (Disease Elimination Conformity Agreement) holders.”

King took over the national compliance manager role from Rex Baynes and an early change was moving the Agency’s focus from trying to identify hives with AFB, to identifying beekeepers who were not implementing their DECAs completely. Complacency around DECAs is the biggest barrier to achieving AFB elimination the departing manager believes, as DECA holders account for the vast majority of registered beehives in New Zealand.

“One thing I realized, just recently, is we put out a reasonable amount of communications about AFB, but there’s a real risk that,

as 90% of beekeepers either don’t have, or don’t believe they have, AFB, they think ‘this doesn’t apply to me’ and they stop hearing our message,” King says.

And the main message that needs to get through to beekeepers? Hive inspections are still, by far, the best tool we have to identify and remove AFB from colonies, no matter what the beekeeper’s history with the disease is.

“For those who cut corners and don’t do regular inspections, AFB is pretty good at finding a proportion of those beekeepers every year. Because they aren’t taking precautions to protect the beehives by simply inspecting them regularly, they suddenly discover that it’s not one or two cases of AFB which they’ve got, but five, 10 or 20. So, I think that’s the greatest challenge, complacency from those that don’t have or haven’t had AFB in some time, who believe ‘job’s done for me, nothing more to do.’”

King points to the success of the Agency, during his time, in reducing the incidence of AFB in high-risk operations where, by carrying out twice yearly inspections on hives, they have reduced infections by 90% each year.

“A beekeeper should be able to eliminate AFB from their beehives within three years and 95% of colonies are owned by beekeepers that are DECA holders. Therefore, we should be able to make fairly quick and dramatic improvements into elimination if all DECA holders implement them as they agree,” King says.

During his time at the Agency AFB incidence was relatively stable in terms of percentage of the overall hive numbers in New Zealand, at 0.32% between 2018 and 2021, until a spike to 0.46% in 2022. The Agency put this down to the economics of the industry as hives changed hands and more vigilant beekeepers reported the disease.

Among the major changes at the Agency in King’s tenure has been the implementation of the new online database HiveHub as a replacement for ApiWeb, plus an increase in the scope of the Agency with more beekeeper levy payer funding allowing more hive inspections by the Agency’s AP2 inspectors and greater honey sample testing, as well as the completion of three rounds of consultation with beekeepers to amend the National PMP Order across 2021 and 2022.



Clifton King departs as national compliance manager for the AFB PMP after five years in the role, warning beekeepers that “complacency” is the biggest threat to not achieving AFB elimination.

He counts the 2021 ApiNZ conference in Rotorua as the highlight of his time at the Agency, with King saying there was a stream of beekeepers congratulating the Agency on their efforts to bring the coordination of AP2 inspections inhouse, as well as roll out HiveHub. A close second, in terms of highlights, was the ability to get out on the road as part of the consultation on the long term PMP Order and meet with beekeepers all over New Zealand.

As for challenges? Well, that's easy the departing national compliance manager says. His successor is going to have to try to continue to balance a lack of funding with a wide range of opportunities the Agency has presented to them to try to assist beekeepers in achieving AFB elimination – all which come with a price tag.

"Choices need to be made about what are the best things to spend levy payers' money on. This inevitably means that many good things are not progressed. Beekeepers don't have unanimous agreement with each other on what are the best things. So, while you're progressing initiatives and best interests of AFB elimination and the beekeeping industry as a whole, you also have to deal with criticism from those that believe you're doing the wrong things or thing, or there are better things to do. That's a challenge that's always going to be there. There's never going to be enough funding to do everything and so choices have to be made as to what will deliver the greatest AFB elimination benefits."


While he might be moving into a role with OSPRI, as head of their NAIT programme to help track livestock movements in New

Zealand, King says he will keep an eye on the AFB PMP annual reports where he hopes AFB rates will diminish. On that note, he wants to leave the industry with a positive thought.

"Looking to the future, I want beekeepers to know they can make a dramatic difference," he says, adding, "but it does require the 5000 beekeepers that have a DECA to take it out, remind themselves what they agreed to do in it, and do it." 🐝



The AFB Management Agency's stand at the 2021 ApiNZ Conference in Rotorua, where beekeeper feedback was positive, was the highlight of Clifton King's tenure as national compliance manager.



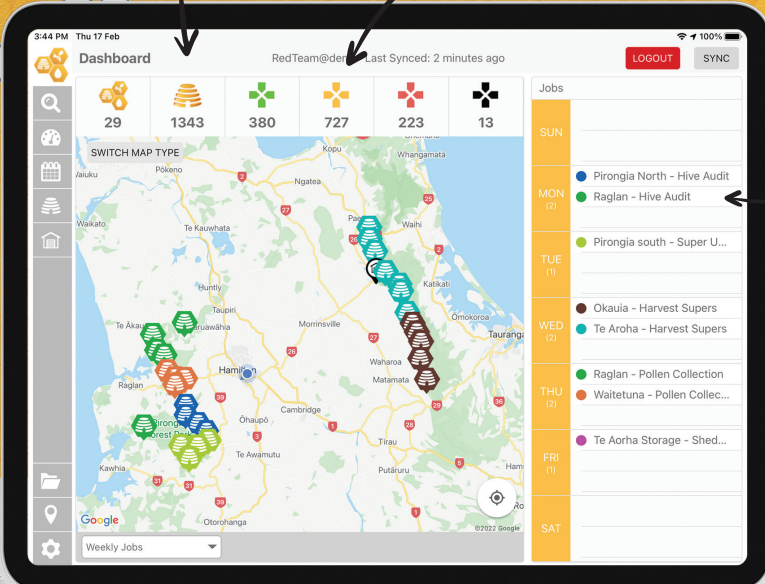
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From White Noise to Mite Noise



BY DAVE BLACK

As a green and innocent young beekeeper (I was 34, pretty young then judging by all those around me) my tutors always impressed on me the value of using ‘eyes and ears’; simple observation. Looking was too easy, but it was a long time before I thought about listening to my bees, or at least a long time before the significance of the noise I couldn’t help but hear began to dawn on me.

Other people had been at it for a lot longer of course, and their ears were like a wine sommelier’s nose, but tuned to the buzz, trills, toots, and quacks that narrate the lives of the hives. One such was a local-ish man who had died while I was still at school, but who remained a legend in British and American beekeeping minds – Eddie Woods. Eddie lived in Hinchley Wood, a small suburb I passed through every day in later years on my London train commute, about when I began my beekeeping journey.

Edward Farrington Woods MBE was an electrical engineer who joined the BBC in 1932 as a sound engineer. Amongst other things, he worked to produce the King’s Christmas Day broadcast and became known as ‘that nice Mr Woods’. During WWII when the country was digging for victory Eddie’s contribution was to take up beekeeping. Inevitably his mind turned to the sounds of the hive and in 1952 he patented the Woods Apidictor in the UK (Patent No GB2806082X 1952-10-31), and by 1957 had been granted a patent in the US too. It wasn’t until 1964 that small enough component



The Apidictor, invented by Edward Woods in the 1950s for listening in to beehives as a form of swarm warning. The device didn’t take off globally, but the use of devices to predict hive states is becoming increasingly common explains Dave Black.

parts became available to actually build it. Then he set to, eventually supplying and supporting about 200 units in Britain and another 100 or so abroad. Specifically, the Apidictor would tune you into swarming.

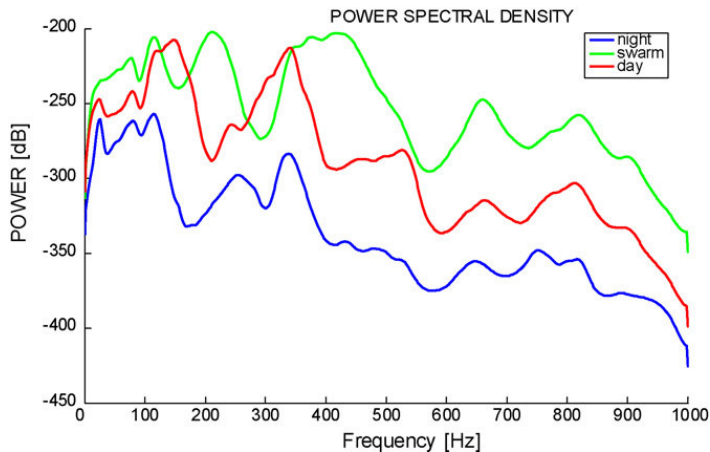
The Woods Apidictor, in the words of the Patent Office (to be read in best BBC received pronunciation...), “relates to the art of bee-keeping and has for its object to provide means for enabling the bee-keeper to obtain more accurate and definite information concerning the activities within a hive and the potential behaviour of its inmates than has been possible by the methods hitherto employed, but in a simpler and more economical manner, and with less disturbance to the bees...”

It consisted of a microphone to be inserted into the brood chamber through a hole in the back, a headset (a ‘Sethophone’) that would be worn beneath your veil, and a small box containing the electronics. The Apidictor had a three-position switch, and indicator lamp, and a volume control used to ‘tune’ your listening experience. Essentially, if the lamp went out on a ‘green’ volume setting – all good. If it was out on the yellow/amber setting watch out; if you were in the red range, ‘trouble t’ mill’.

Perhaps an idea before it’s time, the Woods Apidictors never really worked and faded away with disuse or neglect, but the idea that remote-sensing could work, and that sound might be a reasonable way to do it, has stayed with us.

So set your TARDIS Time Vortex Control, man the helm, and head for 2020! By now we are thinking beyond swarming, and trying to predict all sorts of hive states; disease, dysfunction, and disasters. ‘Precision apiculture’ is collecting continuous ‘vibro-acoustic information’ (not limited to audible frequencies) from accelerometers fixed to the combs, and looks for ‘signatures’ with clever machine-learning algorithms analysing the spectra.¹

Does it work? Well, maybe, but it has produced some really interesting observations. For a not particularly surprising example, we can now be pretty sure that queen piping (‘toots’ and ‘quacks’) helps the worker population to co-ordinate the release of queens. By conveying information about how many queens are free or sealed the piping means that they can prevent the simultaneous emergence of rival queens. Only mobile queens ‘toot’. It has always been a bit surprising that such a large investment in reproductive females could be simply squandered in a fight. It also points out that beekeeping inspections can accidentally prompt the early release of a virgin queen so that more than one mobile



What does a beehive sound like? This graph, which displays data from Ferrari, Silva et al's 2008 research *Monitoring of swarming sounds in bee hives for early detection of the swarming period*, illustrates the difference in frequency (x) and amplitude (y) of a swarming sound (green), compared to a hive at night (blue) and during the day (red).

queen is present within the hive. This is not a natural situation for the colony which is normally determined to manage an orderly release of virgins. And, as for clipped queens; chaos ensues.

In a more surprising example, the same study foundation has supplied a new observation about Varroa mites.² Besides all the usual methods of mite monitoring some more 'hands off' techniques have been tried, including gas sensors for detecting signature odours, and video detection of mite presence, but these have the usual drawbacks, propolis and no light just to suggest two. However, it transpires that the ultra-sensitive but robust accelerometers used in the previous study are able to detect

vibrations produced by a single individual mite. That the scientists can select this phenomena, described as a 'jolt' (like a spring or click), in a fully populated hive is remarkable.

It's also remarkable that a mite is able to produce such a, relatively, strong signal and suggests that it must be an important functional signal for Varroa, otherwise why would they bother? They don't just do it once but sometimes 100s of times and that represents a substantial use of energy for one thing. Naturally one question is, what is for? Another question might be, if we can use it for detecting mites, I'll bet bees can too - do they? Are hygienic bees using their 'nose' to find mites, detecting chemical clues from the mite's cuticle, or are they actually listening with their 'ears'?

Dave Black is a commercial-beekeeper-turned-hobbyist, now working in the kiwifruit industry. He is a regular science writer providing commentary on "what the books don't tell you", via his Substack Beyond Bee Books, to which you can subscribe [here](#). 🐝

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Save the Date

New Zealand Beekeeping Inc are having a Beekeepers Field-day 'In the Beehive' at Hautapu (Waikato) on Saturday 19 August 2023. More details to follow next month.


Neville Marr

Chartered Accountant

An accountant who understands
your business!

I'm a Blenheim-based chartered accountant, hobbyist beekeeper, and business partner with all of my clients. What's important to me is understanding my clients' business and bringing that personal touch. Please contact me confidentially and without obligation if you'd like to discuss how I can assist you and your business this year.


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No Rest from the Wicked



BY PATRICK DAWKINS, OWNER-BEEKEEPER

Inside Pyramid Apiaries is a monthly insight into operations at Marlborough commercial beekeeping business Pyramid Apiaries. This month – varroa control, even in winter.

In June you could have found me in a variety of places: in the office working on *Apiarist's Advocate*, vineyards earing some paycheques outside of the beekeeping world, the shed banging away at repairs and maintenance on beekeeping equipment, and – although we aim for a three-month break from cracking the lids on the beehives – out in the apiaries. Such is the constant threat of varroa.

Varroa mite has been becoming an increasing detriment to hive health in recent years all around New Zealand. Our spot

in Marlborough is no different. Wherever I go it is one of the first things, if not the first, discussed with other beekeepers. The Pyramid Apiaries management plan to reduce the impact of the mites on hive health is ever changing, as we haven't settled on the perfect plan just yet (if such a thing exists).

Like many beekeepers these days, our current iteration of the plan involves using oxalic acid treatments to supplement the frontline synthetic miticide treatments in spring and autumn. In June and July that means a quick trip around some of the more high-risk apiaries to give a blast with an oxalic acid "vaporiser".



Like honey, the strong wool price is in the doldrums, so using a bit to help block hives during oxalic acid vaporising is a cost-effective approach for Pyramid Apiaries.



1-2grams of oxalic acid per hive is all it takes for a vapour treatment to knockdown phoretic varroa.




Full instructions on the various methods of oxalic acid application to beehives can be found in the Control of Varroa: A Guide for New Zealand Beekeepers book by Goodwin and Taylor, but basically a quick blast (about 30 seconds to a minute) with the gun set to 230°C into the hive will sublime the 1-2gm of acid crystals, turning them into a vapour which spreads throughout the hive.

We don't tend to use this method any other time of the year, although many do. Now though, with June and July being the coldest months, there is the least amount of brood in the hives and thus a greater proportion of mites living in the colony will be in their phoretic stage, i.e. living externally on the bees rather than under the brood cap. Although there is some evidence the vapour leaves oxalic crystals inside the hive which can kill off emerging bees in the days immediately post-treatment, it is most effective as a knock down on phoretic mites. We also have entrance reducers on our hives over winter, which makes blocking up the remainder of the gap around the vaporiser gun a faster process than in season (some beekeepers have holes drilled out of brood boxes to poke the gun into, but we just go through the main entrance).

We don't use vaporisation on all our hives. The mating units tend to have lower mite counts due to regular brood breaks throughout the season, so they avoid the 'gun', although close monitoring of mite levels is undertaken so we are not caught off-guard. Hives at higher altitudes which get a good brood break over winter are also less susceptible to varroa and so can thrive without the winter oxalic vapour 'blast'. The hives most susceptible to the mites?

Those lower down the valleys in warmer climates where the queen continues to lay. These hives are hard-workers too, having been stimulated (via early-spring sugar syrup feeding) into a long laying season and thus longer for varroa to build up in the season prior.

Why the long laying season? Those girls have to get to work early for the cherry pollination season which begins in September. Something we will be into, and writing about, before we know it... 

A dozen Pyramid Apiaries hives – only about 30 minutes work with an oxalic acid vaporiser as a winter varroa treatment.



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