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Apiarist's Advocate

News, Views & Promotions – for Beekeepers – by Beekeepers

ApiNZ Survives

Members halt the wind-up and the industry demands "trust and unity"

ApiNZ Survives Amidst Hopes for a New Model of "Trust and Confidence"

In a day of competing ideas and ideals as to the future of beekeeping industry representation, Apiculture New Zealand's (ApiNZ) members voted to keep their industry-good body alive at their AGM on July 17 in Christchurch. The decision to defeat a resolution to dissolve was bookended by open-format discussions among an in-person and online audience of a little over 100, conversations which will now act as the first step on a new journey of consultation with beekeepers on how best to represent their interests.

Despite some straight talking and differences of opinions at times, a mood for collaboration and the agreed need for "trust and confidence" in any industry body emerged from the Sudima Hotel conference room. A more detailed definition of that industry body will occupy ApiNZ staff and governance board in the coming months, as they look to meet with various beekeeping groups around the country.

"We have achieved a lot," ApiNZ chair Nathan Guy concluded at the end of around six hours of back and forward between participants, which touched on the purpose, value and structure of an ideal industry good group, plus how to fund it.

Attending, both in person and online, were both members of ApiNZ as well as non-affiliated beekeepers and stakeholders from around the industry. Among those included was Ian Fletcher, advisor to fellow beekeeping group New Zealand Beekeeping Incorporated (NZBI). He reported on consultation already undertaken with industry in a 'roundtable' process he has facilitated since April. Ahead of the event NZBI had thrown the inclusion of their expert advisor in doubt by proposing several conditions around his attendance. To what level of agreement was reached between the groups on those matters was not defined in Christchurch, but Guy and Flether proved together they could facilitate highly constructive conversations on the topic of a more unified future for apiculture, thus taking an important first step towards that goal.

ApiNZ's board and staff during an, at times, contentious AGM on July 17 in Christchurch where members voted to defeat a resolution to wind up the group. From left, board members Stu Ferguson, Sean Goodwin, Lisa Nicholson, Tony Wright and Nathan Guy, with staff Karin Kos and Phil Edmonds at right.

LIVING TO FIGHT ANOTHER DAY

The process to get to the all-important vote on ApiNZ's survival was stuttered, in part due to the challenges of a mixed in-person and online attendance, and in another part due to a last minute change to the wording of the key resolution and with it some renewed debate on the future of the group. Ultimately, when all the votes were counted though, the chair announced "an emphatic endorsement for Apiculture New Zealand to continue" as 82% of the weighted vote defeated the resolution to dissolve. That resolution had been tabled since a March SGM where members elected to give the organisation more time to come up with a survival plan.

Life support is now available in the way of a $150,000 grant from the Honey Industry Trust, announced earlier in July. It's availability, which will provide for key staff to maintain their roles and conduct further consultation with beekeepers on the best structure to move forward with over the next six months, seemingly made the members' decision to keep ApiNZ alive an easy one despite finances dwindling.

ApiNZ has been in existence since 2016, formed from a merger of the National Beekeepers Association (NBA), which had operated since 1914, and Federated Farmers Bee Industry Group. For a period ahead of the crucial vote in Christchurch the AGM resembled boisterous meetings of the former NBA, after life member of that group – and therefore now ApiNZ – Russell Berry first called for a vote on an adaptation to the wording of the key resolution. While taking the floor on that matter, the NZBI founding and executive member, who has long been at odds with aspects of ApiNZ's operations, implored the voting members to indeed call time on the organisation.

"I'm not saying you haven't done a great job, but the lack of membership is a real problem. We are talking about getting people together and new membership, so let's start again and get on with it," Berry stated.

"I think it is very important to bring everybody together and start afresh … ApiNZ is in a serious financial position, they have spent a lot of beekeepers' money over the years and I don't believe we should be carrying on the same path, wasting a lot of your money running this beekeeping organisation like it is."

While Berry's motion to breviate the resolution to dissolve was seconded by NZBI president Jane Lorimer and carried by the ApiNZ membership, his forthright manner and clear message in support of dissolution left many in attendance frustrated. It followed on from a morning where Guy and Fletcher had shared the microphone and Lorimer had begun the AGM by voicing a desire to "jointly work together to create a sustainable future for all of us". Berry's approach seemingly dented that cohesion, but not the ApiNZ memberships' desire to maintain their group.

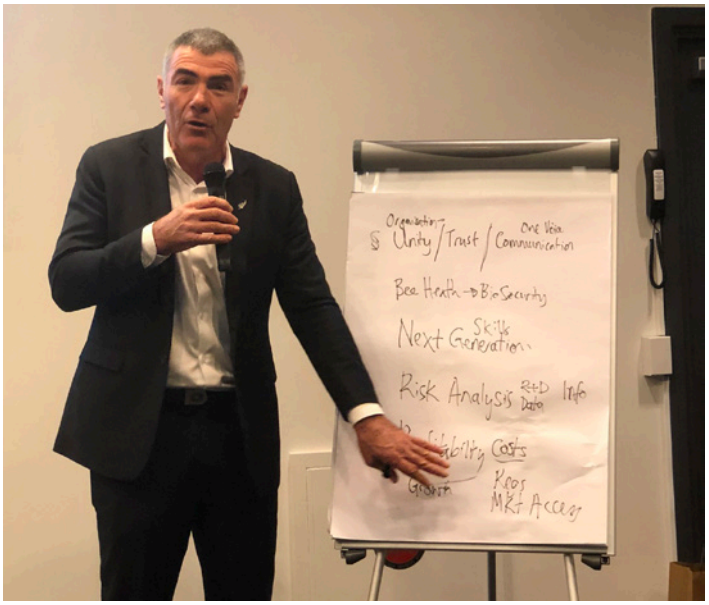
AN ORGANISATION TO ORGANISE ALL

While the "trust and confidence" theme emerged early in the day's talks, even earlier the ApiNZ chair set the table for discussions by stating the need for change.

"Right now I don't think things can get any worse for us," Guy said.

"We need to think about the future and how we can find a sustainable funding model. Politics have got in the way too often in this industry. We need to come together. I believe today is a start.

"This is not about Apiculture New Zealand and its future, it is indeed about your industry's future. It needs a new way of thinking. Revitalised leadership … we need to encourage younger people into our industry to bring new ideas and revitalise the industry from the ground up."



'Unity and Trust' head up ApiNZ chair and meeting facilitator Nathan Guy's notes following discussion with those attending the industry forum at the Sudima Hotel and online.

Following a wide discussion on the purpose of any industry group which should emerge, vastly experienced beekeeper and industry advocate Allen McCaw encapsulated his position on the matter stating "the purpose of an organisation is to organise".

"To make that happen, we have to be in a position where we can get a fair representation of all view-points, accepting dissension, into a body that can organise. There is a heck of a lot to be done. Don't have any doubts about that."

Retired Marlborough beekeeper Murray Bush backed up that sentiment, looking to a white board which included purposes such as 'biosecurity', 'bee health' and 'data collection' and pointed out "every year there is a different set of issues".

"Therefore, organisation is priority one, two, three and four," Bush reinforced.

GOLD NUGGETS

The afternoon session, post AGM, saw various 'gold nugget' ideas presented both in person and online in five-minute speaking slots. A wide gamut of concepts and philosophies emerged, from promoting the value in the current ApiNZ constitution, to calls for a complete refresh of leadership positions, and new governance structures besides.

General agreement was reached on a concept, put into one word by not a beekeeper or honey marketer but scientist Linda Newstrom-Lloyd. She called for a structure which would utilise the best parts of ApiNZ's constitution and the best of the former NBA model, based in "subsidiarity".

The term refers to organisational structures which allow for decisions to be made at the lowest possible level. The concept of allowing for more lower-level control in the industry had been voiced earlier in the day, albeit without the succinct "subsidiarity" term being used, when Guy spoke to unity driving effective organisation. "You need to go from here," he said, holding his hand low, "to up here," as he raised his arm. Fletcher's views were united on that too as he summarised towards the conclusion of the days' discussions – "uniting comes from upwards, not downwards".

MONEY TALKS

Also towards the backend of the day was a short down-to-business discussion on where funding for any group might come from.

ApiNZ CEO Karin Kos set the table with a clear and present example of what a lack of funding looks like, by apologising for technical difficulties which resulted in poor sound quality for some viewing online and even in person. That reached its worst when the chair of the AGM was required to paraphrase, to those in the room, the barely audible accountant's report from the computer video call – information critical to the impending decision to survive or dissolve a group due largely to its financial position.

"I am sorry about the audio for online, but we are on a really tight budget. Normally at an industry conference we would have technicians on board and it would be fabulous. I want that fabulous experience for our industry," Kos explained.

Once again, opinions varied on where funding might come from, with the often-cited need for a compulsory levy again raised. Both

Guy and Fletcher brought the industry back to the reality of the present state when considering a levy in their closing statements though. Fletcher cut straight to the point.

"The discussion about funding has the danger of ending up in fantasy funding," he said.

"You have got to think about what you have the power to do now. What they say about bankruptcy is, 'it happens slowly, then in happens quickly'… A levy of any sort, under any framework is a couple of years away. If you don't have a way to bridge that, it is a delusion. It needs to be realistic to start with."

Guy, a former Minister for Primary Industries, who now occupies the chair role of both ApiNZ as finances dwindle as well as that position with the Meat Industry Association, weighed in on the levy topic too.

"Speaking from experience, Ministers always look about and ask 'how united is the industry? Am I going to get a whole lot of political noise during the consultation round, or is this going to be plain sailing and let's get on and do it' … Ian's comment is completely right. We are into a voluntary model, until we can hold hands and unite, with the Honey Industry Trust support, to get to a point where we can prove to the Government we are worthy of a commodity levy," Guy said.

HAND HOLDING

That process of 'holding hands' among leadership of several industry groups, most notably ApiNZ and NZBI, has been a problem for almost as long as ApiNZ emerged from the NBA-Federated Farmers merger. The events of July 17 prove leadership have some understanding of what must be done to attract more followers, but it also proved that some old beliefs will die hard, and potentially not at all.

Bush, who has been involved in both NZBI's roundtable process and was present in Christchurch, stated he believed it is wrong to determine the roundtable meetings – which also extended invites far and wide – as "an NZBI process, and this one an ApiNZ process".

"We need to get the two groups working together. If they are not, what is the point?" Bush asked the gathering, or perhaps more likely those at the top tables.

Almost 100 beekeepers and industry stakeholders made it to Christchurch to be at the ApiNZ AGM and discussions in person, with around 30 more tuning in online.

"It needs to be unbranded," Fletcher added, with that stipulation already having been one of NZBI's requirements of his participation.

"The purpose of a church is for the non-members … there needs to be a place for everyone. If it is a winners and losers story, there are only losers."

While ApiNZ possesses expertise on staff and at a board level to potentially run a successful consultation process to best utilise the money put on offer by the HIT, it would clearly be significantly aided by incorporating Fletcher's own vast expertise. The former bureaucrat has held top roles in trade, biosecurity and security across several continents, has an academic background centred in constitutional history and proved himself a person of significant potential value to an industry seeking to form a meaningful and lasting constitution.

"It sems to me everyone wants a single framework to represent the industry in some way. In ApiNZ and NZBI there are two industry bodies with a range of support, yet if there is to be a single one there needs to be a single process going forward. That should be the mandate," Fletcher concluded.

Despite the odd bump during the first day travelled on the road paved by the HIT's funding, emanating from the words spoken is a clear desire for a shared journey over the next few months.

"We had a little scuffle through the AGM, but I have moved on from that," Guy concluded the busy day of AGM and discussion.

"Because the industry is bigger than that. It is bigger than politics, bigger than 'them' and 'us'. It is about *we* and all of *us* coming together."

Mānuka Orchard Open Day Highlights Industry Progression

A mood of optimism purveyed at Mānuka Orchard's Open Day on July 25, as more than 150 beekeepers, suppliers, scientists and assorted industry stakeholders made their way to Paengaroa in the Bay of Plenty to talk honey, pollination and bee health.

"We are here today to show that as an industry we are progressing, moving forward," declared Mānuka Orchard owner Logan Bowyer as he opened the day's events in the local hall, down the road from their honey storage, processing and sales facility.

The event featured a trade display in the main hall and various invited speakers and presentations in the conference area, including panel discussions on pollination, hive health and honey testing, beekeeping business models, plus honey production and post-harvest operations. There was plenty of time for beekeepers to socialise beyond the structured talks too.

Here's just a few of the talking points…

- Unsurprisingly, given the event's location in the heart of kiwifruit country, pollination of the vines was a major discussion point. Shane Max, head of global extension at Zespri, made clear the need for a strengthened relationship between the two industries. "We have a massive expansion in gold variety coming," he said, with somewhere between 350-500ha of new vines to go in next year and more beyond. Each hectare will require around 10 beehives in spring, meaning a demand of up to 5000 extra hives each year.
- "For us to be successful we don't just need more hives, we need more hives set up for kiwifruit pollination," Max says.

Panel discussions saw experts and audience bounce ideas back and forward at the Mānuka Orchard Open Day in Paengaroa.

To help educate beekeepers on orchard requirements, Zespri will be holding 10 workshops with beekeepers in August (nine in the North Island, one in Nelson) to aid collaboration and best practice management. "We need to take you guys on our journey," he added.

- Bowyer reported on the 2024/25 honey season at Mānuka Orchard, saying "predominantly a lot of bush honey came in, and not a lot of mānuka". Currently 2500 drums of honey are stored on site, whereas it was around 4000 for much of the last four years. "One 4°c room, which holds 400 drums, has been turned off and gone back to 20°c," he stated, highlighting the removal of older honey from the facility. "We are running out of honey fast".
- Pike Stahlmann-Brown of Landcare Research presented some of the 2024 Colony Loss Survey results, focusing much of his talk on information gained on varroa management. His data suggests two thirds of commercial beekeepers are now treating at least twice in autumn, post honey harvest, for varroa. "If you treat just once, varroa mites have an opportunity to come back," Stahlmann-Brown said.
- Colony Loss rates over time track in line with the amount of registered beehives in the country Stahlmann-Brown identified. The current reduction in hive numbers has seen a reduction in the percentage of hive deaths. "I think there is something there worth thinking about, around overcrowding," he pointed out.
- The majority of new kiwifruit plantings taking place are going in under netted orchards Max explained, but many are intentionally leaving a strip of netting in the roof open so that beehives can be placed under it, aiding bee survival, hive strength and pollination results.
- While talk of industry governance models was largely off the agenda, Northland beekeeper Liam Gavin advised that Apiculture New Zealand CEO Karin Kos had reached out to him to organise a meeting in the top of country as part of their consultation on industry representation. "They are trying to engage with us, now we need to come out and do our bit and get involved," Gavin stressed.

The Paengaroa Hall begins to fill up for Mānuka Orchard's Open Day on July 25, which over 150 people attended.

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UMF Honey Association Welcomes Two New Board Members

As the Unique Mānuka Factor Honey Association (UMFHA) seeks to grow the value of their well-established UMF™ brand, two new board members will soon be helping provide direction, following a July 16 AGM in Hamilton and online.

Jason Prior and Adam Rundle step into the roles, replacing James Jeffries and Alex Turnbull as they depart UMFHA and the honey industry.

Jefferies steps down as his SummerGlow Apiaries winds up their Waikato-based business. Holding the first ever UMF licence number issued, the business founded by Jefferies' in-laws, Bill and Margaret Bennett, is another casualty of the dramatic drop in mānuka honey prices in recent years.

Turnbull recently quit as CEO of Mānuka Health, removing him from the industry. The company's head of research and development, Kannan Subramanian, threw his hat into the ring to replace Turnbull on the UMFHA board, but it was Prior and Rundell who members elected in the three-applicant race.

Prior is based in the Manawatu, from where he has run Downunder Honey, a beekeeping and honey exporting business, for the past 15 years. Exporting to 12 countries, Prior describes his business as "medium" sized, which has him "well placed to represent New Zealand honey exporters" and that he ran for the board position on a vote for change. A believer in the need for stronger quality-assurances systems and "end-to-end product assurance", Prior comes to the UMFHA board backing an industry-led levy to help meet those ends, with a corresponding reduction in UMF fees.

"We need a much stronger marketing organisation that has a clear mandate to sell brand-NZ to the world," Prior says.

Rundle's background in the honey industry leaves him well-connected form his Auckland base. He has held the role of 'head of apiculture' at Honey New Zealand since February 2023, carrying out honey buying for the company which owns the Manuka Doctor brand. Prior to that, Rundle worked for Ecrotek Beekeeping Supplies from 2015, as a sales and business development manager through a period of dramatic industry growth.

The newcomers join an existing board chaired by Rob Chemaly, and including Mike Sheeran of Prolife Foods, Comvita chief science officer Jackie Evans, NZ Institute of Primary Industries Management chief executive Jo Finer, and experience consultant Hannah Doney.

Jason Prior. The Manawatu beekeeper and honey exporter is now a UMF Honey Association board member, saying he ran "on a vote for change".

Adam Rundle. The Honey New Zealand head of apiculture enters the UMFHA board after 10 years in the industry.

The Trumpian Sting

BY BRUCE ROSCOE

Importers in the United States, New Zealand's largest market for honey, from 7 August will be required to pay import duty of 15% on the cost, insurance, and freight (CIF) value of the cargo, up from the 10% duty imposed on 2 April, according to a 1 August US tariff policy announcement. ("Duty" and "tariff" mean the same thing — a tax on imports charged by the government of the importing country.)

US imports of New Zealand honey (all types) in January-June reached 1,431.6 tonnes, an increase of 24.9% over the volume imported in CY2024 1H. The FOB (free-on-board; not including insurance and freight costs) value grew 19.5% to NZD57m, according to Statistics New Zealand. The US share of New Zealand honey exports in the half year expanded to 27.7% from 24.2% in CY2024 1H.

UMF Honey Association believes that the US market is "well-positioned to lead the industry's recovery" and has therefore "maintained a deliberate promotional focus on this market", Rob Chemaly, association chair, said in his report to the annual general meeting in July. Chemaly described the US as "a key growth market for mānuka honey".

Importers can respond to new or increased duties in one, two, or three ways — pay the import duty out of their own pocket; pass the cost on to distributors in the amount needed to recover the duty they paid; demand that exporters reduce their prices in the amount needed for the importer to continue trading at the same level of profitability without increasing prices to distributors. Or importers can ask exporters to share the cost of the duty, in which case profitability reduces for both parties but the market is undisturbed as neither wholesale nor retail prices are raised.

The duties ultimately cause inflation in two ways — prices increase when the tax is passed on to consumers and when the volume of goods in circulation decreases. That is intended, as the objective is to stimulate the production and consumption of home country goods. A ***McKinsey and Company survey***, conducted in May after the first round of tariffs, found that more than 60% of US consumers had either changed or expected to change their spending habits.

A Farewell to King Honey

BY BRUCE ROSCOE

Me Today Ltd, a dietary supplements brand company, on 28 July announced it had appointed receivers and liquidators to its beleaguered, wholly owned subsidiary King Honey Ltd. Me Today, which is listed on NZX, acquired King Honey for NZD36.0m in June 2021.

Me Today has not produced net profits in any year – either before or after its acquisition of King Honey – since achieving a listing on NZX through being indirectly acquired by the listed shell company, CSM Group Ltd (CSM abbreviates China Scrap Metals) in March 2020.

Though the financial engineering behind Me Today Ltd's genesis is complicated, the condition of King Honey at the time of its sale was unclouded. The company had capacity to produce more than 350 tonnes of honey a year from 18,000 hives placed across the North Island and upper South Island.

King Honey employed around 77 staff – seven at two queen bee rearing operations, five regional beekeeping managers and 37 beekeepers at five leased apiary facilities, 27 at the processing, packing, and storage plant in Taupo, and three in sales and four in finance at the Auckland head office. Most of those facilities and staff positions are or will be disestablished.

What remains is an estimated 400-440 tonne inventory of several-years-old honey and a debt to creditors of a reported NZD13.5m.

Those blinkered to the risks inherent in honey production and fickle nature of markets would see an illusory array of stars. King Honey was the brain child of Terry Jarvis, a former test match cricketer and, among other business feats, co-founder of Sky Network Television Ltd.

A Me Today website blogpost sports a photo of star All Black Beauden Barrett clutching a jar of honey. Under the photo the text reads, "WHAT BEAUDEN IS DOING, EATING, WATCHING AND MORE. Hi Beauden! How are you doing?" Me Today announced the three-year Barrett brand ambassador contract to NZX on 15 June 2020. Barrett's management agency, Halo Sport Ltd, confirmed on 11 June that "Beauden is no longer an Ambassador for Me Today".

An image of former prime minister Sir John Key, in protective beekeeping attire, radiates a silent reassurance from the website

In full beekeeping attire, former prime minister Sir John Key promotes the Bee+ mānuka honey brand, which is jointly owned by Me Today Ltd.

of Bee+, a brand jointly owned by Me Today and China interests. A Facebook post showing Key making an appeal – bookended by greetings in Chinese – for Bee+ mānuka honey is still viewable.

But names at the summit of summer and winter sports and politics were not enough.

As at 30 June 2024, Me Today recorded shareholders' equity of NZD3.6m, down 85.1% from NZD24.1m just two years earlier. Accumulated losses at the same balance sheet date amounted to NZD51.7m and net losses to the year ended June 2024 at NZD11.3m were more than double revenues of NZD5m.

In the same year – the final year for King Honey – honey revenues of NZD2.5m accounted for 49.9% of Me Today total revenues. At the operating cash flow level, 74 cents was lost for every dollar of honey sold.

COMMODIFICATION

The demise of King Honey has occurred against a backdrop of falling export prices for retail pack monofloral mānuka honey and madcap growth in exports of bulk monofloral mānuka honey. Both features point to the commodification of a once uncommon resource.

In the first half of this calendar year, export prices for monofloral mānuka honey to the five largest markets of United States, China, United Kingdom, Japan, and Germany declined 2.5% for US (to NZD43.68 per kilogram); 1.4% for China (NZD57.74); 15.9% for UK (NZD56.74); 27.2% for Japan (NZD50.44); and 16.0% for Germany (NZD62.89). Total exports in this category grew 14.3% to 2,837 tonnes on a value decline of 10.2% to NZD146.5m. (All comparisons with calendar year 2024 first half.)

All Black Beauden Barrett was, for a period, a Me Today brand ambassador.

CY2025 1H bulk monofloral mānuka honey exports to UK grew 20.7% to 311.4 tonnes; Germany, 65.5% (179.9t); Japan, 34.5% (77.4t); US, 87.6% (58.2t); and for Australia, the volume exploded from 295kg to 23.4t. Total exports in this category reached 704.4 tonnes, up 22.2%. The average price achieved was NZD21.33 per kilogram, down 7.2% and a discount of 51.9% to the NZD51.63/kg returned from exports of retail pack monofloral mānuka honey. (All comparisons with CY2024 1H.)

"It Felt Right" – Leading Honey Researcher Relaunches Lab Where the Mānuka Industry Began

Citing a need for greater collaboration and coordination among honey researchers, Dr Meghan Grainger of University of Waikato has relaunched the Honey Research Unit (HRU) founded by the late Dr Peter Molan at the institute.

After first discovering the unique non-peroxide antibacterial properties of mānuka honey in the 1980s, University of Waikato biochemist Peter Molan would go on to extend his findings following the launch of a specialist lab at the Hamilton site, named the Honey Research Unit.

"I debated over it for a long time, but this name just feels right," Grainger says, after announcing the reforming of the lab which Molan founded in 1995 and operated until 2013.

"I wanted to keep it called the Honey Research Unit as a legacy tribute to Peter."

While the name may be the same, the scope of operations will be much broader second time around.

"He was very much focused on the antibacterial properties of mānuka, but my vision for the future of the lab is it will go so much further," Grainger says.

"We want to look into antioxidants, as well as phenolics, and we are also looking at other native honey. We are branching out from just mānuka honey, and including the tree itself, and I do a bit of bee research too.

"We know now there are all these other compounds in mānuka honey, but we don't really know enough about them. The idea is to have a more coordinated effort because there is some good work being done, but people are dabbling and results are not being shared."

That leads to inefficiencies, both in work crossover and findings not being fully utilised by industry.

Dr Molan was a mentor to Grainger during her studies and the connection between past, present and future for her at the unit is strengthened by the inclusion of vastly experienced honey researcher and Grainger's supervisor during those studies, Emeritus Prof. Merilyn Manley-Harris. The focus of Grainger's PhD, completed in 2015, was the conversion of dihydroxyacetone (DHA) to methylglyoxal (MGO) in honey, therefore putting her at the cutting edge of New Zealand honey research for more than a decade.

Thus far a team of six academic staff has been assembled at the HRU, with Associate Professors Mike Clearwater and Charles Lee, along with Dr Linda Peters and Dr Tameryn Stringer joining the collaboration. Their skillset covers analytical, organic and bioinorganic chemistry, as well as plant physiology, microbial ecology and molecular genetics.

Funding is limited at this early stage, but the Unique Mānuka Factor Honey Association (UMFHA) has provided some, plus in-kind support sourcing honey. Other than that, where is the money coming from? "My research account at the moment," Grainger explains, adding, "you have to start somewhere and have to get momentum before people come in".

Initial projects on the work plan will be focused on better understanding what Grainger calls "her nemesis", diastase, as well as C4 sugar levels in mānuka honey. The lack of understanding of those enzymes and sugars in New Zealand honeys are causing major market access issues.

Also up early in the research plan is gaining a better understanding of mānuka honey's health benefits.

"The antibacterial story can only take us so far. We need to know what happens when we ingest it. We will explore the phenolics, which are known antioxidants," Grainger says.

There is bound to be no shortage of work – if it can be funded – but Grainger says getting some encouraging early results will be more important than getting out over their skis. Already, after initially announcing the relaunch to UMFHA members on July 16, there has been contact made by people looking to support the HRU.

"I can see there is a need for a coordinated effort," she says, adding "right now we are really in the beginning stages, but I have a vision and it is going to grow".

The Honey Research Unit is now actively inviting researchers, supporters, and industry collaborators to help expand its work and share knowledge across disciplines. More information on how you can assist is available at www.waikato.ac.nz/honeyresearch.

University of Waikato senior lecturer Dr Meghan Grainger has been at the forefront of honey research in New Zealand for the past decade and recently relaunched the Honey Research Unit originally founded by her mentor, Dr Peter Molan.

Use It or Lose It: The Small Lab with a Big Vision for Kānuka Honey

Although their definition of kānuka honey may still be up for debate, Sri Govindaraju and Sunil Pinnamaneni of The Experiment Company (TEC) firmly agree on one thing: robust scientific testing and clear, transparent labelling are essential to adding lasting value to the industry. The husband-and-wife team has spent the past five years juggling continents, raising children, and investing their personal savings into developing a one-of-a-kind testing machine and launching a dedicated honey testing lab as part of the TEC kānuka honey initiative.

BY ELOISE MARTYN & PATRICK DAWKINS

"We like to set an example for our children that nothing in life is easy and nothing will come on a silver platter," Govindaraju says, reflecting on raising kids split between parents who are separated by continents for much of the year, for the sake of advancing their research and development business.

Now, with an interim chemical definition in place for both mono- and multi-floral kānuka – as well as a potency rating (sound familiar?) – the personal and business sacrifices are on the cusp of retuning tangible benefits for themselves and others, as the focus turns to beekeepers and packers. Their support is becoming crucial as TEC, trading as PAQ Laboratories, works to elevate the profile and value of this uniquely New Zealand honey. So says the inventive couple behind the two businesses.

The Experiment Company, now operating as PAQ Labs, has been founded by, from right, husband and wife duo Sunil Pinnamaneni and Sri Govindaraju, and assisted by honey research expert Dr Swapna Gannabathula, with research technician Rushan Mudiyanselage, left.

It's a classic case of 'use it or lose it': if the industry doesn't back the science now, the opportunity to define and protect kānuka's value could slip away. All while TEC sits on what is potentially a game-changing analytical testing device across several industries, developed in the honey research process.

Pinnamaneni has spent more than a decade working with New Zealand honeys, most recently with honey label Zelandia Honey, which he co-founded in 2019. Since 2020 he has been based in the UAE, having moved to Abu Dhabi to market Zealandia Honey and take up a contract researching honey, specifically Samar and Sidr honey for the UAE government, just before the global pandemic struck.

"I have had a lot of time to study honey," Pinnamaneni says of his time on the Arabian Peninsula. "Not just honey from the UAE, but also New Zealand. It is a big laboratory and we have a lot of good equipment."

That was particularly beneficial in Covid times when, with little else available to do, he says he took advantage of the lab to work seven days a week.

Back home in Auckland, alongside Govindaraju as TEC's chief operating officer, the research company has employed the services of a honey bioactivity specialist, Dr Swapna Gannabathula. Since undertaking a doctorate degree focusing on the bioactive qualities of New Zealand honey from 2011-16, "Dr. Swapna" has maintained an interest in the subject.

"QUITE A JOURNEY"

The founders verbally refer to PAQ Labs – which stands for Precise, Accurate and Quality – as "Pac Labs" and, a little over six months

after the doors to "Pac" opened, Govindaraju reflects on the journey it took to get this far.

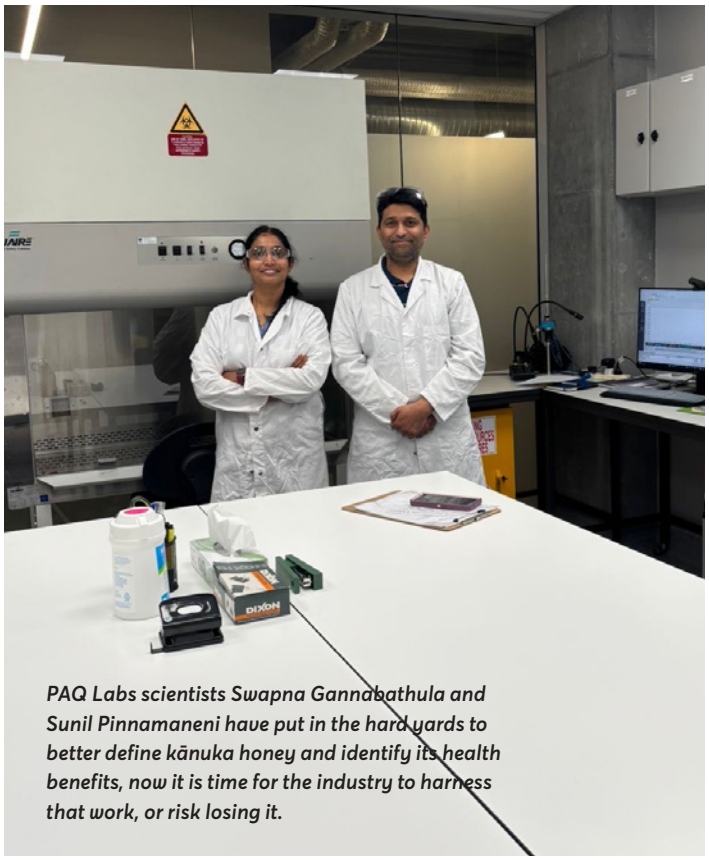
"It's pretty cool, especially in a time where the whole world has gone through multiple disruptions, we have survived that. I won't say we are thriving, but we are paddling fast enough through the water to survive," the honey innovator analogises.

"It's been quite a journey" adds Pinnamaneni, and it's hard to argue with that.

The couple founded TEC as a startup company which has led a science-based programme to better understand the attributes of kānuka honey as well as define kānuka honey and rate its immunostimulatory properties. They have developed a fast, accurate method to detect Arabinogalactan Proteins (AGPs) – a bioactive compound shown to have strong immune-stimulating properties – in kānuka honey. Until now, AGPs were difficult to quantify in a reliable, scalable way.

The couple's innovation combines techniques that were previously siloed across multiple workflows into a single prototype device, capable of delivering AGP results in under two days. It's a significant leap forward from the slow, manual, and fragmented methods previously relied upon, they say.

Pinnamaneni and Govindaraju have invested three and a half years navigating red tape, completing endless paperwork, and carrying out painstaking research, testing, and validation. The result? A fast, user-friendly test that requires just fifteen minutes of preparation and another fifteen for sample running time for the definition.



PAQ Labs scientists Swapna Gannabathula and Sunil Pinnamaneni have put in the hard yards to better define kānuka honey and identify its health benefits, now it is time for the industry to harness that work, or risk losing it.

Their goal now is to achieve ISO/IEC 17025 accreditation—the international standard for testing and calibration laboratories—and to gain beekeepers' support for their kānuka and propolis testing services by the end of 2025. But the risk is real: without strong industry support, this pioneering work may stall before it reaches its full potential.

Now that the foundation has been built, the couple stresses it is vital to keep differentiating kānuka from other honey types. Kānuka honey's unique AGP profile has the potential to distinguish it globally, but only if the science continues and the data grows. Collecting nationwide data is still critical to defining kānuka with scientific confidence, and keeping the lights on at the lab will require beekeepers to utilise their services.

"Getting a definition is not an overnight process," Govindaraju says.

"There have been a few beekeepers that have challenged us about the definition, and that is a good thing. Rather than accepting it, the challenge allows us to test wider. The funny thing about New Zealand is each region has slightly subtle differences in all its biomarker make up, whether it is mānuka, kānuka, kamahi, we are noticing that."

The duo says these regional differences are what make it interesting, and having access to all that variability in the data is of real benefit. "We can relay that information back to the beekeepers for them to use in whatever way they see fit," Govindaraju adds.

MUCH MORE BESIDES

Interestingly, what began as a method to validate kānuka honey has evolved into something much bigger: the development of a biotech instrument with potential applications across the food, pharmaceutical, and cosmetic industries. Each of these sectors, in their own way, stands to benefit from the honey industry – the space where the couple's true passion sits. They've already applied for a range of patents, some for the device itself, and others for its specially designed sample trays.

In July came the inspiring news that in Australia their range of patent applications associated to the testing device proved successful.

"We've secured novelty for both the instrument and the sample trays in our provisional patent application, marking a significant step forward. With freedom to operate confirmed for Australia and NZ, we're now focused on demonstrating the inventive brilliance of our technology, poised to revolutionise antimicrobial performance quantification. It's an exciting time for our small team," Govindaraju says.

The machine operates on a diffusion principle to test antibacterial potency. Both developers admit that if someone had told them five years ago they'd be working on a biotech device, they wouldn't have believed it.

"It wasn't on our radar, but that's what innovation is, though, right?" the COO reflects.

They also acknowledge that while they await the outcome of further patent applications, the process doesn't come without

cost, adding to an already significant five-year investment, both financially and personally.

"Even with some of those patent applications progressing favourably, it will still be around half a million dollars just to protect them globally," Govindaraju explains.

The move underscores their ongoing commitment to drive innovation that could benefit not only kānuka, but the broader apiculture sector as well.

THE PROOF IS IN THE PROPOLIS... TESTING

Propolis testing is also a key focus of the operation, with quality, safety, and authenticity being assessed according to the product's intended use – whether nutraceutical, cosmetic, or pharmaceutical – and relevant regulatory standards.

Pinnamaneni emphasises that, in their view, any claimed health benefits must be grounded in science and supported by robust research, and that is what PAQ Labs has been founded to help with.

Pinnamaneni and Govindaraju have been studying research on the bioactive compound CAPE (caffeic acid phenethyl ester), which is found in high concentrations in New Zealand propolis. CAPE has been associated with anti-cancer properties and has shown promising results in laboratory-based trials.

Early research suggests that CAPE may selectively target melanoma skin cells, potentially slowing their growth. The compound appears to work by increasing oxidative stress and triggering apoptosis (cell death) in these cells. Evidence also indicates that CAPE may be more effective in melanoma cells with high levels of tyrosinase, though this remains under investigation.

Pinnamaneni notes that exploring the use of CAPE in preventative applications – such as incorporating propolis into sunscreens or body butters – could open up new cosmetic market opportunities. This, in turn, would help drive demand for high-quality propolis from New Zealand beekeepers.

"Consumers are getting very clever – we're living in an information age. They're just a Google search away," Govindaraju adds.

Her comment underscores the growing need for a clear definition and robust testing framework for propolis and kānuka, along with transparent labelling across all apiculture-related products.

After countless hours of development, Govindaraju and Pinnamaneni are now calling on beekeepers across New Zealand to get behind their efforts by using their testing services to test their kānuka honey and propolis.

PAQ Labs, verbalised as "Pac Labs" by the founders, operates from Auckland and stands for precision, accuracy and quality in honey and propolis testing.

"Now that the information and science are available, It's up to the beekeeper, the packer, the producer, the exporter to see how it affects their business and what their vision is. It takes years –and a lot of guts – to not be a sheep and actually try and do something about the science," Govindaraju says, speaking with years of experience on the matter herself.

"I'd love to say there's a market so you should test your honey, and you can prove this, but I'm lying if I say that. You've got to put yourself out as a pioneer if you want to use AGP rating on your labels or want to use it for marketing effectively. Be that person, take that first step."

The couple sees their current position as a critical crossroads for the industry. While an estimated 30 to 40 beekeepers have supported their Research and Development journey from the outset, broader industry engagement is now essential to keep moving forward.

MOVING TIME

For years Kiwi beekeepers have cited a need to seek value in 'other' native honeys, beyond mānuka. For years, one couple have put their money where their mouth is, seeking innovation to provide added value to flow back to Kiwi beekeepers.

They're not just building a lab, they're building a system. One that New Zealand's beekeepers and honey and propolis providers can be part of. So, they're putting out the call: get behind the science.

Use it or lose it.

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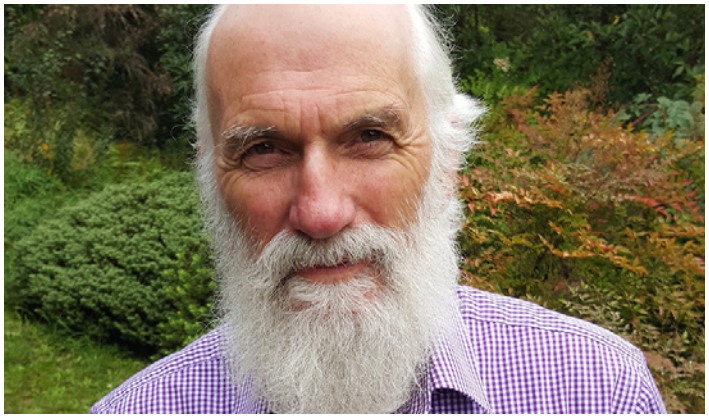
If It's Only Slightly Broke, Then Let's Fix It

BY RICKI LEAHY

Listening to everybody's comments, ideas and opinions at the recent Apiculture New Zealand (ApiNZ) AGM and Industry Forum in Christchurch, my assessment was that industry unity in one way or another was hoped for by most and that we should get our act together pronto.

We can either continue down the hard way, which may have no guarantee of a unified outcome, or the easy way where, for the sake of our beekeeping and industry, we agree from the outset that we must find a way to unify and work together. From that agreed position we could then leave any "us and them" attitudes behind and adopt an 'us' attitude and start positively working together to make the subtle changes needed to achieve our common goal. If not, then it's the hard way.

We need to remember this unity process has been going on for over 10 years now, since the process to unite Federated Farmers Bee Industry Group and the National Beekeepers Association (NBA) began. That eventuated in the rebranding of the NBA, thus forming ApiNZ in 2016. However, not everyone in the industry got on board, leading to the continued unsustainable situation we have today.



Retired Murchison beekeeper Ricki Leahy has a long and dedicated resume in industry governance, serving both NBA and ApiNZ, and believes the ApiNZ constitution is fundamentally sound to serve members, but some adaptations may be needed.

It is important to note that, over time, an enormous amount of cost involving legal advice, professional help and guidance, was invested into developing ApiNZ. Not to mention the voluntary effort and donated cost of travel and accommodation sponsored by those selected to work on the unification project.

It's also interesting to note, at the ApiNZ Industry Forum an 'around the tables' exercise was conducted to extract ideas into the purposes and values of an industry organisation. When all the ideas were collated onto a whiteboard, a voice at the back of the room declared that, if compared to the same type of exercise ten years ago, nothing would have changed. Suggesting we don't need to reinvent the wheel.

THE 'OLD' STRUCTURE

The main difference between the NBA and the ApiNZ constitutions is in how members are elected to their respective Executive Council or Board. The NBA operated a system of eight Electoral Wards. Five in the North Island and three in the South. Each Ward may have included more than one Branch. For instance; the Upper South Island Ward included both the Nelson and Marlborough Branches. The purpose of Each Ward was to elect one of their members to become their representative on the Executive. However, often this system didn't provide the most suitable candidate when compared to the potential of who may have been available throughout the country.

As an example, in any Electoral Ward, there could well have been several exceptionally talented individuals available to be on the Executive. But, with the constitution allowing only one executive member from each region, the Executive missed out on utilising these talented individuals. Often regions had their executive position continually occupied by someone entrenched in their position, while continually harbouring opinions that frustrated our industry from moving forward with the times. Anyway, this regional system outdated itself with the emergence of modern communication technology.

THE APINZ CONSTITUTION

The ApiNZ constitution operates with representation by industry sector, the Beekeeping Sector and Market Sector with each sector broken down into categories, such as the Beekeeping Sector including Non-Commercial and Commercial Beekeeping categories. This type of representation was the key principle that united all industry stakeholders by giving all those associated with the apiculture industry the opportunity to become a member and be inclusively represented by their Sector on the Board. This fundamental change provided an opportunity for any member to attain nomination for election by their sector and, if successful, be voted onto the Board to represent both Industry and Sector.

I have re-read and thought my way through the ApiNZ Constitution and conclude that it is basically a very good constitution and fit for purpose. I believe it could, and should, be used as the basis for us to move forward. It needn't be just tossed aside.

As a thought, constitutions are basically rules or guidelines of how an organisation is governed, just as budgets are a financial management tool. Both are similar in that they are not expected or intended to be set in concrete. In fact, they are each malleable and able to be adjusted as changing situations, or circumstances at times, may dictate.

MORE BEEKEEPING REPRESENTATION PERHAPS

For instance, comments have been made that there should be more beekeeping sector representation on the ApiNZ Board. I have heard Jane Lorimer speak of the growth potential of pollination to our industry and of her comments referring to the true value of our bee's pollination to the wider primary industries. I agree with Jane's comments whole heartedly, including those of the unrealised value of clover pollination to the grazing/meat producer sectors etc. From a wellbeing of our bee's biosecurity and health perspective, one would assume that other primary industries that depend on our bee's pollination services would be concerned if our industry organisation could not be critically relied upon.

So, as an example of adjusting the constitution, we could perhaps consider adding an extra member to the Board who would represent a new Pollination Category within the Beekeeper Sector.

What I am describing is a tweak to the ApiNZ constitution that gives the Beekeeping Sector an extra voice around the table. This may then give beekeepers that added confidence to assure themselves that ApiNZ is indeed a beekeeping organisation. I do note that this will shift the balance resulting with a strengthening of the Beekeeper Sector, but the Market Sector would still remain just as well represented around the table.

Maybe a few fine constitutional tune-ups, such as this example, would be all it takes for the ApiNZ Constitution to suit the whole industry more adequately.

ONE TABLE TOGETHER

From my experience on the ApiNZ Board, I can assure you that there is a good working relationship on behalf of our industry between both the Market and Beekeeper sectors. The Market understands the support needed by beekeepers who produce the products and, vice versa, the Beekeeper sector understands the issues facing the markets and so all work closely together.

No matter what form of constitution is decided upon, I think it is important that both sectors should continue to sit around the same Board table. They should continue to work through all the issues together, maintaining that strong bond by understanding that both sectors are equally dependent on each other.

DOLLARS AND SENSE

We all know that ApiNZ is in a bit of a pickle at the moment and the reason for that is inadequate funding. There is absolutely no issue of poor financial management, in fact it's quite the opposite. Our administration is suffering just like any business that finds itself locked into a poverty spiral.

Members who are struggling with the current downturn have put a check on their outgoings and many have had no choice other than to forego their memberships. Sadly, many have been forced out of business, all of which has affected ApiNZ 's income and operating budget. The ApiNZ Management Team and Board at present would be struggling to do much of any substance for us other than to continue advocating and representing us as best they can and working hard to keep our 'boat' afloat. We should all be very thankful for their resilience in that regard.

However, that's the outcome of a voluntary organisation and exactly why we need to think of how our industry administration needs to be funded in the future.

A LEVY WILL EVENTUALLY BE NEEDED

It doesn't matter what constitution we may decide to adopt or how we decide to unite going forward, there is one thing for sure – we need a commodity levy and one of sufficient value to more than adequately fund our administration and industry good activities.

And look at us – collectively we voted down a levy in the past. In my opinion that was dumb.

Let's get our heads out of the sand on this. Industry good activities don't just happen. Also, to produce honey that is suitable

for export we need to adhere to all the regulatory requirements of traceability and food safety compliance. To maintain a sustainable market, we need funding for market research and a strong united and well-funded industry organisation advocating on our behalf supporting all sectors of industry. We need to be kept informed and up to date with current information regarding all aspects of our apiculture industry. Our industry Management Team is needed to manage and undertake the administration of all those industry good activities on our behalf.

A commodity levy is needed so we have a strong, well-funded industry governance body that can then support all of industry, providing opportunity for us all to operate in a profitable and sustainable manner.

HOW TO COLLECT IT

Levying export honey is the most sensible and viable way to fund a levy. To be successful we have to 'chase the money' and as our market reports suggest, the money is in the export market.

A commodity levy doesn't need to cost the beekeeper or the producer anything in the long run. We simply pass the cost of any levy from seller to buyer and eventually the end consumer pays for it.

So instead of struggling to figure out how only a few hundred beekeepers could pay an unaffordable amount each, we should consider how easy it would be for the millions of overseas consumers who, when purchasing their jar of honey, would not notice the inconsequential amount included within the retail value.

Of course, there is plenty of detail to sort, and now is not yet the time to do that.

When the chips are down within our individual businesses, we need a strong administration to support us through it. I remember hearing comments at some of those 'shall we have a commodity levy' meetings of a few years ago that the levy money would all get wasted on administration. Well, I say, actually it's industry administration that needs to be supported in the first instance. ApiNZ are serving us really well in these trying times.

Advocacy is so important, it is the key hidden value that is the foundation of everything.

Ricki Leahy is a retired commercial beekeeper of about 40 years' experience in the Tasman and Buller districts where he operated a 2000 beehive business based in Murchison. He is a life member of ApiNZ and was president of the NBA for the three years leading up to its rebranding and constitutional changes to ApiNZ in 2016. He then served six years on the ApiNZ Board.

John Berry on Fire, Wind and Rain

BY JOHN BERRY

When you have been involved in beekeeping for as long as I have, you're bound to have seen a few disasters and learned from a few mistakes. You wouldn't think there was much left for me to learn, but the other day I had my nose rubbed firmly in all of the above...

It started with the wind blowing the lid off my paraffin dipping plant, followed by rain getting in. Because the paraffin shrinks as it cools, the water can get down the cracks and it's impossible to get it all out. What you have to do is heat it up slowly and have it very gently boiling until all the water is gone, or it will froth up and boil over, which not only wastes paraffin but also creates an extreme fire risk.

I thought I had everything well under control when I went in for morning tea (I'm semiretired now so my morning teas can be a bit extended…). A friend turned up about the same time as I thought it was time to go put some more wood in the firebox, but when I went outside I could see a huge column of fire and smoke.

Uh oh – John Berry's paraffin wax dipper goes up in flames.

The whole thing was a raging inferno. The plant is deliberately placed away from anything important, so nothing was immediately threatened, but it was nevertheless a deeply worrying event. I got the hose and used that to cool down the outside of the plant. It's very important not to get water in with the hot paraffin or it will just explode.

Meanwhile, some of the staff from Arataki next door had noticed the fire as well and came over to assist. We tried one of their extinguishers, but it didn't do anything and in the end the consensus was made that it was better to call the fire brigade. I continued to use the hose to stop anything close to it getting too hot and, in the end, managed to extinguish it about one minute before the fire engine turned up.

It's the first time I've ever had to ring the fire brigade and I was expecting a bit of a bollocking for my negligence, but they couldn't have been nicer or more understanding. This was the second callout that morning for our local volunteer Fire Brigade. In the end the only real loss was a whole lot of paraffin. I have lit this plant or one similar to it so many times over the years without any real problems and was fully aware of what could happen, but I allowed complacency to creep in. It was bloody scary. Lesson hopefully learnt. If you are wondering how hot it got, it melted one of the brass taps.

MORE FIRE

I can only think of one apiary that was partially lost to fire and that was over 50 years ago. It was surrounded by dry gorse and the fire was nothing to do with beekeeping. Some of the hives burnt while hives next door were fine. I have always been extremely careful with my smoker and never put it on the ground and just don't use it if conditions are extreme. The only thing I have ever set fire to with a smoker is myself. I could smell the stink of burning and was looking for the source when I felt a hot spot on my belly. My veil was quietly smouldering.

I did lose a veil once that was on the back of the truck to a cigarette thrown out the window (not by me). By the time we noticed it was too late to save it, but fortunately the truck was fine.

I do know beekeepers that have lost hives to fires and I know others that have started fires with their smokers. It's uncommon, but it does happen. I have been singed around the edges a few times while burning American foulbrood hives and once had one full of petrol fumes explode right beside me. Fire needs to be respected.

WIND

I have probably seen more hives lost to wind than any other natural phenomena over the years. Perhaps the most spectacular was an apiary near Te Aroha over 40 years ago. Everything from the apiary was plastered against the fence, boxes, floors, lids, frames. I don't remember how many of them were killed outright, but it must've been a few. I spent several days driving around just putting lids back on hives. I don't think I've ever seen another wind like it, with dozens of power poles in a row snapped off and partially finished houses blown to kindling.

In the days of single hives, most of our hives in Hawke's Bay had rocks on top, but hives Arataki had in other areas mostly went without. In those days we did not use inner covers and, if the lid blew off, the hives were fully exposed to the elements. In fact they were better off being knocked over on their sides than sitting without a lid. This was of course well before varroa and, in those days, it was losing a lid, wasps or starvation that were about the only things that actually killed hives. Even with the lid off, a surprising number survived the winter.

I don't know how many hives were lost to wind damage, but I'll guarantee it far exceeded flood and fire. I've seen winds that were literally strong enough to blow the prickles off gorse bushes. I've had a pallet of hives blown out from under the ropes on the truck as I drove along the road and many, many times I have been hit by flying lids and top boards.

Changing hives over to pallets almost eliminated the problem of losing lids to wind. It also greatly reduces stock damage and I suspect they will be a lot more durable during an earthquake. I have read an account of what happened to hives in the Hawke's Bay earthquake and it was not pretty.

RAIN

Over the years I have seen a lot of lives go down the rivers. Changing from single hives to pallets made quite a big difference and with my own hives I don't think I've had a single one flooded away. I have lost the odd one because the entrance got completely blocked with silt though.

Hives on single floors tip over very quickly in rising water, whereas hives on pallets tend to stay upright and in worst case scenarios will float. My brother and I once lassoed six pallets of hives in the middle of a small lake and, while it didn't do them any good, the majority survived. I have even found the odd single hive still alive hundreds of metres down the river.

One of the worst floods I can remember was the Easter storm in 1981. I was working for my uncle at the time looking after hives on the Hauraki Plains and Coromandel. Fortunately the worst of the flooding was on the other side of the river from where most of our hives were, but we did lose one site of 50 hives. In that case the water didn't go over the top, but actually wore the bank away until all the hives had tumbled into the river.

Rain of course also means mud and mud means getting stuck, but if I was to write about every time I'd ever been stuck it would take a while. Let's just say I have been stuck often enough to cause me to have recurring bad dreams on the subject.

Extending the Use of the Foster Method of AFB Detection

By John Mackay, dnature technical director

When dnature Diagnostics and Research first coined their concept of qPCR testing for American foulbrood (AFB) it was predominantly with swabbing of hive entrances in the field in mind. Nothing stays the same for long in the New Zealand honey industry though and now, as removing spores from export honey becomes a pressing issue, alongside a huge upswing in the trade of used equipment, its value to beekeepers and honey sellers grows.

The Foster Method for AFB detection has been used extensively in New Zealand for some years now, analysing the results of hive entrance swabs (either single or in composite tests) and determining whether colonies are carrying clinical levels of the bacterial cells. By clinical levels, we mean that the hive would be showing clinical signs of disease when opened and visually inspected – something that can be hard to check in colder climates with no brood.

A more recent extension of the method has been the testing of hiveware (honey supers with frames and gear such as feeders and queen excluders). Looking at second-hand gear, the picture may be a little different. Rather than trying to isolate and destroy the individual clinical colony, batches of gear can be sampled with a single swab and the same composite testing performed. The current value of some hiveware means it can be uneconomic to break down the composites and so it's an 'all-or-nothing' approach: do I touch *any* of this gear or not.

This is especially the case when looking at second-hand gear. As one multi-generational beekeeper said "my grandfather said you see a spike in AFB when beekeeper numbers surge . . .and when they exit". We wouldn't argue with that grandfather – unfortunately we have tested a lot of hiveware containing high spore levels over the last two years or so. The highest? So far, it's been 3 billion spores ... off a single swab.

But here we're using the swab a little differently: the single swab can be used across 10 pieces of equipment – swabbing each one in the 'W pattern' below. This means the 12 swab composite is now testing across 120 boxes, baseboards, excluders etc.

Swabbing across honey supers.

If gear is needed urgently, then yes, these composites can be broken down to the stack of 10 supers (for example) that were tested with the one swab. However, the cost of testing the 12 individual composites could be more expensive than the hiveware itself in the current economic conditions.

The beauty of the Foster Method is, the beekeeper can make that call themselves, once they know the initial composite test results.

THE 20-TONNE HONEY TURNAROUND

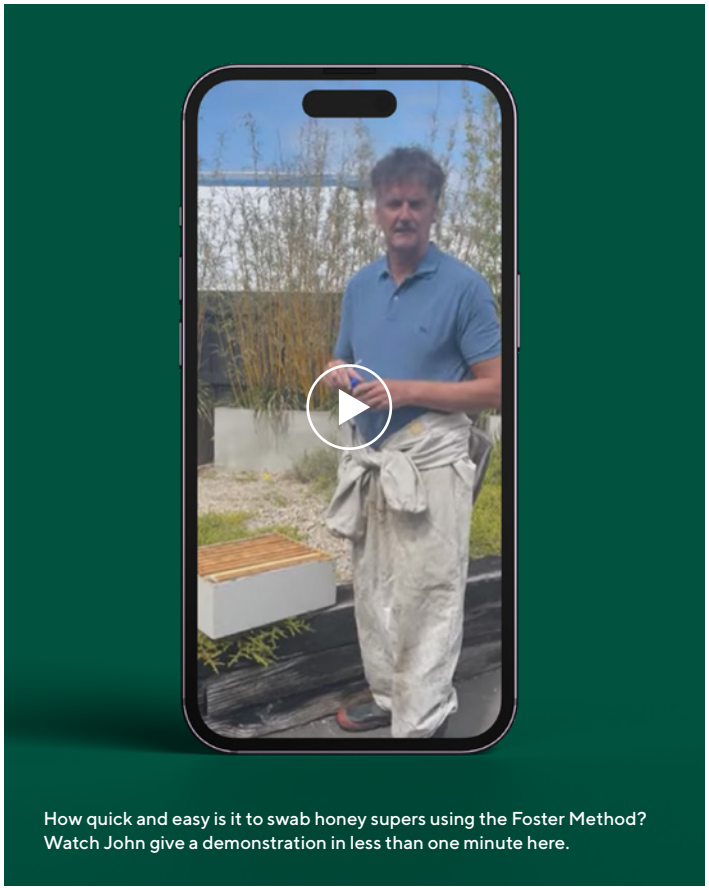
Spores in honey – often without clinical cases being observed – are proving frustrating to many beekeepers who contact dnature. One thing to consider is the spores present in those honey frames that are ending up in low levels in honey. Essentially it's contamination of your honey without clinical cases presenting.

One recent example was a honey company that had more than 20 tonnes of honey with spore contamination. After the testing and destruction of contaminated hiveware and dead-out baseboards, the following season the levels of contaminated honey reduced to well under a tonne.

And that's the ultimate aim of testing hiveware: not only preventing unwitting cross-infection of hives with contaminated honey supers – but also giving more saleable product for beekeepers (i.e. no spore detection in honeys).

IN THE APIARY

Then there is the original 'in the field' method of testing hive entrances, as succinctly demonstrated by he to whom the method is named **here**. Whether you have a major AFB outbreak, or just a case or two perplexing you, testing hives and hardware can greatly assist in eradicating AFB from your operation. ■



How quick and easy is it to swab honey supers using the Foster Method? Watch John give a demonstration in less than one minute here.

If you have detected AFB in your beehives, the Foster Method of in-the-field testing, as demonstrated by Barry Foster himself **here**, can save a lot of time and money on the path to eradication.

Two Empty Seats Await Commercial Beekeepers on AFB Board

With two vacancies emerging on their board, the recently formed New Zealand Bee Health and Biosecurity Trust (NZBB) have put the call out to commercial beekeepers – 'we want you'. In recent years applicants have been thin on the ground, but the current chair is hoping recent interest in their move to a new independent model of governance will entice more to step forward.

Some beekeepers were aggrieved at the manner in which NZBB formed from the previous American Foulbrood (AFB) Pest Management Plan Management Agency in June, specifically questioning the Minister for Biosecurity's decision to choose a Trust over an incorporated society for the cause (as detailed in *Blindsided Beekeepers See red at AFB PMP Change*). Among the complaints was the so called 'self appointing' nature of the board (aka Trustees). Now, only a month on, commercial beekeepers have their opportunity to apply to join the board.

The former AFB Management Agency currently has a vacancy for a commercial beekeeper, and with hobbyist beekeeper Jane Röllin reaching the end of her term the decision to open the seat to another commercial beekeeper has been made – meaning there are two seats available to those who call beekeeping their job.

"We have been carrying a vacancy for some time and are also recognising the fact commercial beekeepers want greater representation at the board," says chair Mark Dingle, himself a hobbyist beekeeper.

Both Dingle and fellow small-scale beekeeper and deputy chair Val Graham will see their second three-year term, and therefore last, end next August. Meaning, there will likely be a hunt on for two new hobbyist apiarists to fill seats in a year's time. The board as currently comprised is rounded out by three commercial beekeepers in Murray Elwood, Trent Profitt and Lubomir Dudek.

"Historically we have had low levels of interest in applying for board roles from beekeepers generally, and commercial in particular. Perhaps it is because they realise, apart from a small honorarium, they are not doing it for the money, but it is about giving back to the industry," Dingle says, having done so himself since 2020.

While a "commercial beekeeper" or two are sought, owning or managing more than 250 beehives is only the first point on a list of 16 "skill-sets, experience, and attributes" as set out as ideal for NZBB Trustees.

"Primarily we want people with the right skills to apply, and it extends beyond beekeeping. Have they got financial nous? Do they have strategic nous? Do they understand AFB control systems? How have they responded and developed it in their own systems?" Dingle says.

Beekeepers deserve the best, Dingle believes, and hence he wants to see as many qualified beekeepers apply before the August 10 cutoff as possible. From there an external consultant will screen applicants before making a recommendation for consideration by the board.

NZ Bee Health & Biosecurity™

The newly titled New Zealand Bee Health and Biosecurity agency for managing AFB has two open positions on the board now available to commercial beekeepers.

Under the new NZBB there is also the potential to form an 'advisory group' or groups, to the board. So far, progress has been made on what the terms of reference for this group might be, but that's as far as it has got.

"The shape and form that might take, we are still working through," Dingle says.

"There are all sorts of questions to ask around whether it is an ad-hoc group to provide feedback on a specific issue the sector considers to be a priority, or whether they see it as being a standing group that has extensive beekeeping networks maybe. We haven't worked out what it looks like yet, or how it is to be appointed."

Commercial beekeepers considering applying to the vacant NZBB Board positions are advised to consult the Board Member Role Description and Board Member Skills List documents, before submitting a curriculum vitae, cover letter, and names of three references by email to info@nzbb.org.nz or post to PO Box 88, Rolleston 7643. Closing date is 5pm August 10.

Wellington Proving a Popular Venue for Research Symposium

All the best and brightest minds in New Zealand's honey bee research in one room, along with the beekeepers who want to be brought up to speed on the latest findings – that's the idea behind the New Zealand Honey Bee Research Symposium which will see its sixth iteration take place in Wellington, Thursday August 28.

The event was first held in 2020 and, in a sign of the Covid-inflicted times, was online. Since then, Rotorua, Christchurch and Hamilton have played host. Now, in year six, the event will be centrally located in the nation's capital and on the home turf of event organiser Prof. Phil Lester of the University of Victoria Wellington.

"We cap the event at 100 attendees and we are nearing three quarters of that already registered, so I encourage anyone who wants to come along and be brought up to speed with the latest in what the science community in the beekeeping space is doing to sign up now," Lester says.

The final programme of speakers for the university venue is yet to be finalised, but abstracts have previously been called for and organisers are working through them. Once they have decided who will present and when, each will have 15 minutes to detail their findings and/or ongoing research.

While the title might read 'Honey Bee', in reality the spectrum of topics is always far wider. Honey research and varroa findings are always covered, but the likes of native bees, propolis and even new product adaptations having been known to be discussed too.

In recent years the day has been capped with an open discussion which allows attendees to converse around where they think research should be focused moving forward. This will once again be the case the organisers say, thus providing beekeepers an opportunity to help guide future research.

"While the research portion of our industry operates on a, comparatively, thin budget for the most part, there is some good work going on out there with an eye to real-world, practical application for beekeepers," Lester says.

"We designed the Symposium with the idea of fostering collaboration between the honey bee science community, as well as between scientists and beekeepers. I think it has been successful in doing that, and on August 28 in Wellington that will once again be the aim."

Registration to the event costs $80, includes catered food and can be made here.

Zespri Workshops Will Put Pollination Front and Centre

With harvest behind us, the kiwifruit industry turns to the season ahead. Winter canopy management moves into budbreak enhancers, from which spring will flourish and the arrival of the bees.

Pollination is an essential activity in the kiwifruit calendar. Growers need good beekeepers just as much as beekeepers need good growers – a mutually beneficial partnership if ever there was one. Zespri, in collaboration with experienced beekeepers and orchardists Neale Cameron and Richard Klaus, invite beekeepers to a series of workshops to discuss what it takes for effective bee pollination of kiwifruit.

Topics to be covered include pollination hive management; kiwifruit basics and the orchard environment; kiwifruit minimum hive standards; successful pollination under netted orchards; agreements, communication and good practice; what can beekeepers expect from a grower?

These sessions will be held between August 4 and 8 across the North Island and – all going to plan – August 12 in Nelson (full list of dates accompanies this article). They will be hugely beneficial to all pollinating beekeepers, particularly those new to the industry or wanting a refresher. Therefore, please share this invitation with your employees, colleagues and beekeeping acquaintances and register your interest via email to **extension@zespri.com** – name, numbers, and location.

HIVE STANDARDS

The Kiwifruit industry operates with minimum hive standards, established by the Kiwifruit Pollination Association. They are:

- Four full depth frames of brood in all stages (7000cm^2 of brood, seven frames 60% full).
- Twelve standard frames well covered with bees (approximately 30,000 bees)
- 8-10 hives/ha is usually sufficient with good males and no competing flower resources

You may ask, why that number of bees? Studies have found that as the bee population in a hive increases the proportion of field bees is greatly increased, as the number of 'house' bees remains relatively stable. This obviously leads to a much greater pollination efficiency, with less than 20,000 bee hives returning less than 40% efficiency and those with more than 30,000 99%.

NETTING ORCHARDS

A lot of the original evidential trial work from Zespri & Plant & Food Research (2015) that informs some of the more negative attitudes toward pollination under hail netting was done with fully enclosed orchards that included darker netting and smaller holes – a worst-case scenario for pollination. Nowadays, growers are more aware of these limitations, and have adapted their orchards accordingly. Here's what can be done to mitigate these effects:

- Place hives on block boundary or under open sky
- Split introductions and rotate hives out after 2-3 days
- Roll up sides if present
- Have grower open roof panels
- Use smaller hives
- Feed pollen patties
- Provide water source
- Audit hives before and after

MAKE A CALL

We implore any pollinating beekeepers who've not already spoken to the growers they service to reach out and see what may have changed and be required for this season ahead. It's a chance to see how pollination went last season too. Take the initiative – pick up the phone and give them a call.

LOCATION	VENUE	DATE	TIME	HOST
TE PUKE	The Orchard Church	4th Aug	8:30am – 12:00pm	Neale, Richard & Zespri
KATIKATI	Katikati War Memorial	4th Aug	1:30pm – 4:30pm	Neale, Richard & Zespri
WAIKATO	Grassroots Trust – Velodrome	5th Aug	1:00pm – 4:00pm	Neale, Richard & Zespri
AUCKLAND	Franklin Club	6th Aug	9:00am – 12:30pm	Neale & Zespri
ŌPŌTIKI	Bridge Street Cafe	6th Aug	9:00am – 12:30pm	Richard & Zespri
GISBORNE	Gisborne Theatre	7th Aug	9:00am – 12:30pm	Richard & Zespri
WHANGĀREI	Discovery Settlers Hotel	7th Aug	9:00am – 12:30pm	Neale & Zespri
KERIKERI	Turner Centre	8th Aug	9:00am – 12:30pm	Neale & Zespri
HAWKE'S BAY	No.5 Café and Larder	8th Aug	9:00am – 12:30pm	Richard & Zespri
NELSON [TBC]	Top 10 Motueka	12th Aug	11:00am – 2:00pm	EVENT- subject to weather

Kiwifruit pollination workshops scheduled to be hosted by Zespri to which pollination providing beekeepers are invited and encouraged to attend.

Eating Well

It's been said 'an army marches on its stomach' and any beekeeper worth their salt knows that their honey bees' diet (including 'salt'!) is essential to their output, in peace and war. As yet we haven't been able to fully replicate a complete, naturally-foraged diet with supplementary alternatives. Could that soon change?

BY DAVE BLACK

Surely it's more than a little surprising that, among all the animals we have tamed or caged, apparently honey bees are the only ones that have to be left free to gather their own food. Almost anything in a zoo can remain penned. People keep aquariums of exotic tropical fish at home for years and years. Dogs, horses, sheep, snakes and hamsters can all be housed and fed to live out their lives contentedly into old age, but honey bees can't manage more than a few summer weeks in containment, ultimately because we don't know enough about what they eat.

NUTRITION

Nutrients are substances that an organism must obtain from its surroundings to grow and stay alive, and when it comes to honey bees we don't know what all these substances are. It's obvious they harvest nectar, pollen, and water, but there are some details about the nutrients contained in these resources which we have been missing. We can supplement their natural diet (for a little while), but we've never managed to substitute an artificial replacement, and planting supplemental forage crops can turn out to be a bit 'hit and miss'.

It's hard to beat the real stuff. A honey bee seeks out dandelion pollen a nd nectar. Photo: Peter Bray.

Part of the reason this is complicated is that these particular bees live as a colony of dissimilar individuals, and not as a herd of similar ones. Generally honey bees move from a protein-rich diet to a carbohydrate-rich diet as they age. An individual larva's nutritional needs are different from an adult's; a drone's requirement different from a queen's, or a nurse bee, or a forager. As the colony as a whole responds to change in its environment, and the size of the proportions of individuals in it shift, the dietary needs of the colony must adjust to an eccentric availability of food resources. If you're feeding them, what they need in September isn't necessarily the same as what they need in March. But it's more than that.

HEALTHY EATING

Honey bees (not so all bees) have adapted to feed on a plant-based diet of floral nectar and pollen. Nectar and honey dew are the natural sources of carbohydrates for honey bees. An adult worker bee uses the equivalent of about 11mg of dry sugar a day.[1] Nectars contain varying proportions of sucrose and its component monosaccharides, glucose and fructose. There are other things in nectar; different sugars, some proteins, minerals, and various phytochemicals. While they can be essential for other animals, they are not thought to be important to honey bees.

Pollen provides the bees with protein and, as a nurse, a bee would consume in the order of 6.5mg per day. A single larva needs to be fed something like 30mg of protein, which works out to be around 100-200mg of pollen, depending on the variety. It is of course not just protein, but a portion of ten amino acids.[2] The only way the bees have of obtaining these essential amino acids is by consuming them and then using them to make all the proteins they need. In addition, pollen provides lipids,[3] including essential fatty acids,[4] starch, fibre, vitamins, and minerals.

Of these, one thing we haven't studied much is the minerals. At a most fundamental level, honey bees are collections of individual elements, atoms which cannot be converted into

different atoms (in contrast to the organic compounds which can be 'repurposed'). If you studied chemistry you will remember 'stoichiometry', probably not fondly. From the very formation of a bee all chemical elements that form that body of the adult must be assembled in the right proportions, so these must exist in their food. To 'make' a bee, apart from the atoms of carbon, hydrogen, and oxygen found in carbohydrates (and nitrogen in proteins), all the other atoms are going to come from pollen. Some of these atoms[5] are often deficient in the pollen sources available to the hive and that has the potential to limit the number of bees that can be 'made'.[6] For example, the eucalypt pollens, and kiwifruit, all appear to lack sodium, and that might be why bees sometimes seem to like 'salty' water.

Lipids are a large group of organic molecules defined by their insolubility in water. Chemists subdivide the group into eight more precise groups of molecules like fatty acids, glycerols, sterols and others. To most of us they are all the waxes, fats and oils that make up living structures. They store energy, insulate, and act as chemical messengers – the hormones that modulate bee behaviour. The sterols are components of the membranes of all plant and animals' cells (in your case its chole*sterol*), and a small amount of sterols are important in bees for ovary and egg development and for producing the moulting hormone, makisterone.

AN INHERITED HICCUP

An accident of evolution that happened long before bees were bees makes sterols particularly important. 600 million years ago, the ancient ancestors of all insects, (the Ecdysoza; as ecdysis means to moult a cuticle or 'outer skin'), gave up the ability to make the sterols they need.[7] The Ecdysoza and all their descendants rely on phytosterols made by plants. This has made it both important and more difficult to understand steroid metabolism in bees and, in social bees, how they are conserved and transferred among the nestmates.[8] Unfortunately sterol analysis techniques for insects are not particularly well developed.[9]

BIOTECHNOLOGY STEPS IN

This April a group of biotech entrepreneurs, largely from a Belgian company called Apix Biosciences, published some work on a 'nutritionally complete' pollen replacement diet. Developed with collaboration from scientists at the universities of Washington, Newcastle, Pretoria, and the Hebrew University of Jerusalem, Apix Biosciences is hoping for commercial release of the product in the US sometime in 2026, with an eye on a claimed five billion kilogramme market demand. I ought to note at this point that the company is currently raising venture capital to fund the product.

According to the paper[10] the key to its success was the discovery – by selectively removing nutrients from diets fed in cage trials – that one particular sterol, isofucosterol, is much more important than had been previously realised, *essential* actually. Without it, brood production declined and the bees suffered with neuromuscular impairment. In field trials with the University of Washington 64 colonies used in blueberry and sunflower pollination (known for its nutritional stress) the new 'complete' diet successfully mitigated the season's ill-effects compared to available alternatives. It might indeed be a promising solution.

This study challenged the 'essential' status of the main sterol found in honey bees, 24MC, inferred in previous work since the 1980s.[11] Time, and more research, will tell whether the new study

There's a range of pollen substitutes on the market for beekeepers to provide their honey bees, but delivery of a complete diet has thus far eluded beekeepers and scientists alike.

is right, but it underscores the importance of a more complex and nuanced understanding of dietary sterols for honey bee's nutrition, and of the importance of organising a resilient variety of forage opportunities for them.

You can't buy honey bee health. Not for the moment, at least.

Dave Black is a commercial-beekeeper-turned-hobbyist, now retired. 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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Season's Greetings

So, our school holidays went down like a lead balloon. As the term ended, the playground plague was activated with warlike precision. Reminds me of the previous holidays actually – a time to puke, a time to cry, I wish that cough had passed us by. Four spluttering, snotty weeks later, the 100-day cough has ripped through all but the youngest of my four kids.

Lemon and honey drinks have been the standard, and it means a lot to know the origin of the honey. Heck, my kids have been devouring it straight out of the frames, cull combs from the cleaning crew. Tastebuds differ. My six-year-old is keen to eat black wax, weirdly, along with the honey, pollen, and bee bread alike. The youngest is my honey muncher, all honeys, all the time, more than what would make anyone else sweet-sick, yet she has avoided the dreaded lurgy.

As have I, but not just from scoffing honey. My dad firmly feels that everything bee related primes our immune system. At almost half his age, he thinks I have so much 'get up n' go' that no flu can catch me, and anything else is left for dust. I believe him. Beekeeping keeps you on form, mentally and physically invigorated, and too pig-headed to let anything stop you from bee-ing where you need to bee.

Our rounds this month have seen a growth, the upside of the annual curve. In comparison to last year, many more hives went completely broodless for the winter period. Now that the shortest day has been and gone, early pollen and nectar sources are sparking up the bees, and frames of brood are multiplying. The flipside to condensing hives over winter, conserving resources, is that we are now adding back frames of honey and pollen to keep up with growth and boost expansion.

Acacia and five-finger blossoms are emerging, while gorse and Spanish heath have been at it for a while. Himalayan honeysuckle has disappeared with the frosts, and prolific flowering tree lucerne is drawing crowds of plump kereru. Still, some sites suffer a pollen dearth.

After our run-in with varroa earlier in the year, we quickly got levels under control using oxalic acid sublimation. Now, with a manageable mite load, all our hives have been stripped with oxalic acid staples. Sticky board results show we are on the right track, and we will never again be without 'OA' in our arsenal.

Next up, my dad is chomping at the bit to administer formic acid, to cleanse and refresh the colonies, and unapologetically murder any mites left on bees or under cappings. We will be able to apply this acid treatment when daytime ambient temperatures have risen, to allow sufficient vaporization of formic throughout the hives.

There has been beautiful weather for popping lids, and we even got to work with the boss this time around. I haven't been intensively through hives with the old man since pollination last year, and I'm quick to pick his brain on any and all apiary matters. Sometimes tempers flare and did I mention anything about pig-headedness? I know better than to argue with the boss though, and as an inborn mediator, I hold space to becalm the storm.

I also know to stop while I'm ahead, so I'll leave you with the miracle of the spring build up, and I'll see you next month, hopefully up to my elbows in bees.

Season's greetings,

Aimz

Aimz is a second-generation commercial beekeeper in the Bay of Plenty who took up the hive tool full time at the end of the 2024 honey season. Formerly a stay-at-home mum to four kids, she has now found her footing in the family business.

Surveying for new apiary sites, at the top of the world.

Gaza

What has led to the war in Gaza and what are the potential solutions? In 1000 words or less please... Ian Fletcher turns his keyboard to an impossible task, yet sheds an immense amount of light on a war seemingly without end.

BY IAN FLETCHER

The images are heartbreaking. We see Gaza's civilian Palestinian population cowering under the weight of a starvation-inducing blockade, warfare, and a breakdown of civil order. What next?

Last time I wrote on this I ended with the sober note that the situation in Gaza defied both black-versus-white judgement, and 'simple' solutions. That's still true. But things have moved on.

First, some basics: Gaza is small (its longest axis fits from Masterton and Featherston; it's no more than 10 km wide – or roughly like Wellington and the Hutt Valley). It has (or had) about 2.2 million people. It has no meaningful resources, surface water, functioning airport or seaport. Until 1967 it was part of Egypt (although Palestinian people don't see themselves as Egyptian, and Egypt refuses to get involved).

Israel conquered Gaza in 1967, and kept it when the Sinai was handed back to Egypt in 1979. In 2005, Israel withdrew its soldiers and settlers; in 2006 Hamas (which is a crusading Sunni Moslem religious party and armed force) won elections, and then expelled its rivals. Hamas governed Gaza until 2023 as a police state, committed to Israel's destruction as a religious as well as nationalist duty. There have been several 'minor' wars with Israel ('minor' is a relative term).

Then, 7 October 2023. Hamas penetrated the border fences into southern Israel in force, killing and kidnapping thousands. The level of violence against civilians was shocking. It struck at the heart of Israel's identity as 'the' safe home for Jewish people.

So, war to this day. Israel has also destroyed Hizbollah (a Shi-ite militia in Lebanon, allied to Iran). It has (with US help) bombed Iran to prevent Iran further developing nuclear weapons (in the belief that Iran would use them on Israel – perhaps true). It's not clear how much of a setback the Iranian nuclear programme has suffered. Israel and the US have also attacked Houthi groups in the Yemen who have been attacking shipping heading to and from the Suez Canal. The Houthis are still active.

But the key battle is Gaza, against Hamas. Israel is not winning as they want: Hamas is degraded but not destroyed, and able to

Gaza – the images are heartbreaking.

recruit from the 700,000 or so military age Palestinians in Gaza who have no other options, and every reason to hate Israel. Hamas is still holding hostages, which Israel (despite stunning intelligence successes) has not been able to locate or liberate. Israel's blockade tactics are terrible, but they reflect Israel's quiet desperation. Israel is also funding a (mainly criminal) opposition, and has developed complete data supremacy – every smartphone monitored. But not quite enough, it seems.

In the global war for public opinion, Hamas is winning. Hamas has managed to portray itself as plucky fighters against Israeli genocide, despite having started this war, having almost no Arab friends, and having a background as violent Islamists (to the extent that they are banned in Egypt). Israel has belatedly realised this, and eased its blockade.

What next? No end in sight. Israel has enough US support and enough domestic support to keep fighting. Hamas has shown it can and will keep fighting, albeit less effectively. The rest of the world can't do more than wring its hands.

There are several other forces at work too: in Israel, the government can't stop the war without losing power. Religious parties in the government insist on a sort of total victory that would depopulate Gaza. The fragile Israeli government needs their support. Demographically, Israel is in better shape than other developed countries, but that reflects high birth rates among Israeli Arabs and orthodox Jewish communities, as well as migration. Israel needs peace to deal with some big issues around both communities. But not yet.

Hamas is revelling in the symbolism of Gaza as an idea to crystallise Islamic rage. European countries are waking up to the fact that their Moselm communities are firmly on Hamas' side. European countries' Moslem communities are growing as a proportion of their (falling) populations. In future they won't be ignored. Hamas' victory in the war for public opinion in Europe is assured by demographic forces. But it will make Europe less influential, with less leverage in Israel.

The US is another matter, although Israel would be wise to consider social changes there too. And the Arab world will find it hard to support any peace based on another 'catastrophe', as Arabs see the 1948 War which established Israel. Memories are too long and emotions too raw.

All this is up close: Genocide in distant places is one thing (think Rwanda); genocide broadcast live on smartphones is quite another, and even the most authoritarian Arab governments will be sensitive to the images we all see.

For years, many have clung to the two-state idea – that Israel could live alongside a Palestinian state centred on the West Bank, including Gaza. This idea died long ago: Israeli settlements have corroded the territorial identity of the West Bank, and the Palestinian Authority (the proto-government set up in 1993) has degenerated into a corrupt and authoritarian gerontocracy. Forget it.

So, what will happen?

Israel's thinking has turned to what seems the unthinkable – the organised, forcible depopulation of Gaza. That seems – to them – to be the only way to root out Hamas from the community (and network of tunnels) that it is bound up in. Hamas has nowhere to go, and no-one wants 2million Palestinians.

But Israel has two advantages: the Trump Administration will support this idea, and some Arab countries might help pay for it if it could be made acceptable. But the psychological, political and financial obstacles are formidable. Yet, as Sherlock Holmes once observed, "Once you have eliminated the impossible, whatever remains, however improbable, must be the truth".

The choice might come down to forced depopulation, or a really long war with many, many more civilian deaths. If staying and dying in Gaza is just a matter of principle, then, Jordan, here they come. It's the only home available.

An end to the death and destruction in Gaza seems a long way off, with the Sunni Moslem religious party and armed force that is Hamas – now degraded but not destroyed – revelling in the symbolism of Gaza as an idea to crystallise Islamic rage, while Israel vows to destroy them.

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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