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APIARIST'S ADVOCATE

News, Views & Promotions – for Beekeepers – by Beekeepers

Gazing to the Honey Industry's Future

ApiNZ and UMFHA unveil a plan to join forces, while a mānuka honey pioneer advocates for advancement of the UMF brand.

ApiNZ and UMF Honey Association Positioning to Merge

A new dawn in New Zealand beekeeper and honey exporter collaboration looks likely in 2025, with industry groups Apiculture New Zealand (ApiNZ) and the Unique Mānuka Factor Honey Association (UMFHA) officially proposing to join forces in what they are calling "a stronger collective voice". Members of both groups have been told a successful merger would be just step one in a longer-term plan to introduce a mandatory funding model for the honey industry.

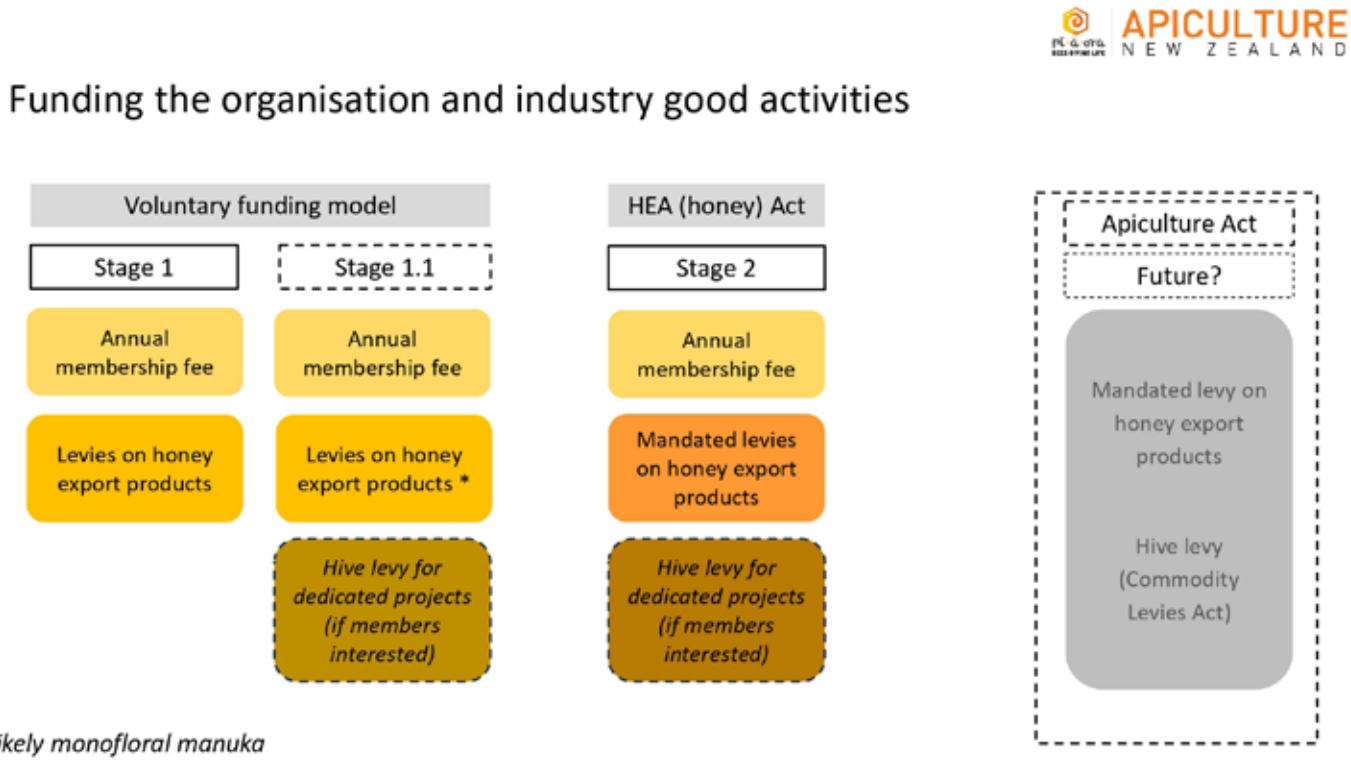
The proposed new industry body comes with a working title of *New Zealand Honey Association Incorporated*, and its concept was presented to UMFHA and ApiNZ members via separate online meetings on November 27. Members were then sent a draft constitution for the proposed industry body, and asked for their feedback prior to December 16.

All going to plan, ApiNZ and UMFHA hope to form the new association in April 2025. It will provide continuance of ApiNZ's industry advocacy and UMFHA's stewardship of their UMF™ brand, all with the benefit of UMFHA's much healthier financial position, compared to ApiNZ.

Prior to April, ApiNZ would need to be formally dissolved, while UMFHA's proposal is to adopt a new constitution with broader purpose.

"It's been a tough time for beekeepers in the last couple of years and, as a voluntary industry organisation, we have felt that. Things have had to change. Our membership has reduced significantly," ApiNZ independent chair Nathan Guy says, while chief executive Karin Kos calls the move a "no-brainer".

The new association would be voluntary in the sense that neither beekeepers or honey exporters would be mandated to join, much in the same way there is no mandate to be a member of ApiNZ or UMFHA for owners of beehives or exporters of honey. However,



a "flat" membership fee (as opposed to ApiNZ's current model which is based on level of hive ownership) would be required from those who elect to join. Furthermore, monofloral mānuka honey exporters would pay additional levies – initially UMF licensees would continue under their current fee structure and other (non-UMF) monofloral mānuka honey exporters would be subject to a similar levy on their exports.

The funding structure and collective action is anticipated to provide a stronger base from which to push for funding through a mandatory industry-wide honey levy in the coming years.

The draft constitution outlines a model where five directors, two with commercial beekeeping experience and two with exporting experience, are elected by a vote of all members at the AGM. This cohort of four member-elected directors would then co-op one independent director and a separate independent chair to form a board of six directors. Directors would each have one vote where required, except the independent chair who would not have a vote.

A full membership, and thus voting rights, would be available to 'any person or entity involved in beekeeping, extraction, packing, retailing and/or exporting of honey from New Zealand for commercial purposes'. An 'associate' level of membership would be available to anybody else who has an interest in supporting the organisation and its goals, but associate members would not have voting rights.

pī·ā·ora
BEES GIVING LIFE

APICULTURE
NEW ZEALAND

Apiculture New Zealand has been operating since April 2016, formed following a restructure of the longstanding National Beekeepers Association. In 2025, it plans to dissolve to form a more effective industry body, alongside the UMF Honey Association.

The 'commercial' focus is for good reason, with ApiNZ stressing the need to prove to government that the industry has a group in position to administer a mandated honey levy if required.

"Stage 2" would therefore see the new association work towards gaining honey, likely mānuka honey specifically, a place in the Horticulture Export Authority (HEA) family, currently limited to fruit and vegetables. That would provide for a licencing scheme

and thus collection of levies at the border, plus a set of 'export marketing specifications' which would give the honey industry greater control over what is exported.

Getting to that point is likely to take 12 to 18 months though according to ApiNZ. They are not making clear whether they anticipate an industry wide vote as being required to convince the government of industry support for HEA inclusion and thus amendment of the relative Act of Parliament. While this would usually be the case, with exporters likely to foot the bill, the question of whether beekeepers' support would be required remains unanswered.

"In an industry good organisation, if there are any major decisions that need to be made, we would want to get a broad base support of our members, whether they are commercial beekeepers or not," Kos says.

How broad the new industry body's representation of all of apiculture might be remains to be seen though, with ApiNZ's own falling membership amidst declining numbers of registered beekeepers – particularly commercial beekeepers – in recent years prompting the proposed merger. A "flat" membership fee has the potential to reduce the financial barrier to entry though.

Further into the future, ApiNZ and UMFHA hope the merged industry body would facilitate an "Apiculture Act" to bring into one piece of legislation a range of industry specific issues, including a more comprehensive honey levy than the HEA offers.

With UMFHA members to bring the lion's share of funding to the new association, as proposed, the question of how they feel about taking on that mantle is now with them. Chief executive Tony Wright believes the move to merge is compelling though.

"UMFHA, as it currently stands, has a very narrow mandate around the promotion of trademarks and standard for UMF™, but there is really very little in our purpose which we can apply to the broader industry good. So, when ApiNZ dissolves, which they will because they are running out of funding, who is going to take on all the work? It is a professional job which needs to be done by a professional team. Without that support, what UMF members currently enjoy in terms of a partnership infrastructure, which sits alongside the standard we have got, just won't be there," Wright says.

Guy, a former Minister for Primary Industries during his political career, is not shy about their desire to pursue an apiculture Act under the Commodities Levy Act. He calls their desire to follow the wine and organics industries on that path as "shooting for the stars".

"I think we are big enough to get our own Act, and then we could fold a lot of quality standards and biosecurity and all sorts of things into it," Guy says, adding, "but, we need to prove we can hold hands, speak with one voice and play nicely, to make it a hell of a lot easier to then convince ministers and government that we are on track and worthy of our own Act."

Mānuka Honey: What Went Wrong? And a Road to Recovery

Mānuka honey pioneer Phil Caskey is largely removed from the industry these days. While still holding a non-controlling ownership share of New Zealand Mānuka Group he is no longer involved in day-to-day operations. Caskey has previously built mānuka honey businesses from the ground up though, and is disappointed to see an industry built around a unique and once-prized honey, now in crisis. He's confident there's a way out though, and New Zealand land owners, beekeepers, and honey packers have the vehicle to realise mānuka honey's full value in their grasp – the Unique Mānuka Factor. He shares his vision for a better UMF™ brand and a better mānuka honey industry.

BY PHIL CASKEY

Having been involved with New Zealand's mānuka honey industry since it first gained traction in the mid-1990s, while not surprised, I am deeply saddened by what has become of it. The mānuka honey industry had so much potential for New Zealand based on the plant with a Māori name which then Associate Professor at the University of Waikato Dr Peter Molan made famous through his passion and determination. After identifying its 'Unique Mānuka Factor' in the 1980s, there arose a unique product and brand opportunity with huge potential for New Zealand, its apiarists and marginal land farmers.

THE EARLY YEARS

I first met Dr Molan in the early 1990s, when we began trying to take mānuka honey to the market. My wife Sharan and I, and other early industry participants including Bill Floyd, Bill and Margret Bennet, Bruce and Barb Stevenson, John Rawcliffe, Richard and Moira Haddrell, Malcolm Haines, John and Cushla Gavin, et al. found his passion for his findings about mānuka contagious. We collectively set about carving out a credible reputation in the global market place for what was a very credible product.

Phil Caskey, part-owner of New Zealand Mānuka Group, has been a part of the mānuka honey industry since it first gained traction in the 1990s and believes that only by backing the UMF™ brand to its full potential can New Zealand maximise value in its most prized honey.

Sharan and Dr Young Mee Yoon, who was then food science manager of Bee & Herbal Limited, were responsible for taking mānuka honey from food grade, to the first New Zealand honey to achieve medical device status. They worked tirelessly to develop the Good Management Practices (GMP) quality control system and become the first honey plant to gain GMP status as a medical device manufacturing facility. We went on to form a 50/50 joint venture medical honey company together with the University of Waikato called Apimed Medical Honey. This company later partnered with Brightwake in the UK and worked to establish patented mānuka honey wound dressings into medical markets around the world.

10+ OR BUST

From the get go, Peter Molan was very specific that only honey with a UMF factor of 10 and above could truly be considered to have credible health benefits. He documented this in his early publications and reviews.

This focus and intent served the industry well and in the early 2000s an outbreak of the infection MRSA in the Waikato Hospital was the catalyst that put UMF mānuka honey on the map. Julie Betts, the then head nurse of the hospital's surgical ward, used high UMF™ honey supplied by us to help rid the ward of this superbug infection.

In 2003, at Bee & Herbal Limited we were exporting around 80% of New Zealand's mānuka honey and were struggling to fund the business growth. Then Comvita helped drive the mānuka industry and the mānuka and UMF™ brands when they purchased our mānuka honey business. In 2004 they publicly listed the merged businesses under Comvita Ltd., which would go on to become the world's leading advocate for UMF™ mānuka honey.

PRICES SOAR AND CONFUSION REIGNS

With mānuka honey prices rising from $2/kg to the beekeeper, to $15/kg in five just years, the booming industry soon attracted those that would take advantage of the credible status the UMF™ brand had achieved.

In order to capitalise on the opportunity Dr Molan and others had created, the first problem to overcome was how to create enough supply volume to meet perceived market growth potential. With tight controls around how the UMF™ brand could be used and a strong scientifically supported emphasis on only the higher UMF honeys, an obvious direction was to confuse an uneducated consumer market with branding and numbers – enter NPA, PA, MGS, K Factor and MGO.

With no brand use controls over these acronyms, it was open slather on what could be presented to the consumers as genuine mānuka honey, and full advantage was taken by some marketers and traders. Consumers became confused and soon the term "mānuka fraud" was being bandied about in the market place.

CRACKING THE CHINA MARKET AND FILLING THE LINES

There was a worrying perception that the market opportunities for mānuka honey were a bottomless pit and this was supported by

the seemingly endless demand coming out of China. In truth, the so-called China market was a complex and deceiving product-demand conundrum. While China is indeed a huge market, the reality is that honey is a low-cost staple item in China and in the early 2010s, when the China market started to take off, the Chinese consumer was paying the equivalent of around $1NZD for a jar of Chinese honey. Gift giving is an important part of the culture though and mānuka grew its popularity in China from not just its credible health properties, but also in the holiday gift-market, which boosted sales.

Line filling – filling the supply chain infrastructure for products from supplier to consumer – became the biggest driver for sales into China through this period and, while huge in China's case, this was always going to be a comparatively short window for growth.

To put this in perspective, in New Zealand there are about 73 Health 2000 stores and around 330 Unichem and Life Pharmacies, while in China several of the large pharmacy and health chains exceed 3000 stores each with state owned Sinopharm having a network of 10,000 drug stores. When you look at the volume of product and sheer scale of logistics and timeframes required to physically produce, ship, transport and supply products to every store, then fill the storeroom and all the companies' warehouses and provincial distribution centres, plus containers in transit and in port, you get an idea of the volume and timelines it takes just to get product on the shelf of every store throughout China. That is before any product can actually be sold to the consumers. To help highlight this, the first major order we had to a significant new customer in China in 2011 was 200 tonne, and that only put a few jars into each of their key stores in a 3000 store chain.

Once all of these supply lines were filled, which took several years to achieve, further sales into that market were totally dependent on consumer uptake. In China's case this mostly relied on gift season sales. However, when this was not enough to continue to support the volumes of production that had been created to fill the supply chain, a squeeze on these markets was created.

Another phenomenon created by the China market was the supposed coincidental boom in both the New Zealand and Australia markets, which ironically were both largely driven by Chinese nationals buying mānuka honey in New Zealand and Australia and sending it, via mail, to China. Efforts by China to slow this trade have been effective, thus reducing domestic honey sales.

CONFUSION REIGNS

When the New Zealand Government first introduced its new standards for mānuka honey in 2016 the original draft criteria that was set genuinely identified mānuka honey as a monofloral variety of some significance in the market place and only mānuka honey with higher UMF ratings would qualify. Markets we were communicating with at the time were very supportive of this, as it showed government supported integrity for the product.

An example of a mānuka honey label which would give greater prominence to the UMF™ brand in Phil Caskey's eyes. By using a UMF "watermark" or similar design, consumers would be more aware of product that meets the UMF standard he believes.

Unfortunately, this did not fit the mānuka honey profile that a number of marketers had established in the markets where multifloral honey was being branded as mānuka and lower grades of NPA (non-peroxide activity) or MGO (methylglyoxal) were being promoted to consumers as the real deal mānuka. Lobbying and legal pressure convinced the government to change the new standards to include a multifloral grade for mānuka.

Marketers were quick to take advantage of this with advertising and labels where the prominent descriptive brand on labels is MĀNUKA and the classification brand "multifloral" is much less defined. The average consumer, who is unaware of the discernible difference between mono and multifloral, and was already confused with the multiple acronyms being used to describe the strength of mānuka honey, is understandably misdirected when confronted with an MGO 40+ MĀNUKA multifloral versus a UMF™ 10+ MĀNUKA mono floral. The perception is that they are buying a genuine higher grade of Mānuka when they buy the 40+ option.

The net result of this has been a flood of the more affordable so called MĀNUKA Multifloral honey into the market and the blending of multifloral honeys has become a major part of the value-add process. This means margins are much higher for the traders, and volumes of mānuka honey available to the market are significantly higher than the current market can absorb. Therefore, the market for the higher grades of mānuka honey will continue to struggle, unless either we move back to a mono-floral only grading for mānuka honey or, as a minimum, we regulate the labelling to highlight the difference between the genuine monofloral mānuka and the less credible multifloral mānuka.

TAKING BACK CONTROL

Therefore, I think we should change the focus slightly from chasing the elusive and costly rainbow that is in trying to protect the brand name 'mānuka honey', which seems to be struggling to get traction in many markets. We have already largely destroyed the credibility of that as a quality brand with consumers, with what is essentially the pretend or 'wannabee' mānuka, aka multifloral mānuka honey.

The industry already owns a credible and long-established brand that signifies quality in genuine mānuka honey – UMF™. We should be using this as a phoenix that rises above the ashes of what was once a very real opportunity for a unique New Zealand product that one man, Dr Peter Molan, had an intense vision for. He spent much of his life dedicated to promoting the genuine active quality that lay within that truly unique New Zealand product. Now, for all intents and purposes, that has been forgotten because marketers realised it was not in their best interests to promote a scientist or his science when it did not support the multifloral mānuka angle that they were using to create super profits from cheaper honeys.

A FULL REBRAND

It's not just a simple matter of rebranding that's required, we actually need to completely redefine the genuine UMF™ product itself and distance it from some of the negative stigma attached to cheap multifloral mānuka honey. A full rebrand, calling it UMF Mānuka Honey, as was originally intended by Dr Peter Molan.

It will take a quantum shift of industry supported focus to reposition UMF from its current status as a simple quality mark, into a strong product brand recognised globally as a symbol for its guaranteed product authenticity and genuine quality. It is already New Zealand and industry owned and is a well-established, registered brand in all of our major markets.

There needs to be a focused and determined long-term strategy by those in industry who own the forests and work with

commercial apiarists who can constantly supply the higher ranges (UMF 10 and above) to reposition the credible aspects of UMF Mānuka Honey back into the market place.

It will need to be a well-funded programme focusing on re-educating consumers and markets to what actually UMF Mānuka Honey represents. Labels should incorporate the three letters 'UMF' as the dominant part of labels and branding. Under that, 'Monofloral Mānuka' could serve as a product identifier, with the marketer's brand at the top. This would allow the UMF to take prominence, rather than as a small and simple so-called quality mark that currently distinguishes the UMF brand. There are many creative ways of achieving this through the modern design process, including a "watermark" style use of UMF, such as in the mock-up design which accompanies this article.

MAKING IT HAPPEN

The extended reach we now have with global digital marketing platforms and social media through influencers can mean instant success for standout products. Monofloral, high UMF Mānuka Honey certainly has the attention-grabbing credibility, combined with a strong and largely untold backstory, to justify some significant attention in the market place – if presented and marketed correctly with full industry support.

As has previously happened, the whole New Zealand honey industry would inevitably benefit from this new profile and ride on its coattails. Our near neighbours would need to start from scratch and invent their own claim-to-fame story, as this is exclusively our own story/brand and has been a good 35 years in the making.

This could initially be funded by introduced capital from licence holders and then from sales levies. If a Co-op structure (which has some strong merit) were to be adopted, then work could also be funded by capital injection from suppliers and landowners as stakeholders.

As has already been established globally, there is a direct correlation between the success of one high profile honey in world markets (mānuka) and the reflected value add rub off impact on all New Zealand honeys. However, this has been diminished by the depreciation of the value of mānuka honey in the eyes of the consumer by the introduction of the low-cost alternative 'multifloral'. Adding to this is the deliberate blurring of the lines between the tangible health benefits of using genuine high UMF mānuka honey, and the low-MGO multifloral mānuka honeys being marketed by some as the real deal.

There is still room for all honeys and everyone in the industry and, while multifloral mānuka has earned a place at the breakfast table, we should not allow the marketing of this to signify that it is comparable to UMF 10 or higher mānuka honeys, which would carry the UMF™ Mānuka Honey brand. I remind you that, in the early works conducted by Dr Molan he was a strong advocate for only honey with a UMF 10 or greater to be used with the UMF™

logo, because all of the genuine science around bacteria control for internal and external use was based on these higher levels of UMF.

EXAMPLES TO FOLLOW

In this fast-paced world of changing product options there are many examples of well-established food brands that have successfully rebranded themselves to stay relevant in the modern world. These include Pepsi, McDonalds, Starbucks and Burger King, and none of these have the credible back and front health product stories we have with UMF Mānuka Honey.

The fast-paced global market is largely being driven by the growth in e-commerce trade, which was just 1.3trillion USD in 2014 and grew to 5.7trillion USD in 2023. The upside of a small world, media-based, marketing platform is the speed and global market reach that a genuine product with a great story can travel when it captures the attention of the market.

While it won't necessarily be a five-minute quick fix, the higher grades of UMF™ mānuka honey are still a very genuine product with significant health benefits and very strong, largely untold, back story. Given time, positive repositioning, a dedicated and well supported industry commitment, it could again make genuine UMF™ mānuka honey the industry and New Zealand flagship success story it once was.

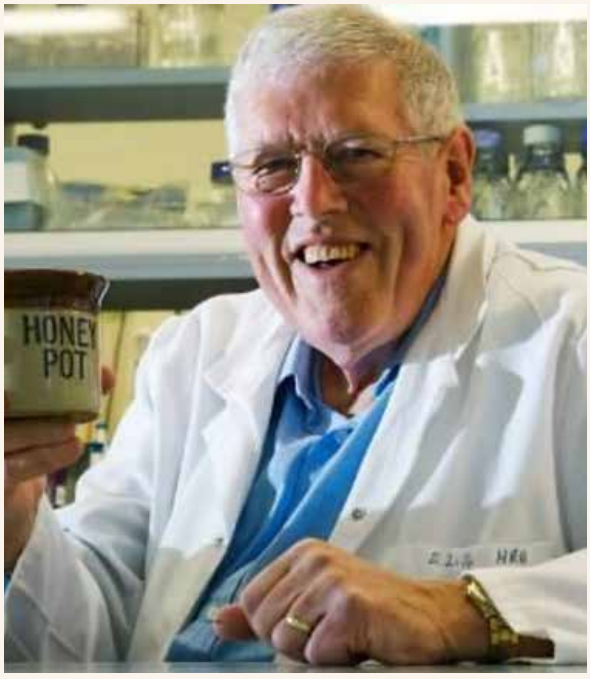
Isn't that what we should be aiming for?

Share your thoughts on the future of mānuka honey – email editor@apiadvocate.co.nz.

Dr Peter Molan's Thoughts

As part of a promotion for UMF™ in the early 2000s, Dr Peter Molan put his name to a 1000-word article to describe the antibacterial properties of mānuka honey. It included 15 bullet points to emphasise where mānuka honey comes from, why it is unique and how the UMF rating system came about. We re-publish his closing two points here, to emphasise his belief that UMF10 or greater honey only should be used if antibacterial claims are to be made:

- *The New Zealand honey industry has registered UMF as a trademark to prevent its misuse so that the antibacterial activity of manuka honey cannot be misrepresented.*
- *I recommend that honey with a rating of UMF 10 or higher be used which is the level of activity for honey used by medical professionals in New Zealand. Although good results may be obtained with lower levels of activity, there is a chance that the activity may not be high enough to fully clear an infection. Honey with a lower level of activity will not allow as much of the antibacterial elements to diffuse into infected tissues, and this could mean that effective control of infection may not be achieved in deeper tissues.*



Dr Peter Molan discovered and quantified mānuka honey's antibacterial properties with the UMF™ rating system in the 1990s. He stressed that only UMF10+ honeys were suited to combating infection, something the honey industry seems to have forgotten.

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A Hot Topic – UMF Honey Standards

A recent survey of UMF™ branded mānuka honey in China and Singapore by the Unique Mānuka Factor Honey Association (UMFHA) returned what leading mānuka honey exporter Comvita's acting-CEO Brett Hewlett described as "an alarming number of non-compliance to agreed honey standards". What has been UMFHA's reaction, and can they control continued breaches of their standards?

In-market audits of honey carrying the UMF™ brand are frequently carried out by the Association which owns, and thus is tasked with protecting, the quality-mark for the benefit of their 184 certified honey brands. With UMFHA stating their members provide almost 70% of packed mānuka honey exported from New Zealand, it's an important role.

The results from an audit earlier in 2024 prove the importance of the continued surveillance, with almost one-in-five UMF™ products collected in market and returned to New Zealand (under an approved regime allowing the movement of the honey samples to this country for testing) failing their quality standards.

In China 38 products from 10 brands were purchased and six did not meet label claims. In Singapore 30 products from 20 brands were chosen, with seven not meeting the label claim. This resulted in two UMF™ licences being terminated and non-compliant honey ordered to be withdrawn from sale.

There are four "quality factors" that make up the UMF™ rating system and thus seek to provide assurance to consumers. "Potency" is measured through methylglyoxal content and converted to the UMF rating system, and thus products must have, at minimum, the level of Unique Mānuka Factor claimed. The "shelf-life" of UMF honey is ensured by a dihydroxyacetone (DHA) of at least 70mg/kg, while "authenticity" is proven by adequate levels of leptosperin in the honey, and "freshness" is measured by hydroxymethylfurfural (HMF) levels.

While UMFHA has not detailed the specifics of what caused each of the failures of their standards in the September survey, they are focusing on heat exposure as the contributing factor.

"Because the UMF Licence requires each batch to have a Release Certificate confirming product compliance, we were able to verify that in all cases the product was processed and released to market meeting label claims," UMFHA chief executive Tony Wright says.

Mānuka honey is distributed from New Zealand to the world aboard container ships such as this. Managing heat exposure onboard and, perhaps more importantly, when in storage in markets, is a challenge the UMF Honey Association and its members are grappling with.

UMF Honey Association chief executive Tony Wright has overseen the cancelling of two UMF licenses due to non-compliance of their standards and ordered product withdrawn from markets.

"We were therefore able to identify heat exposure during shipping or storage, most likely the latter, as the root cause of the problem. This was evidenced by the HMF levels and our ability to model predicted shelf life under different conditions."

With mānuka honey sales having slowed globally, perhaps it is unsurprising honey has been put at greater risk of heat exposure as storage times extend. Whatever the cause of the problem, Wright believes with greater education their members can overcome the challenge of avoiding heat-damage to their honey.

"We provided this feedback to our members, advising them to talk to their supply chain partners about corrective and preventive measures that will ensure product quality is maintained. Many of our members have this well controlled already, and we see the evidence of this in the audit test data that comes through," Wright says.

(Editor's note: Japan-based honey importation consultant and regular *Apiarist's Advocate* contributor Bruce Roscoe further details management of heat exposure in ***Learn from Chocolate, So Honey Doesn't Have to Take the Heat***, page 14).

Non-conforming UMF™ product was withdrawn from sale once offenders were notified of the breach of standards, according to Wright.

"In two cases we were not satisfied with the response or the capability of the licence holder to uphold our standards and maintain an effective quality management system, and those licences were terminated.

"Pleasingly, where product withdrawal was required the affected licence holders were able to confirm small inventory holdings which made the task simple and efficient. Other than the two exceptions noted, we saw an efficient and professional response," the chief executive says.

However, he was not able to confirm "withdrawn" product had been destroyed. If it has not been, and with it unable to be legally returned to New Zealand, there is a risk the honey could still make it to consumers through another channel.

Furthermore, as a large stockpile of mānuka honey sits in storage around New Zealand, meeting UMF™ quality standards will likely be an increasing challenge for the aged honey.

Off the back of those realities, and the latest nearly-one-in-five breaches of UMF standards in China and Singapore, it is not surprising that UMF has "significantly" raised their budget for surveillance activities.

"They are a valuable means of ensuring the process works, maintaining a credible standard whilst always looking for the continuous improvement opportunities, such as better tools and guidance for the industry," Wright says.

Learn From Chocolate, So Honey Doesn't Have to Take the Heat

The finding of excessive HMF (hydroxymethylfurfural) content — an indicator of possible heat damage — in UMF-labeled mānuka honey products in China and Singapore will not surprise northern hemisphere honey traders. Based on the experience of long hot Tokyo days and nights, Bruce Roscoe outlines the measures traders and distributors can take to protect honey from heat damage.

BY BRUCE ROSCOE

A cargo of honey has arrived at the port of Tokyo. The pallets, wrapped or jacketed in a heat-shielding material, are transported to a temperature-controlled distribution center. A temperature recording device is retrieved from an upper layer of a pallet. Since leaving the premises of the New Zealand producer, data have been logged at 30-minute intervals. The data are uploaded to a computer, read, and posted in graphic form against a batch number to a website.

Unlike in the case of highly temperature-sensitive cargoes such as vaccines, the data are not read live and the container temperature cannot be adjusted during shipment. The goal is more to show that the temperature did not exceed 37 degrees Celsius during road, rail, and ocean transport, and in particular not over the equator at 0 degrees latitude. Research points to bees — masters of temperature control — cooling and heating their hives to temperatures within a range of 25-35°C. For ease of explanation,

Honey exporters often use a data logger to monitor cargo temperatures during land and sea transport.

"below 37°C" assists customers because they can associate it with body temperature.

Before the COVID-19 pandemic some traders used only air freight for their mānuka honey cargoes. As a marketing ploy, they said competitors' sea-freighted mānuka honey would be cooked over the equator. They seemed not to understand that high equatorial temperatures occurred more over land than sea and that heat damage is caused by temperature over time. Crossing only 1 degree of latitude or 60 nautical miles takes less than four hours for the type of container ship plying the direct NZ-Japan route. Temperature data logs showed "cooked over the equator" to be a fiction. When the pandemic halted air freight, all mānuka cargoes had to be sea freighted.

Customers came to expect temperature monitoring as a matter of course. Some exporters, as an alternative marketing ploy, began to make a greater use of refrigerated containers. These enlarge the carbon footprint, but now seem a fixed part of the mānuka trades for the added assurance of temperature control.

TIME BOMBS IN THE TEXT

Before we enter the world of storage, it is essential to check all wording on the cartons and jar labels used by a New Zealand supplier whose cargoes are imported for the first time. A time-bomb may be ticking in the text. At issue is the purist view of some honey producers about the optimal storage temperature for honey that has been finely crystallized or "creamed" during processing in order to make it easily spreadable. An importer known to this writer did suffer the detonation of such a bomb.

Advice to store at "under 16 degrees" was printed on both carton and product label of a South Island mānuka product. The importer faithfully, but foolishly, repeated that information on the Japanese product label. This mistake was not noticed by the buyer of a supermarket chain then of some 130 stores. But the successor to that buyer did notice. He said: "I've either got to put this product in the chilled goods section or order a recall, and I'm not going to put honey in chilled goods". The recall was ordered, the mistake unforgiven.

Advice that creamed honey should be stored at 16°C is relevant in New Zealand. In Japanese one has to write, "Store at ambient temperature" for grocery goods. In-store supermarket temperatures here are set at around 21°C. But grocery products usually are warehoused at room temperature. Last year in Tokyo temperatures during the hottest months of July, August, and September recorded highs of 33.9°C, 34.3°C, and 31.2°C, while humidity for those months averaged 72%, 78%, and 80%. Humidity levels are important, too, as high humidity can degrade product labels. What to do?

FIND THE CHOCOLATE

In the circle of this writer, honey is stored at 20°C at all hours. If the honey is to be stored in a third-party warehouse, it is essential that the warehouse is dedicated to grocery goods and advisable to inspect the facility in person. Chocolate will be among the

The direct Tauranga-Tokyo route is often used for the shipment of honey cargoes to Japan. (A refrigerated or reefer cargo service is available from Lyttleton.)

grocery goods. Arrange for honey cargoes to be stored in the same area used for chocolate, where there should be air flow and temperature control within a 15-20°C range. When choosing a trucking or courier company, find a chocolate specialist. Ideally, the importer or wholesaler will operate the warehouse, but such is usually the case only for supply to small retail chains or outlets that do not manage their own distribution centers.

If you have a choice of shipping directly to stores rather than the distribution center of the store chain, always ship directly. In the case of online store sales where you are shipping directly to individual customers, a good practice is to ship as late as possible so that the honey is not left in the uncontrolled environment of a courier company. Knowledge and control of each transportation segment are key.

A BEE BODY-PART SILENCE

Customers will ask questions about honey and heat. What to say? Many mānuka sellers — UMF and non-UMF alike — on the major online platforms tell stories. They routinely state in product descriptions, or even in product titles, that the honey is *hikanetsu* or "unheated". At honey promotions, the question whether the honey is hikanetsu is nearly always asked. One cannot shatter customers' illusions by explaining that all processed honey has been heated by packers to different temperatures during the stages of processing.

One cannot say, "Well, we had to filter out the bee body parts — legs, wings — and wax from the honey we had received from the beekeeper. But the honey had crystallized. We couldn't filter it without dissolving the crystals so we heated it to about 45-50°C". Or, in the case of liquid honey, "We flash-heated it to 75°C but only for a few minutes".

Still, as a trader and distributor, it is important to understand at what stages and why heat is applied to honey during production. In the case of high-priced mānuka, some customers have made a study of it and know more than you may think. They also know what your competitors have told them, and your competitors may know more than you.

The issue of excessive HMF content is more likely to relate to long periods of storage at warm temperatures than careful, knowledgeable processing. High sales turnover is key. If turnover at traditional retail outlets slows, or if through the loss of a customer a large volume of honey remains in storage, selling that inventory through e-commerce platforms becomes vital. Discount it through the ruse of label or other cosmetic damage, which eliminates complaint from upmarket retailers that would reject such product.

To individual customers whom you meet at promotions or whose questions you answer online — and the questions will come like a honey flow — talk about the practices of bees rather than honey packers. Talk about how they themselves will heat honey through muscle movement so that it is readily edible and how they will cool a hive through wing movement. And mindful that in nature they build nests in the shade, say under the leafy branches of a tree, mention that your honey is stored cool, just like chocolate.

Bruce Roscoe is a Japan-based New Zealander providing honey importation and distribution consultancy. He is a former director of research for Deutsche Bank Securities Japan, with extensive experience as an equity research analyst and as correspondent for both leading New Zealand and global media publications.

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Coriolis Report Review

"After the Gold Rush — the current situation in the New Zealand honey industry", November 2024, 92 pages. Coriolis (New Zealand) Ltd.

REVIEWED BY: BRUCE ROSCOE

Honey was one of New Zealand's "major success stories" and "can be again", Tim Morris of boutique market research firm Coriolis writes in introduction to the tome "After the Gold Rush — the current situation in the New Zealand honey industry". The question becomes, is the prospect of resurrection supported more by evidence or faith?

After the Gold Rush follows up the Coriolis 2012 report, *"Investment Opportunities in the New Zealand Honey Industry"*. At a time when local and offshore investors alike are seeking to view their engagement through a rearview mirror, the report is nothing if not courageous. It is also free. Though more a primer intended to advertise research capability than a finished item, the report is nonetheless a valuable reference. Industry participants will want to read the last section — "Where to from here?" — first.

Unfortunately, only three of the 92 pages look to the future. The outlook is dark. "Things are going to get worse before they get better due to excess inventory", the report concludes from interviews with three honey packers and an auditor. Hive numbers are earlier guessed to bottom at "something like 350,000". The final page recounts "a number of mistakes" the "stakeholders in the New Zealand honey industry" made in their "management of mānuka". In counting as "mistakes" the lack of a "single industry body" and "refusal" to implement a levy, Coriolis has cast its lot with the current duopoly of Apiculture New Zealand and the UMF Honey Association.

A RICH VEIN OF DATA

Between the covers of *After the Gold Rush* is a rich vein of data. Any research into the honey industry is handicapped by a paucity of primary data. Coriolis has amassed global and New Zealand data that is germane to honey trades in general and mānuka trades in particular. Although the base data are secondary, Coriolis has added value through modeling and field interviews with beekeepers and packers. Two of several beekeepers' soul-cut comments: "It is cheaper to walk away". "Value is not going back to the beekeeper. It's lucky our son has left. We can't support him..."

Preliminary estimates are produced where available data are "patchy". If readers "have better data, call us with it," Coriolis invites in a reflection of an industry that does not care to count. In sum the report contains 73 data figures. (It would be helpful if they were numbered and indexed.) Eight show global and the remainder New Zealand data, both macro and micro. It is worth viewing all data figures. Pause at each one, breathe in the numbers, and imagine or think. Questions leap out from the pages. The report's authors are happy to receive questions. They invite you to contact them "directly to discuss or debate anything" about the research (their names and email addresses are supplied).

On viewing the figure showing the 20-year trend in the average export price for New Zealand honey (all types) against the about 60-80% lower prices for a selection of other honey exporting countries, the question that lodged in the mind of this reviewer is, is honey

the actual subject of this report? How could so much mānuka honey have been sold in such a short time at such a high price? What underpinned the confidence that so much more should be produced? What has happened to deflate this trade and the hopes that it held and now nurses?

MĀNUKA MAY BE TURNING INTO A HONEY PRODUCT

Mānuka in five of the top 10 export markets (China, Hong Kong, Korea, Japan, Singapore) is viewed as an alternative medicine and resides in the world of Chinese traditional herbal medicines. Efficacy may not have been proven clinically by the standards of Western medicine, but in these countries the two categories of medicines coexist. (Japanese hospitals of size have departments of "Eastern medicine"). It seems likely that a large volume of mānuka in other countries is consumed by residents of Chinese or other Asian heritage.

Coriolis states that mānuka is "medically proven" in five categories. Where, then, are the mānuka medicines? Mānuka-impregnated wound dressings are approved in some countries in the medical device category, but mānuka-based medicines for internal use are not found. Laboratory experiments that prove efficacy against medical conditions sill cannot be repeated in in-body experiments. Wound dressings have not lived up to their promise, as Comvita Ltd's accounts since the June 2020 year show.

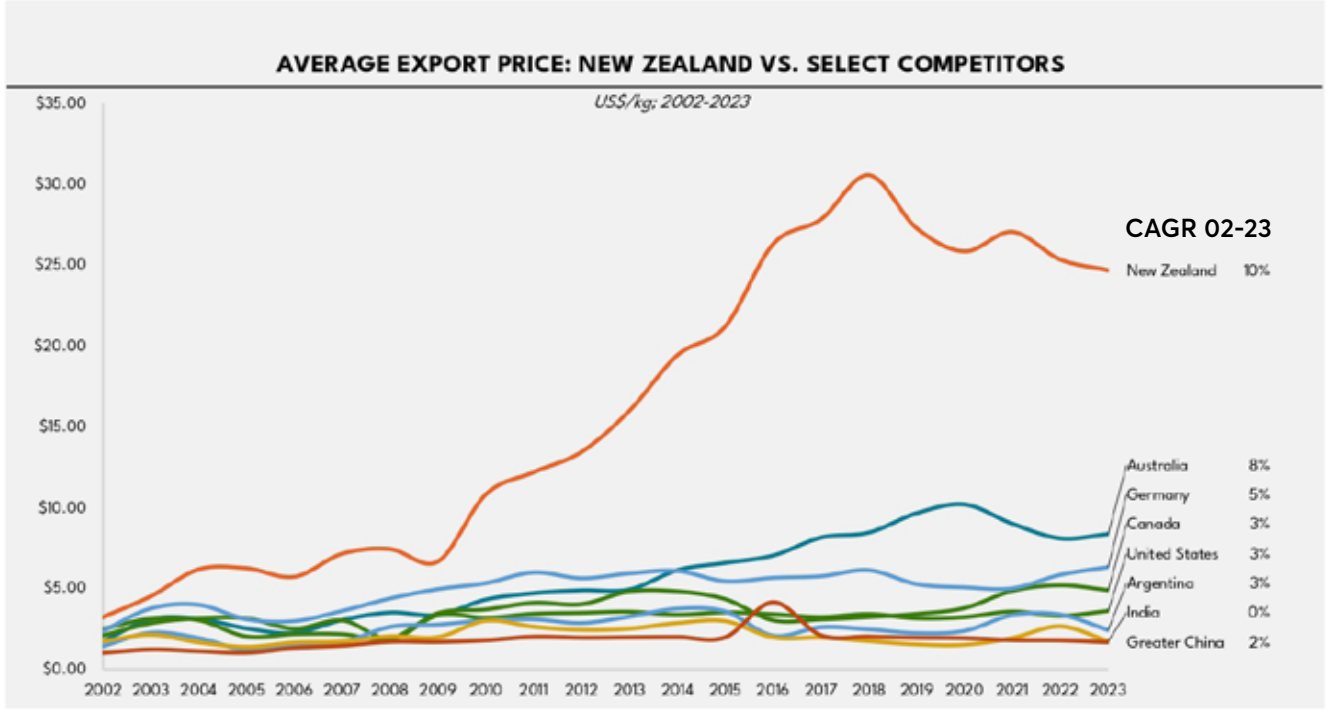
As an alternative medicine, too, it is possible that mānuka is failing to live up to the promises many consumers expected it would keep. It has been sold as a food but marketed as a medicine in language ("wellness" and other words of that ilk) that flirts with regulatory boundaries. Being delicious does not help. Medicines are not expected to be delicious. Current market malaise could be explained by the beginning of a long retreat to the status of a honey product.

With the exception of Finasucre, a Belgian sugar processor, and Swiss giant Nestlé, which is looking to exit, Coriolis shows the major direct investors in the New Zealand sector to be Chinese or of Chinese connection. This reviewer can find no example of investment made by an offshore honey company. A useful focus for future research, therefore, may be the changing position of mānuka in the market for traditional herbal medicines. Put another way, some research appears to look at a cat and ask why the dog is underperforming.

COWBOYS OFF (AND ON) THE RANGE

Coriolis is perhaps too quick to castigate mānuka "cowboys". Some observers may see big cowboys accuse small cowboys of being cowboys. Imposition of the mānuka scientific definitions by the Ministry for Primary Industries in 2018 sent small cowboys off the range. In hindsight, it has become clear that those exiles were an important source of demand. Their practices are now adopted by larger versions of themselves who, in Japan at least, routinely sell multifloral mānuka under a monofloral mānuka banner. (It is an easy fudge to pull off when writing product descriptions and price cards in Japanese, the more so when the point size of lettering used to print "multifloral" in English on the product label is one-half or even one-third the size of the lettering used for "mānuka".)

New Zealand (with mānuka) has been able to achieve high honey export prices where the rest of the world has not



Note: Data is all honey, including bulk; Source: UN Comtrade database; Coriolis analysis and classifications

EYEBROWS AND CHAMPAGNE

Inroads made by Australian "manuka" honey in offshore markets and the dangers posed by conflicting New Zealand regulations for chemical residue in honey are gaps in the report. Eyebrows will be raised — shaved off, maybe — with the Coriolis view that, "Effectively manuka honey has more in common with a premium wine...than everyday honey. A lot more could be done with this in mānuka honey marketing (e.g. vintage years, beekeepers reserve, older years at higher prices, etc)".

Coriolis posits that "any honey claiming to be 'active' is likely a fraud' — that will be news in Japan where Australia's Capilano "active manuka honey" is said to have become the largest selling mānuka brand — and uses "UMF" as a generic term whereas it is the trademarked brand of an industry body. None in this reviewer's circle would agree that "the people running this industry are still mostly beekeepers..."

An interval of 12 years between identifying "investment opportunities" and explaining, to quote Coriolis, "the evolving big picture crisis..." is too long. Excusing the lapses of a free primer, much expertise and insight ground the Coriolis research. More frequent, commercially produced and sold shorter reports, say at two-year intervals, that balance reaction with prescription would benefit the industry more than current extravagant spending on public relations-type "messaging".

A CRISIS CONCEIVED AT HOME

Comvita Ltd also recently has described the industry as in a state of "crisis", as has this reviewer. Our use of this word appears too liberal. Not everything has turned to hell in a handbasket in export markets. Monofloral mānuka volumes and values, for example, in the year ended June 2024 were pretty good. Volume of 5,704 tonnes and FOB value of NZD317.7m represented year-on-year increases of 13.2% and 23.2%. The per kilogram value of NZD55.70 was up 8.8% over the year-before value. True, FOB data represent only the transfer of products between countries at a declared value. Some packers may have merely shifted inventory from New Zealand to their overseas self-owned units or affiliates (the so-called "channel-stuffing" to which Coriolis refers).

Some crises are caused by others, some we make ourselves. Whatever crises beset the industry appear deeply rooted in New Zealand. At least some portion of the scores of millions of dollars surrendered through bulk exports at throwaway prices must be reclaimed. And in an economy said to be a real estate market with bits and pieces tacked on, beekeepers must be left with more than some of the bits and pieces. Avenues to broader, more tangible equity participation must be found.

Bruce Roscoe is a Japan-based New Zealander providing honey importation and distribution consultancy. He is a former director of research for Deutsche Bank Securities Japan, with extensive experience as an equity research analyst and as correspondent for both leading New Zealand and global media publications.

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John Berry on Cell Raising

BY JOHN BERRY

Like most things beekeeping there are innumerable ways of raising cells and one method is not necessarily better than another. My method is not really suitable for large-scale cell raising, but certainly worked very well for me raising around 1500 cells a year.

I mostly work with full depth boxes with gauze stapled on the bottom, wooden runners to provide some ventilation, and a simple sack and lid on top to keep the bees in when necessary (also great for collecting swarms). It can also be done using a standard hive as long as you have some sort of ventilated shifter to go underneath when transporting the bees.

John Berry's cell raiser uses a box with a ventilated mat below, and one frame each of pollen, honey, young brood, and the frame with cell cups to prepare them, along with bees shaken from one brood box. All covered with a sack and lid, with room for an entrance at one corner.

Good results are achieved with two bars of 20 cells each.

For cell cups I use the longer lugged cell cups and stick them onto cell bars with melted wax. Two bars per cell frame and around 20 cups per bar. For many years we made our own cells from wax, dipping shaped wooden dowels (soaked in water) into just-liquid wax. They worked very well and were stuck onto the bars the same way, then cut off with a knife, but I find the plastic cups easier to handle and harder to damage.

PREPARING THE HIVE

Into the cell box goes one frame of pollen, one frame containing young brood, one cell frame and one frame of honey. Into this you need to shake all the bees from one full brood box. There must be enough bees to cover the four frames and plenty left over to beard within the box. I do this mostly by collecting bees from a nice quiet healthy hive when I am requeening.

If I just need a few cells, or at the very start, I will move a strong hive at home at least 10m away from its position. I leave the three needed frames behind and shake about half the bees, but it will gain a lot of returning bees as well. Bees gathered into the cellbox are simply shut in with the sack and taken home, where I place them somewhere away from queenright hives (these will suck a lot of your queenless bees away). Then I simply lift the lid back a few centimetres and fold the corner of the sack furthest from the frames back to create an entrance.

You can successfully graft within a few hours of this preparation and many times I have collected bees during the day and then grafted late that afternoon, but the best results are the following day. You can graft up to three days afterwards, but don't expect such good results and make sure you destroy any cells which they will be raising on the brood.

Not much can go wrong, but some hives will always do a better job than others. I never collect bees without first finding the queen, but most of my cell raising is done in autumn and you get a surprising number of hives with two or more queens at that time of year.

THE GRAFTING PROCESS

These days I graft exclusively with a 000 sable paintbrush (not synthetic), usually available from a good art supply shop. I was taught to graft by my father using a grafting wire, which I could spend half an hour explaining how to make, but the 000 is a huge improvement. I have grafted with a vintage grafting spoon which was an interesting exercise, but once again the 000 is better. I know a lot of people who use a Chinese grafting tool. I have tried and failed with this and have no intention of ever trying again.

I like to graft from dark frames because it's so much easier to see the grubs. My father always grafted with the sun over his right shoulder sitting on a bee box, but I prefer to do it indoors using a lamp with a soft white light and for the last few years I also have worn some 2x glasses from the Two Dollar Shop.

The smaller the grub the better the resulting queen, but if you graft a very small (under one day old) don't expect as high a take. It has been said by many people that you cannot graft eggs, but I have done it with moderate success. There is no real point in it though, other than proving it can be done.

With grubs I normally get around 80% success, but it does vary and one year it didn't matter what I did I struggled to achieve 50%. The next year everything was back to normal.

When I first started work at the age of 15 we were having a lot of problems with what we thought was black queen cell virus, but in the end we discovered that old Mr Taylor who made the wax cell cups didn't like bees and when the smell of the hot wax attracted them he would get the fly spay out. Removing the fly spray removed the problem.

HANDLING CELLS

Two days after grafting (graft Monday, check Wednesday) you will be able to count how many cells are successful, although you can expect to lose a small percentage before 10 days. You can requeen using these two day old cells and we often did. There are several advantages, with the main one being that they are almost indestructible. This was important when a lot of our apiaries were a long way up some very rough, unsealed roads.

If I was going to use them I would do a quick count, then simply flip the corner of the sack back over and seal them in with the lid and place on the back of the truck, preferably with a bit of padding underneath. The box could then be opened and used as needed.

If the cells are going to be left for later then you need to go through and cut out any cells on the frame of brood. For a

long time the practice was to remove this frame of brood when grafting, thus forcing the bees to put all their effort into the cells, but the reality is you just end up with a whole lot of demoralised bees that do a very poor job.

If there is no honey flow then you might feed a little bit of sugar, or even stir some of the honey and pollen together in the frames. If there is more than a trickle of fresh honey coming in then it's a good idea to place a frame or two of foundation in at this stage as this will help stop them building burr comb all over the cells.

You can next use the cells at eight, nine and ten days after grafting. At this stage they must be handled very carefully to avoid damage to the queen's wing buds. A queen that cannot fly, cannot mate.

On day 11 they will be starting to hatch.

When all the cells are used up I usually use the old bees to make up a spare division and then shake a new lot of bees from a suitable hive and the process starts again. Any leftover two day cells can be brought home and put back where they were to continue raising them.

KEEP IT SIMPLE

This system uses, mostly, gear that you have lying around and there is no need for incubators and other fancy stuff. When grafting you don't need to cover things with a damp tea towel or work in a sterile environment. Just try and keep everything from getting too hot or cold and work as quickly as possible.

When grafting I tend to use minimal or no smoke. It is a good idea to put the cell cups in at least a few hours before grafting, but if you are desperate, forgetful, or both, then I have grafted straight into cold cells with good results.

GRAFTING TECHNIQUE

I find it much easier to show some someone how to graft rather than to write about it, but here goes…

Grafting uses very fine movements, but with the brush you basically need to slide the bristles down beside the grub and when correctly positioned they will then bend and splay out underneath and you just lift it up.

To place in the cell cup you work in reverse as well as giving the brush a twist as you remove it. Try and keep the grub as near the tip as possible. Dark frames are far easier to see the grubs in.

Well fed grubs are much easier to pick up than hungry ones. Very small is best, but slightly bigger is easier. Grafting is a skill that takes practice to gain proficiency, it is also something that some people will be better at than others. I am perfectly adequate, but my sister and some of my nieces leave me for dead when it comes to speed and I suspect they get slightly better results as well.

You will get better results at times when hives are naturally prone to raising cells, such as spring swarming and autumn

supersedure. If you end up with some cells that are smaller than you like I recommend opening the worst looking one to see if there is still surplus royal jelly left in the bottom of the cell. If there is, it had enough food and they will all be fine.

Don't discount using two-day cells. Apart from being almost indestructible they can also give you a complete brood break, making many varroa treatments a lot more efficacious.

One day I'm going to cover selecting breeders in-depth, but if you only graft from your quietest, best producing, healthiest and, these days, hopefully varroa tolerant hives, your bees can only improve.

I learned how to graft from my father, but I also had my skills honed with what was, I think, a three-day course at Flock House Farm Training Institute in the Manawatu in 1976. It was also an invaluable networking opportunity as beekeepers were pretty thin on the ground in those days.

And wouldn't ya know it, I still have some photos from the occasion…

One from John Berry's archives… playing silly buggers during a "Queen Bee Production" training course at Flock House Farm Training Institute in 1976, Manawatu.

How Many Can You Name?

WIN

Here's one for the long-time beekeepers of New Zealand – how many of the beekeepers in John Berry's "class photo" of 1976 can you name? The occasion is a "Queen Bee Production" training course held at Flock House Farm Training Institute outside of Bulls, organised by the Ministry of Agriculture and Fisheries.

Send in who you think you know in the photo and the reader with the keenest eye and best memory will win… a prize of some sort! but importantly the glory of being named in January's *Apiarist's Advocate*.

Email **editor@apiadvocate.co.nz** with who you recognise.

Note: There were not many women beekeepers in 1976 it seems!

Extended Content Labels – Is Your Honey Label Doing All It Can to Stand Out from the Rest?

Kiwi honey producers face competitive market places, both within New Zealand and abroad, and so Kiwi Labels is doing all they can to help honey brands stand out by telling – and thus selling – their stories. For the Christchurch company, innovation is a constant and their latest development means extra space to display industry standards and regulations on label, as well as extend branding.

Extended Content Label (ECL) Systems are becoming increasingly common in many industries, including food & beverage, house & garden, agriculture, automotive, and health & beauty. That includes honey, says Kiwi Labels' general manager Regan Fox.

"ECLs are often referred to as 'Booklet' or 'Multi-page' labels and they provide a versatile solution to many marketing challenges," Fox says of the technology which is solving problems for honey brands.

"An ECL is a label that unfolds and pops out. They can be used to create additional space for detailed product descriptions, promotions or simply provides a solution to comply with industry standards and regulations."

Such innovation is nothing new for Kiwi Labels, who have been in business since 1976 and who pride themselves on using that experience, knowledge and skills of their Christchurch-based team and factory to overcome challenges for their customers.

"We have label options for every solution and environment, but ECL in particular provides the perfect label for your product packaging, whilst not compromising your brand or existing label size. Additional layers or pages can be applied behind a cover label to allow extra space to suit your marketing needs," the GM says.

Additional benefits of an ECL system include increased transparency for customers and a better understanding of the product's purpose – attributes that can add serious value to a honey brand. For existing brands, adding ECL to their labelling can be done with few hassles, and so Fox is keen to have the discussion with honey packers and marketers about how Kiwi Labels can improve their products.

"Creating and implementing an ECL system requires minimal planning. Our innovative team of label experts can provide design templates or customise an ECL solution to suit your product."

While ECLs might be the latest innovation from Kiwi Labels, it is just one of many ways they are helping their clients. They take pride in assisting not

Extended Content Labels are in use across many industries already and with honey's need to display a range of complex information, they provide a versatile solution to several marketing challenges.

only label supply, but also in capital expenditure decisions, plant design and process control solutions, adding value to each and every label. Some innovations, such as security features, are also specifically tailored to the honey industry.

Support for the honey industry doesn't just come from their labeling adaptations though, with the Christchurch company regular supporters of the New Zealand Honey Awards, and Apiculture New Zealand's national conference for beekeepers, as well as Apiarist's Advocate's free source of beekeeping media.

"The New Zealand honey industry is currently a smaller scale in comparison to many others around the world, but we must strive to be mighty and Kiwi Labels is doing all we can to help make that a reality for many honey brands," Fox says, adding, "Right now, ECLs are an effective way to do that and so we want to hear from more honey brands to discuss how we can help them display more detailed product information and additional data". ■

PHOTOS

Top right:
Come and have a chat – whether in person at industry events, or via phone or email, Kiwi Labels welcomes anyone packing honey to reach out so they can help them get the most out of their honey label.

Bottom right: Kiwi Labels have long sponsored the New Zealand Honey Awards, with South Island manager Kevin Powell seen here, left, awarding the supreme honey award to Jarved Allan of The Mānuka Collective in 2021.

The Language School

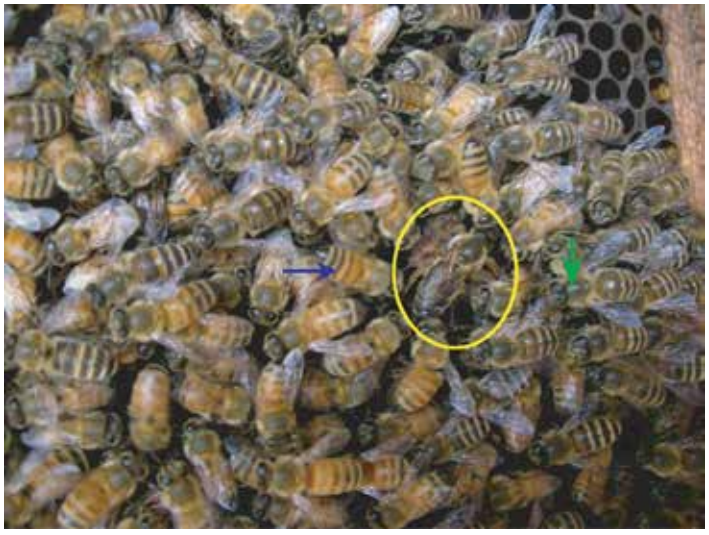
It's a welcome sign to any beekeeper – and, surely, to their bees too – the 'waggle dance' that signifies a nectar flow. Science writer Dave Black puts on his dancing shoes to help us understand what is known about this peculiar language of the honey bee.

BY DAVE BLACK

Luckily, it's not uncommon to open up a hive at this time of the season and see a dancing bee or two. We can only speculate about the origin of this curious behaviour. Some have suggested it started as a sort of aborted take-off on combs open to the sky, a six-legged mime with sound effects. The intended direction referenced the sun until, in cavity-nesting species, gravity substituted.

You have to be even older than me to remember that the idea that this was a form of communication was, until the early 1970s, still controversial. Karl von Frisch had been observing the dances and developing his dance language theory since the 1920s. Adrian Wenner was an electronics technician and biologist grounded in maths who thought he had been 'indoctrinated' by the *status quo*.

At the time (von Frisch's observation was challenged in 1967, his Nobel Prize awarded in 1973) the idea that an invertebrate might have a language made no sense at all. According to Wenner, maybe the dance *contained* information, but it could not be assumed that foraging bees acted on it. In his opinion what bees were recruited by was odour. The difference between the protagonists was partly philosophical, nature in all its beauty or nature as an exercise in practical mechanics. Or, as someone else put it, "the bees talked to von Frisch, but only danced for Wenner."[1] It was an acrimonious debate, despite the scientific merits, enmeshed in personal and social differences, and not actually too dissimilar to the current 'animals (bees) feel pain and deserve ethical care' arguments. But that's another story.



A mixed-species honey bee colony established specifically to study waggle dances, with an Apis cerana cerana queen, A. cerana cerana workers and A. mellifera ligustica workers. The yellow circle indicates the ACC queen. Blue and green arrows indicate AML and ACC workers, respectively.

A TALE OF MESSAGES AND MESSENGERS

Beekeepers studying the behaviour had seen that it varied between one species or sub species and another, and we had got used to talking about that as different 'dialects' (of the same

language). What's more, quite early experiments had shown, at least to some degree, the dialects were hereditable[2].

The aspect of the dances that differed was that the dances transitioned from one type to another to indicate different distances. As a rough example, *A. m. ligustica* (Italian bees - AML) would do 'round' dances for up to 10m, and 'waggle' dances for distances of 40m or more, where *A. m carnica* (Carniolans) would do round dances up to 20m, and waggles after 90m!

Besides the genetics, the local environment is also something that altered how dances were performed, but it was difficult to untangle the two factors. You would need to run colonies of different species at the same time in the same place, or run colonies populated by a mixture of species. Generally this just results in all-out war, but at least one study succeeded[3] (for a while) with *A. cerana* queens and a mixture of AML and *A.cerane cerana* (ACC) workers. Mixtures built with AML queens imploded within a few days, those using ACC queens could be managed – but only just – for more than 50 days.

The study found that the workers did behave as expected, the directions in the dance were the same, but the distance indications were different. The attending bees were still able to find the food source regardless of the dialect they followed, even if it meant following the directional instruction and then searching. It looked as though attendants were more likely to follow a dance performed by a member of their own species, but the statistics were ambiguous, and there was cross-species recruitment going on. Despite the six to eight million years of evolution separating the two species, they were each able to 'understand' the others 'language' in a functionally useful way.

The curious language of the honey bee – the waggle dance.

AN ENIGMATIC MELODY

Last year a study[4] from some Chinese researchers fleshed out what's really going one here. They set up two groups of five colonies with marked bees. One group were hives treated normally, the other group contained the experimental colonies. The experimental colonies only contained bees that were one day old, so the scientists were able to observe the dancing as the bees

aged and compare the two groups. At first, the experimental bees could not follow any dances and their early dances were confused, directionally error prone, and never communicated distance accurately.

Distance measurement by honey bees (their 'odometer') is understood to use something called 'optic flow'. That is, their eyes provide the brain with continuous information about how quickly objects, or the patterns of brightness and darkness objects cause, change as they pass through their visual field[5]. That 'flow' of information about a flight experience then re-presents the data as a buzzy waggle run across the comb surface. It's well established that following an average of all the dances for a given destination provides a very reliable relationship between the duration and strength of the waggle and the distance to the food source.

In both groups new bees that had not begun dancing (eight or nine days old) followed the dances of older (more than 12 days old) bees that had. It shouldn't be a complete surprise that bees watch and learn things from each other – it has been demonstrated quite convincingly with bumble bees for example[6]. What appears to happen is that, whatever their innate ability, it's essential bees learn to 'calibrate' their dances by watching older foragers. They can't do that when there are no older foragers though.

The nature of what the 'calibration' is, is a bit of an enigma. It isn't happening as a result of a failure to communicate, because the dance watchers are not testing the 'instructions' at all, they're just watching. What's more, although watching improves the dances, young bees that grow up without a tutor never learn to encode distance accurately.

So, just as listening to a tonal language (Mandarin, Thai, Zulu, Punjabi etc.) as a child tunes your brain to hear and produce the perfect pitch, the buzz of the waggle dance loses its melody unless you've grown up with it.

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Pollination Initiation 2024

It's been a busy month in the Bay of Plenty, but first-season beekeeper Aimz has managed to find a few moments to recap a period where pollination moves flowed into an early season honey harvest...

Just like a Boy George song – red, gold and green, red gold and gre-een... thankfully it's over. Our bees have done the rounds, kiwifruit pollination is completed for the year, and the bees have been moved out to locations further afield.

With more hives into the kiwi's than ever before, the time and effort put in to manipulating hives has paid off with a booming year, and many orchardists stating this was the best pollination they've ever had.

Taking into account the variables of weather, orchard managers, sprays, servicing and logistics, this time of year can be demanding on management. Timing is again of the essence, for flowering dictates the bee's entry and post-flowering demands immediate removal of the hives before sprays can be applied. Hive movements are recorded and re-checked to prevent mis-orientation from our homing bee-cons.

And in the midst of that, my eyelids are sticking open with honey. Extraction season has come early for us with tons of strippings from our pollination hives.

A change of scenery for Aimz as some favourable spring weather in the Bay of Plenty means there was honey extraction to be carried out in November.

On the move. Swarms are a part of life, even in the kiwifruit orchards.

But honey is another story altogether... for now I am still loving the pollen brought in by the hive on my doorstep. Possibly red, gold and green, but also shadowy hues of purple, pure white and brown.

Throughout life, my dad would put a few pollen traps out every year, harvesting for personal use and also selling a bit as animal pollen. I was always extremely grateful to be given a jar of this superfood, sparingly consumed at a teaspoon per day. Fast forward to now and I have loads of the stuff, well enough to last the year, even though I do have to restrict the kids, or they would eat it by the cupful.

Every beekeeper should experience collecting their own pollen. A complete protein with all essential amino acids, and a massive nutrient profile of vitamins, minerals, enzymes and antioxidants. A plausible link in the established notion of the longevity of beekeepers.

A tribute. To the life of the bee, so short and fleeting, yet so meaningful on so many different levels.

The true value of managed honey bees in pollination has risen exponentially from the advent of varroa, and the destruction

of feral colonies. Whole ecosystems rely on cross pollination of flowers. A single bee can gather around 20,000 grains of pollen per trip, visiting over 100 flowers in an hour. Collected in hairs all over its body and compacted into pollen baskets on its back legs, one colony can collect 30-40kg of pollen over a season for rearing brood.

That is a lot of pollen. Insignificant weights though in comparison to the honey coming in this season. Jeepers, shifting honey around is a great work-out. My arms are feeling it (and looking it) from jobs like taking honey (lifting honey boxes), bayvarolling hives (lifting honey boxes) and sorting and extracting (lifting hundreds of honey boxes).

Lucky it's been interspersed with the less physical labour of transporting hives and I am feeling pretty seasoned after taking a few double layers on all night coast runs. Midnight madness at its finest and the push is almost over.

In the meantime, I'll keep taking that bee pollen. My energy levels are peaking, though my crystal ball tells me there are many hot days in bee suits ahead. You'll hear from me again after I catch up on my sleep…

Stay cool.

Aimz

Adding supers for the bees to fill with fresh blackberry and lotus major honey.

Trump Card

BY IAN FLETCHER

Will the Trump Restoration make any difference to New Zealand's place in the world? How will it shape our domestic politics and debate? Perhaps too much ink has been spilled on this already, but it is worth reflecting on what does and doesn't change, and what to watch.

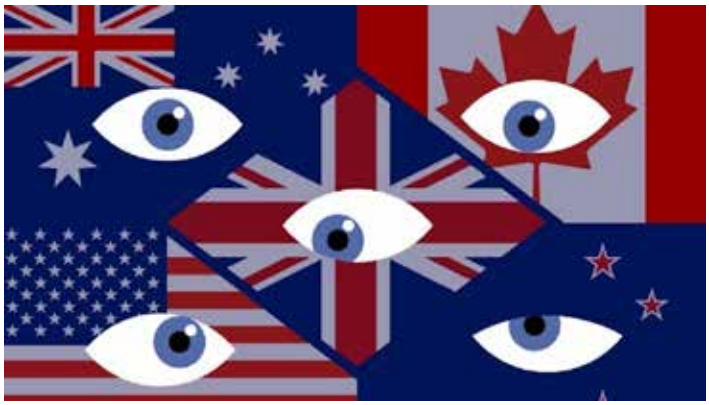
The main reason to look at this is that the new US administration will dominate headlines for quite a while, and we might be in danger of reading them wrong.
Firstly, the relationship between the US and Australia will be really important for New Zealand. Australia has invested heavily and systematically in making itself indispensable to the US in regional (and global) defence and security. I think Australia will prove to have been successful, and its partnership with the US in defence will endure.

Why? Big commitments (AUKUS especially) have been inked, so there's a sense of partnership. The Australian Federal Government devotes a great deal of time and talent to defence and foreign affairs. Because State governments in Australia manage health, education and policing, the federal Government has political and intellectual bandwidth available for defence. Because Australia is a high-wage; high-tax economy, its governments have enough money to do stuff and build or buy what they need. And finally, there's political consensus around the proposition that Australia has to be strong.

New Zealand has none of these features. But we do have the advantage of not being important, so we are unlikely to be too much of a target. But we need to be realistic: any free trade agreement with the US is now off the table. US tariffs will hit us, if they're imposed, and that will be unpredictable, and bad. We would be very silly to offer public comment on US politics or policies, as the Trump administration will have a thin skin, and have little tolerance.

What about the Five Eyes? Successive New Zealand governments since the 1940s have all, without exception, wanted to be part of this arrangement. (The history is curious: New Zealand never actually signed the relevant agreement; rather, the then Prime Minister, Peter Fraser, gave Australia permission to sign on our behalf.) Membership of the Five-Eyes means we do not have a genuinely independent foreign policy, and we never have. Having opinions is not policy; policy is what governments can do,

The isolationist economic policies of US President-elect Donald Trump signify more transactional international trade, but it has been coming for some time says Ian Fletcher.



Continued membership to the "Five-Eyes" Alliance may come at a higher cost, and thus higher military spend, warns ex-GCSB boss Ian Fletcher.

not just say. We will rely ever-more on Australia, as the US gets less reliable and predictable.

What of the Five-Eyes in the future? I think it likely that there will be a price for our continued membership, and that price will be higher defence spending. So be it. Our current defence force is an expensive gesture, and rationally we should spend more, or abolish it. The latter won't happen, so I expect we will see our defence spending rise, putting more pressure on government here to raise taxes.

Tax will be the big issue in the next New Zealand election, in any case, as the pressures on the health system rise, and as we fail to face up to the need to limit superannuation to those most needy. But all that is for another column.

What of China? China's economy is in slow-motion decline (driven by its aging, falling population). But China is still an important market for New Zealand and Australia. So, we will watch US/China relations closely, and avoid public criticism of either, if we can. We do that now. Otherwise, there's not much we can do to shape the US/China relationship. But we need to be prepared if it goes badly wrong.

Wrong would mean actual armed conflict over Taiwan, or a sudden regime collapse in China or in Taiwan. All are unlikely; neither is impossible. All could be really damaging to New Zealand. We have no plan. We never do. I know this Cassandra-like warning will never be heeded, but my conscience requires me to say that we need what's called a "War Book" – a plan for regional conflict that is already in place and can be implemented immediately and effectively. It wouldn't be military; it would deal with the maintenance of an acceptable standard of life in New Zealand if we are wholly or partly cut off from the rest of the world for a period of time. We can't rely on others; we must become more self-reliant.

For those unfamiliar with the story, Cassandra was a Princess of Troy in classical mythology, given the gift of accurate prophecy, and the curse of never being believed.

And what of all the effort we have put into the world trading system and market access since the early 1980s? It's over. We need to bury that set of beliefs and assumptions, and face up to a world where economics (the allocation of scarce resources) and politics (also the allocation of scarce resources) overlap more than we want. It's going to be a more transactional world, and tough for a small exporting country with little or no leverage. Actually, this has been under way for some time – I date it back to China's accession to WTO a quarter of a century ago. But we can't go on pretending. As a colleague once said, "being right is not enough".

Trump's real gift to us will be the end of this pretence.

We need to face up to a lot of things, and we really now have no excuses: my list includes taxes, public services, Crown-Māori relations, relations with Australia, and effective and professional core public service, infrastructure, a modernised environment of science, innovation and investment in ideas (not land), national self-defence and resilience, effective and well-funded regional government, environmental policies that don't depend on pine trees, well-managed trading relations with every possible market (including much better support for our companies). That's before we get to health, education, crime, and our own aging population.

We're small, fragile and insignificant. No-one cares, really. Even we don't really care about ourselves. Denial is not a policy. Nor is hope. Cassandra was right; Troy burned.

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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