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# The Q & A Issue

We ask the big questions and get the answers on kanuka honey research, trading in second hand beekeeping gear, women in beekeeping, and artificial intelligence.

# Kanuka Honey Researcher Answers the Big Questions



In 2020 The Experiment Company (TEC) was founded and set out to better understand the qualities of kanuka honey. Now, they are nearing completion of an innovative testing method which they hope can not only better define the unique New Zealand honey, but highlight its valuable qualities. We sit down with TEC founder and chief operating officer Sri Govindaraju to find out more about what they have learned thus far, where they hope the future of this research takes them, and how the apiculture industry can benefit.

#### Q. Why is it essential to conduct kanuka honey research?

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**SG:** Researching kanuka honey is vital for understanding its properties, benefits, and potential applications across various domains, from health and agriculture to economics and the environment. Research can help verify and quantify these benefits, potentially leading to new medical applications. Our research so far has demonstrated that it has high immune stimulatory properties.

Investigating its properties further and potential uses can open up new markets and economic opportunities for beekeepers and producers. It might lead to the development of new products or industries. Moreover, research findings can build trust among consumers by providing scientific evidence supporting the claimed benefits of kanuka honey. This can increase its demand and usage.

#### What has your research demonstrated thus far?

Dr. Swapna Gannabathula's previous studies have proven that kanuka honey has a type of glycoprotein present called Arabinogalactan protein (AGP), which exhibits immunostimulatory properties.

TEC has picked up her work where she had left it and added some more research components, which includes kanuka chemical markers, cytokines and tyrosinase inhibition assay research.

> We tried and tested the gel electrophoresis AGP method that she has used in her past work to check for repeatability and

reproducibility, so that we could validate it for commercial use. However, the validation has not been successful. We then pivoted and tried another method, the 'disk diffusion assay method', and after some trial and error, we finally figured out a test process that could reliably produce the same results within range. However, the AGP test alone is not enough to determine the authenticity of kanuka honey. So we have developed a chemical markers method after testing numerous samples. Although this area will be a continuous innovation for the coming year or two, until we start collating data from samples around the country and determining patterns and trends.

We want to continue the investigation on cytokines and  $TNF_{-\alpha}$  in kanuka honey and present scientific evidence about their potential benefits to immune health and how they can be applied to new products and development.

#### What are AGPs, and what is their function?

Arabinogalactan proteins, aka AGPs, are a specific type of glycoprotein that exhibits potent immunomodulatory properties. They are a stable compound and don't change over time. They are bioactive proteins found in the cell walls of plants.

AGP has been scientifically proven to be immunostimulatory, meaning it has the ability to stimulate the immune system. They are a rich source of pro-inflammatory substance and release a cytokine called macrophages from the immune system. Macrophages are highly specialised cells that can detect and destroy harmful bacteria while activating the pro-inflammatory process.

### Are these AGPs present in any other honeys? Are they in mānuka honey?

AGPs are found in all honeys, although they are found most abundant in kanuka honey, followed by kamahi and manuka honeys. Abundancy in New Zealand honey ranges from one to 100 mg/10g.

### How will your AGP findings in kanuka honey benefit the industry, including beekeepers and exporters?

A handful of operations are already playing in the kanuka honey space. They are selling it domestically or exporting it to

Sri Govindaraju, founder and chief operating officer of The Experiment Company, says their research into a chemical definition for kanuka honey as well as its immunostimulatory properties is progressing and laboratory testing should be available in season 2024/25.

Could The Experiment Company be on the verge of determining properties of the kanuka bush that will bring greater value to honey producers?

parts of the USA, Southeast Asia, Japan, and Middle East.

Now that the research has shown what AGPs can do, the industry needs to understand how this can help motivate the end consumer to buy a jar of kanuka honey, what its benefits are and how honey sellers can use it to market their product. The exporters/brand owners selling kanuka honey as a finished product to consumers can use these findings to let the customers know how much AGP content is present in their batch of honey.

At this stage, we know that there are regional variances in the amount of AGPs present in kanuka honey. We see the long-term benefit of working with organisations like Kanuka Science Group – which has helped fund much of the research thus far – to create an AGP rating system from which the beekeepers and exporters can benefit. They will be able to use this trademarked rating system at their point of sale or on their labels to educate the end consumer. Hopefully, this will increase the demand for higher AGP-rating products and ultimately increase the price of this uniquely New Zealand honey, leaving more dollars in the beekeeper's pockets.

This sort of rating system and chemical definition will sound awfully familiar to the Kiwi honey industry. What have you learned from the mānuka honey story – including the pitfalls – which can be applied to this kanuka journey?

This is only the beginning of kanuka honey testing, and we believe there will be lot of learning from our first version of AGP rating and



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the definition of kanuka honey. It won't be a perfect definition from the launch, but as we push forward and collect more data, we will get better at it.

#### What is your innovation here?

Our innovation lies in creating and developing the analytical instrument to quantify AGPs present in a honey sample.

The disk diffusion assay method has been around since the 1940s. TEC has taken this method and modified it to suit the AGP test requirements. When the test method was validated for reproducibility and repeatability, we encountered some hurdles with quantifying the readings of the AGPs from the assay plate. That's when we came up with the initial design of the analytical instrument to help make our life easier to report the results with more accuracy and reliability.

#### Where do you think this research and innovation will lead?

When we embarked on this project, our vision and mission were to develop a reliable test method that the beekeepers and producers could request to test their honeys. In the process, we tripped up a few times, which took us on a slightly different path than expected and with that came plenty more learnings and findings. We are excited to roll out the AGP test method. Once this has been executed and finds its own feet, we will want to pursue more research into kanuka honey, extraction and isolation of the AGPs, more applied research, clinical trials, and some product development.





#### You mentioned Dr Swapna in Auckland earlier, but you are speaking to us from Dubai, so can you tell us about the TEC team and how all the work comes together?

My husband, Sunil Pinnamaneni, and I are living in UAE temporarily as he works on projects involving research of local honeys. Together, we founded TEC and Sunil has been managing the kanuka research virtually from the UAE, including developing the project's vision, guidelines and commercialising the research. Prior to this role Sunil spent 10 years in the New Zealand honey industry, in various science and research type roles.

Dr Swapna Gannabathula works out of Auckland and has studied New Zealand honeys since 2011. She has a few helpers in her lab too and between Auckland and Taupo they carry out all the groundwork.

Myself, I assist with keeping the wheels in motion! From being the face of the company, to filling out the grant applications and keeping up to speed on all things operations wise.

#### How has TECs research been funded to date, and how do you foresee it being funded as we advance?

We have been lucky that we were able to bootstrap a bit ourselves, plus some funds through Kanuka Science Group (which includes Pinnamaneni and Govindaraju's honey company Zealandia Honey, as well as Doc O'Connor of Koa Honey Ltd) and the balance funded through Callaghan Innovation, who pitched in 40% of our R&D costs last year. We have just been awarded another seed grant by them, which is a co-funded grant too, where they contribute up to 50%. We will use these funds to design the prototype and conduct some validation work. We have applied for more grants and are awaiting results.

We have plans to raise capital next year and aim to have some funds by mid-2024. We haven't fully formulated who our ideal investors will be. Whether they will be angel investors, or the bank is yet to be decided.

I have been accepted into an incubator program hosted by the Ministry of Awesome, a start-up supporter based in Ōtautahi Christchurch. With their help, we have begun working on streamlining the business, metrics and putting a structure together that is appealing to potential investors.

The Experiment Company science team in the lab. Founder Sunil Pinnamaneni, right, along with lead scientist Dr Swapna Gannabathula, centre, and Ye Liu at left. TEC need more kanuka honey samples submitted this season to help improve their research.

#### What does the future for TEC and kanuka honey look like in your mind?

While we are close to wrapping up our project on kanuka honey R&D, research never ends; there will always be something that needs proving, finding, or analysing! We want to pursue further research into other native honeys and bioactive compounds from New Zealand and around the world. Our long-term goal is to be known as the incubator for honey and therapeutics research.

#### How can the industry be involved and help you?

Due to poor weather, last season was a write-off, so we didn't get many samples from the beekeepers to analyze. With an El-Nino weather pattern on the way, there's potential for a bumper crop of kanuka honey. So, when beekeepers have harvested and finished extraction of their 2023/24 crop, we want at least 50 or more samples from around the country to complete a final validation on the test method and the analytical instrument.

We want the beekeepers, manufacturers, and exporters to spread the word about kanuka honey testing which will be available to them from the 24/25 season on. They are welcome to contact us with any questions about the science and research.

We will be present at the National Fieldays and Apiculture New Zealand conference in June 2024 to showcase our product and innovation.

We want beekeepers to stay engaged with us. If you are a kanuka honey producer, get in contact so you can be part of the journey!

Sri Govindaraju can be contacted via email: sri@experiment.nz 🕷



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# Managing the AFB Risk in Second-hand Gear



As New Zealand's registered beehives reduce from a peak of nearly one million to closer to half of that number, a lot of the beekeeping equipment which remains in the sheds changes hands. With this in mind, we check in with the American Foulbrood (AFB) Management Agency to determine the level of risk associated with trading in second-hand beekeeping equipment that might hold AFB spores, and what can be done to mitigate the spread.

There is always a risk associated with trading in second had beekeeping equipment and beekeepers should do their due diligence before taking ownerships, that's the message from the Agency's national operations managers Dwayne Hill and Marco Gonzalez.

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There has always been a "steady flow" of beehives and associated equipment being traded, but in recent years – with beekeeping proving far less economical for many – that flow has become a flood.

"Concern does go up as more gear floods the market. Not all of that gear is owned by beekeepers that have a great AFB history, or we know anything about," Hill says.

"Experienced beekeepers buying such equipment can manage that risk, but the worry is with new beekeepers, do they actually know what they are buying?"



Dwayne Hill, AP1 for the AFB Management Agency stresses the importance of doing your due diligence before buying second hand beekeeping equipment.

Whether beekeepers taking on used equipment are experienced, new to the industry, have one hive or 10,000, there are some best practices which should be undertaken.

#### TREAT ALL USED EQUIPMENT AS HAVING AFB

Just because a beekeeper says they have a clean AFB history, or that the hives or equipment they are trading are 'AFB Free', doesn't make it fact. It is illegal to sell equipment known to be contaminated, and often trading platforms – such as Facebook groups – require sellers to declare its status. Whether sellers genuinely believe their declaration no doubt differs case-by-case, but, either way, the Agency advises a "buyer beware" mentality.

Any beekeepers who buy or inherit used equipment and spread it through their operation indiscriminately are playing with fire – potentially literally.

"When you buy second hand gear you must assume it is contaminated and use quarantine measures, such as only introducing it to a few selected apiaries and tracking their performance," Gonzalez says, having seen the alternative go badly wrong.

"I know a beekeeper who got AFB through 30 percent of his operation just by putting second-hand supers right through his apiaries. If he used a couple of apiaries only then his problems would have been a lot less."

#### **DO YOUR DUE DILIGENCE**

Buying beekeeping equipment should be treated like buying a second-hand car Hill says, "do your due diligence". A big part of that diligence is physically inspecting the equipment prior to taking ownership.

"Don't just buy off Facebook because it says it is AFB free. Go and have a look. Take somebody with you who has more experience. A DECA holder, if you are not one," Hill says, while also advising new beekeepers to stay away from second-hand equipment altogether.

A useful tool as part of the due diligence process is the Foster swab testing as offered by dnature Diagnostics and Research.

"It can take a minute to swab and very little cost to get that tested. If you are buying thousands of dollars' worth of gear, that swab testing money will be best spent finding out whether there are AFB spores present. If you find AFB at that point you can tell the Agency and take the risk away from everyone else," Hill says.

Recommendations of what to swab, and how many swabs to use, differs depending on the type and amount of equipment being assessed and so dnature technical manager John Mackay advises those looking to take on second-hand equipment to make contact with them to come up with a plan.

"We are well aware that there are cost pressures in beekeeping at the moment, but we can run composite Foster tests which make diagnosing large amounts of equipment more cost effective. We just need to plan it out with the beekeeper," Mackay says.

Hill says he has been dealing with a case where AFB has been detected in hives that were recently purchased and now the thousands of boxes that came with them are also being destroyed.

"Only upon first inspection of hives, post buying them, was the AFB noticed, then when the rest of the gear was inspected obvious signs of AFB were found. It was a lack of diligence on both parties' part, but as a buyer it is your responsibility and they could have spent a day going through the gear in the shed prior to purchase and avoided some of the cases of AFB they now have."

#### **ONCE YOU HAVE THE GEAR**

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Once a beekeeper has done their due diligence and decided equipment is safe to take ownership of, and come up with a quarantine plan, there is still more they can do to reduce their risk of inheriting AFB spores.



Marco Gonzalez, AP1 for the AFB Management Agency advises beekeepers to "buy local" when it comes to used beekeeping equipment, if possible.

"If you have the use of a paraffin dipper, then use that to sterilise wooden equipment, even if you do have negative swab results. The sterilisation process works, if done correctly. That is, at least 10 minutes at 160°c plus," Hill advises.

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The pieces of equipment most likely to carry spores are bases, followed by frames.

"All the AFB-decaying material fall onto the base as the bees attempt to remove it from their hive, then they are walking all over it. Even pallets that have had AFB hives on them can transfer AFB, so cannot be reused," Gonzalez says.

As for frames, Hill has some advice there.

"Frames are a high-risk item, that is where the honey is stored, brood laid, and therefore the spores are predominant there. So, buying boxes and frames and destroying the frames and repopulating the boxes with your own frames, or new frames, will definitely minimise that risk. Even if you didn't dip the boxes, the disease risk is going to be substantially reduced by removing the frames of another beekeeper."

#### THE PLASTIC PROBLEM

In the past bleach has been floated as a remedy to AFB infected plastic equipment, but this is too unreliable and such equipment must be destroyed.

"Bleaching has so many variables and can easily become unsuccessful in removing AFB spores," Gonzales explains.

"Variables include: the age of the solution, the exact concentration of the solution, protection from sunlight, pH level of

the water, the level of cleaning achieved on the plastic material prior to bleaching, the period of time the bleach makes contact with the plastic. It is just a lot of variables."

Once again, the Agency have seen it go horribly wrong for people who think they can flout these rules.

"In 2019 there was a huge AFB outbreak in Wairarapa and that particular beekeeper was attempting to bleach-treat plastic frames from AFB infected hives. He created one of the largest AFB outbreaks we have come across. Plastic frames and bases have so many crevasses, you can never clean into all the areas which the bees will reach," Gonzalez says.

#### **BUY LOCAL**

With an abundance of second-hand equipment available, the Agency is advising beekeepers not to go further afield than needed. There are numerous reasons for this.

Southland has seen AFB brought into the region from Northland recently, frustrating Agency efforts towards elimination.

"We would rather deal with AFB outbreaks locally. Southland is one of the regions with low AFB levels, and Northland one of the highest. So transporting gear between regions like that doesn't makes sense, for a number of reasons," Gonzalez says.

Holding vendors of second-hand equipment accountable, if it does prove to be contaminated, is much easier when the dealings are all local too, as is the Agency's investigations, Hill explains.

"When you find AFB in the second-hand gear it is a lot easier

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to then go to those areas using the same AP2, the same people involved, to look for the same AFB. There seems to be a lot more understanding from the beekeepers when that happens. Whereas, if you have hives or gear from across the country and different parties involved, there is a disjointedness to the investigation."

For more advice around AFB best practices, or to advise of abandoned apiaries or equipment, contact the AFB PMP Agency.



## **Big Burn Off in Canterbury**

In October several commercial beekeepers assisted the Management Agency in destroying thousands of hives formerly of North Canterbury based The Beekeepers Honey, which had gone into liquidation.

The liquidator informed the Agency in September they were abandoning the hives. Agency national operations manager Marco Gonzalez says, at that point, they were obligated to offer the hives to landowners and, if they were unwilling to take over ownership, they had to be destroyed.

"We cannot afford to have apiaries without a beekeeper responsible for them and for AFB control. Therefore, those apiaries must be destroyed under Section 25 of the Biosecurity Act as 'Hives Posing a Risk'. It's the only power we have. We cannot gift them, we cannot sell them, we must destroy those hives," Gonzalez says.

The Beekeepers Honey, owned by Chris and Susan Gill at time of liquidation, did not have an AFB problem known to the Agency. He thanked the commercial beekeepers who provided vehicles and facilities to assist in destruction of the approximately 2000 hives, as it would have otherwise been a costly task for the Agency.

Apiary locations were not shared with other beekeepers, but when neighbouring beekeepers notified the Agency of the presence of The Beekeepers Honey Hives they were asked to assist in their destruction. **\*** 

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# RMP Audit Changes Are No Guaranteed Win



After more than four years of campaigning, beekeepers holding Registered Management Programmes (RMPs) for their honey facilities got a hard-fought-for win from the Ministry for Primary industries (MPI) recently when rules were introduced making the move to yearly – rather than twice annual – audits more attainable. However, those leading the charge are not fully convinced of the benefits just yet.

"The proof will be in the pudding," says Apiculture New Zealand (ApiNZ) chief executive Karin Kos, while New Zealand Beekeeping Inc (NZBI) say they lack confidence in the ability of auditors to fairly implement the new RMP rules.



For years both industry bodies have been lobbying MPI to make a change to their requirement for honey extraction, processing or storage facilities – some of which are only in use for a few months a year – to be audited every six months. The beekeeper representatives wanted annual audits and last year that was made possible, but only if the RMP holder went through a range of training exercises.

Figures showed very few RMP holders were willing to make that costly effort to get to 'Step 7' and instead were reaming at 'Step 6' and twice annual visits from the inspectors. Now though, under the new rules, competence to move to Step 7 and annual audits can – theoretically – be proven through a history of compliance and knowledge.

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Access all New Zealand honey types at the click of a button. "It should be a lot simpler, but the proof is in the pudding. So, we will be very interested to hear from people how they go. As I understand it MPI has briefed the verifiers on the new rules," Kos says.

"The devil is in the detail and people will be going through that with their next audit."

RMP audits are carried out by MPI or private company AsureQuality.

A bone of contention for NZBI during the long lobbying process has been AsureQuality's dual role as auditors and providers of training programmes, something they say is a conflict of interest as they can decide who requires their training and who doesn't.

"Regulators should be separate from trainers, otherwise they have an incentive to keep beekeepers dangling in the 'almost good enough' category – something MPI's own figures bear out," says lan Fletcher, an advisor to NZBI.

Under the new rules this conflict still exists.

MPI, when asked for comment on how they would ensure auditor's performance and specifically willingness to move RMP holders from Step 6 to Step 7 would be monitored, was unable to detail specifics but claimed to be in "regular communication with the verifiers to align requirements and expectations".

NZBI are not convinced.

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"We have little confidence here, and NZBI will be looking to support beekeepers who want to appeal verification decisions, especially if those decisions involve pressure to buy AQ's training," Fletcher says. Kos says, if applied as intended, the new rules provide "flexibility" for the almost 300 honey RMP holders sitting at Step 6.

"There are other RMP holders that are still going to need training though. You do have to have good training support and I would love to see more training providers. We need to be more active in looking for who they could be," Kos says.

Apiculture New Zealand has approached a range of potential providers of that service.

"When I first went out to look a few years ago, there wasn't much interest. So, perhaps industry needs to be more responsible for its own training. With anything, you need funding, dedicated people to do that. Other sectors, with levies, have training components."

On a positive note, there has been collaboration between the two industry bodies, ApiNZ and NZBI, to achieve change for the better for beekeepers.

"I enjoyed working with their team and I hope they enjoyed working with our team," Kos says.

With the industry groups first flagging concern at the RMP rules as far back as 2019, MPI's move to change has been glacierlike slow – too slow Kos says. She hopes the two industry bodies have proven themselves to MPI and future rules can be enacted more swiftly.

"Together we have a lot of expertise at our fingertips, but we need to be more deliberate about how we push through what we need. If MPI have things coming up – and there are potential changes to the honey E-certification process – then the design and testing of all of that is where collaboration really makes sense." **\*** 



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# Championing Ladies in Apiculture



Argentinian by birth, Hamilton beekeeper Sol Tejada has worked in New Zealand's beehives for the past three years, in both North and South Islands. Noticing an under representation among female beekeepers, she was motivated to study the topic of women in beekeeping as part of the Kellogg Rural Leadership Programme earlier this year. Having recently published her findings, she joins us to field a few more questions.

#### Q: Congratulations on completing the Kellogg Rural Leadership Programme. What motivated you to do so, and what motivated you to choose your topic, Women in beekeeping: how to champion ladies in the apiculture industry?

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**ST:** Thank you. I found out about the programme because a coworker did it and it sparked my curiosity. I was lucky enough to find out about it a day before the application deadline. It was a great chance to network with like-minded people from the food and fibre sector, a great chance to enhance my leadership skills and the opportunity to gain knowledge from very influential industry leaders.

I am passionate about the primary industry, but especially about beekeeping. I think there's profound wisdom in the bees' behaviours that can be applied to our lives.



Sol Tejada's Kellogg study has provided insights into the role of women beekeepers in New Zealand.

Part of the programme is bringing to the table a concern or something you wish to improve in your industry. My dream was to become a commercial beekeeper in New Zealand and I realised that there were not many female beekeepers, or at least I did not come across many. The team I worked in was entirely men and I possess a huge determination to foster an environment where women not only enter the apiculture industry (and any place I am working in) but also thrive and hold positions of empowerment and power.

#### Q: One of the key findings was that, despite the two largest industry bodies having women as chief executive and president, female beekeepers see the industry as a place where they are under-represented. Why is this so?

Curious, right? The volunteers said they feel underrepresented because the ladies of the industry are not really visible, despite being in prominent leadership roles within the industry's bodies which reveals a nuanced challenge. They feel disconnected and underrepresented primarily because of a lack of visibility and accessibility to female role models to emulate. They do not know them.

The absence of a recognisable pathway for career advancement compounds this issue, contributing to a sense of isolation within the industry. They highlighted the difficulty to get in touch and network with other female beekeepers, also as a result of lack of networking events or clubs or hubs which are mostly dominated by men and tend to be focused on hobbyist beekeeping.

This lack of networking opportunities further compounds the perceived underrepresentation, inhibiting the formation of supportive communities and mentorship relationships crucial for professional development.

Q: On that note, your research highlights improving 'mentorship' and 'networking' as important to attracting and retaining women in commercial beekeeping. Why is this so and does that mean the mentoring and networking needs to come from other women? Mentoring and networking were mentioned by the beekeepers interviewed as life-changing support received. Mentorship actually came from experienced beekeepers, mostly men that guided and supported the female beekeepers and provided the knowledge transfer that was key on the way of building a successful career in beekeeping.

From the literature review, it was possible to perceive that sometimes mentorship is not encouraged or it is hindered due



to a bias relating to the relationship established between the individuals, especially when they involve individuals of different genders. "What are people going to think?" sort of thing. That's why healthy mentorship should be encouraged.

Networking brings a lot of space for collaboration, highlighting the value of local connections for collaboration and business opportunities. However, participants noted that the beekeeping community tends to gather around clubs focused on hobbyist beekeepers, posing challenges for commercial beekeepers to find suitable networking and support channels.

#### Q: Eight out of the nine women in beekeeping whom you interviewed perceived there to be a bias towards them in the industry based on their gender. Were you able to determine how this bias manifests itself?

Gender-based bias, often unconscious, is challenging to detect and address. There were 11 different types of biases mentioned by beekeeping women in the research. I will explain some of them here.

Gender delegation is assigning tasks based on the gender of the team-member, stereotypically assuming certain tasks are more suited for one gender over another, limiting opportunities or responsibilities based on a bias.

Sexual over perception bias is perceiving a flirtatious or sexual interest from the interaction with a team member when it is not real. Misinterpreting professional interactions as flirtatious or sexually motivated when, in reality, they are purely professional.

Maternalism is avoiding hiring women between a certain age, or assuming that the desire of being a mother would get in the way of their career.

Intra-gender bias is a bias coming from the same gender in the form of perceiving the person as a threat or showing a jealous behaviour.

Gender-based favouritism when hiring is when one gender is preferred, no matter which candidate is better suited for the position.

I would also like to mention that from the literature review It was possible to identify another bias when promoting women. Men are promoted or offered positions by their potential, but in the case of women, they are promoted by their achievements. So they are already running behind on promotions. How can you show what you are capable of, without the opportunity?



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#### Q: You identify work flexibility as an important factor to attract more women to beekeeping. Does this not put in jeopardy the productivity of beekeeping operations that require high levels of dedication at certain times of the season?

Not at all, flexibility was actually considered one of the good things of being a beekeeper by self-employed beekeepers. They did not consider this as a perk of their job because it was intrinsic to their profession. It was mentioned by new beekeepers and beekeepers that have been in the industry for decades. They mentioned that they could plan their beekeeping duties to adapt to the time they needed to pick up the kids from school, for example.

If you think that cannot exist in big companies, I will have to disagree. Big companies will need to adapt their teams probably and give plenty of room for communication to allow their team members to express their needs and plan accordingly. It may seem impossible to achieve flexibility, but perhaps it sounds difficult only if it hasn't been done before.

#### Q: The most measurable of your recommendations is to increase the presence of women at beekeeping conferences, including networking events for female beekeepers. Have you progressed these ideas with event organisers?

This was a request from some of the beekeepers I spoke to. They expressed this need and I mentioned these requests to one of the industry bodies during an informal talk, but I have not progressed these ideas in a formal way, yet.

#### Q: How do you hope your report is received?

I hope it is received as positively as possible. It is a very tricky subject and can create a lot of resistance from members of the industry, but the truth is the truth. No one is pointing fingers and my only intention is to see a more diverse industry.

I did not add my personal experiences and I only heard what women in our industry wanted to say and I asked questions they had not previously been asked. Following that, here is another of my recommendations: ask 'why?'.

Why aren't women applying for high ranked positions? Why do I not have a female team leader or lead? Where are the women in the industry? Why are they in the background, as some mentioned?

I hope to see a new generation of beekeepers where diversity and inclusion is highly valued and equity in opportunities is offered.

I would like to thank all the ladies that participated in the interviews and would like to encourage the ladies of the industry that did not want to be interviewed to reach out to other female beekeepers, to find support and ask for help when needed. The apiculture industry showed itself to be very supportive. I heard amazing examples of how great things were achieved from the collaboration between beekeepers.

Thanks, from a beekeeper to all the beekeepers!

Read the full report: https://ruralleaders.co.nz/women-in-beekeepinghow-to-champion-ladies-in-the-apiculture-industru/

Contact Sol Tejada via email: soledad.tejada@gmail.com 🕷

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- Email your story idea for us to cover in 2024 to
  editor@apiadvocate.co.nz. It could be an apicultural issue, a beekeeper
  you think needs profiling, an upcoming event, or anything in between.

So, don't be shy, get tagging or emailing because someone has to win this Christmas bounty!

Thanks for reading in 2023, we will be back with more 'news, views and promotions' from New Zealand beekeeping in 2024. **\*\*** 







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# Ombudsman Fails to Uphold Beekeeper Complaints

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Honeylands Naturally, a Wanaka honey packing business specialising in single servings, has had their protest against the Ministry for Primary Industries fees denied, with the Ombudsman citing MPI's actions were not unreasonable and within the laws set by parliament.

Apiarist's Advocate detailed owner Chris Watkins grievances with the Risk Management Programme (RMP) auditing process and complaint to the Ombudsman in April. Following the story, seven other honey processors who had revoked their RMP, or were considering it, offered their support to Honeylands' Ombudsman application. Watkins complained of the frequency (6 monthly) of their audit, the amount charged, and the decision to increase the charge rate. Since the complaint was lodged some changes have been made to rules around audit frequency for proven competent operators (as detailed in *RMP Audit Frequency Changes Are No Guaranteed Win*, this issue), but it is too little too late for Honeylands Naturally who have suspended their RMP due to the cost.

"Our small company had to make a decision; it was beyond our ability. When your compliance bill comes out at \$10,000 a year it is just too much. It's crazy," Watkins says.

They will no longer be able to pack honey for export, but can still pack honey for domestic sale under a Food Control Program (FCP) registration, which they hold for some of the other products they produce.

"We can manufacture jams, dressings, all sorts, and export them, but when it comes to honey they want it under an RMP. If we put one percent of something else in the honey and called it a spread, they couldn't touch it," Watkins laments.

Their export market for honey had reduced in recent years he says, but he has driven for change to spiralling compliance costs for the good of younger people in the honey industry. Now, with the Ombudsman ruling that such costs are within MPI's remit provided by Government, he plans to speak to his local MP to try and stimulate changes, and encourages others in a similar boat to do so too.

"Get alongside your local MP, because the incumbent Minister for Primary Industries will just wipe you aside and point you back to MPI, just like they did to me, just like they did to *Billy Mulcare from Kāre Honey*. You need to contact an opposition MP or maybe your local candidate to lobby their own party." **\*** 



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# **Hot Stuff**



Varroa is a growing problem for beekeepers the world over says Vatorex founder and CEO Pascal Brunner and so the Swiss company has developed a thermal treatment for beehives in an attempt to provide beekeepers another weapon in their arsenal. Lifehive is yet to hit the market in New Zealand, but Brunner is in the country gathering Kiwi beekeepers' opinions and overseeing some trials in North Canterbury. We find out more about the piece of Swiss beekeeping ingenuity.

The Lifehive is a component-heavy brood box and frames. There's the eight wooden frames with plastic inserts, which themselves have coils of wire and foil embedded to convey the heating, then the box itself has LiFePO battery affixed on one end, from which a wire goes through the box to convey electricity to a long, flat terminal running the length of the main recess to connect with the lugs of the frames. Then there's the clamp to hold the frames down to ensure connection. In the field, a solar panel is required to power each unit, either placed on the hive lid or beside the hive.

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It's a lot of componentry, but it's all in the hope of solving most beekeepers biggest challenge – controlling varroa. By heating brood frames to 42°c for three hours when capped brood is present, Brunner says they can kill juvenile mites recently laid. It's impact on foundress mites is less certain, and phoretic varroa are unharmed.

Vatorex launched Lifehive in Switzerland in 2016 to the hobbyist market, but wanting to take the business to the next level they are now looking to commercial beekeepers in larger beekeeping markets, Canada and New Zealand. At Waiau Apiaries in North Canterbury Nick Belton has ran a few small-scale trials in recent years, and this spring has 100 hives fitted out with Lifehive. Larger trials are also being run in Canada through the Alberta Beekeepers Commission.

"Varroa is such a big problem in the beekeeping industry and it will grow, that's for sure. We can look at Europe, you can look at North America, look at Switzerland. The path where it goes is clear. So, Lifehive can solve these problems," Brunner says.

The potential of thermal treatment of beehives for varroa control gained attention in New Zealand in 2020 when the Hivesite team (as featured in the January 2021 issue of *Apiarist's Aduocate*) from Waikato received two awards at the national Field Days for their heated beehive base-pad. Since then development of that product has stalled, with difficulties in harnessing enough power, and therefore practically pricing the product, being major issues according to the developers.

Brunner says they have not determined a retail price for Lifehive to New Zealand beekeepers yet, that will hopefully come in the next year as they continue adaptations.

The current iteration of Lifehive is the sixth generation. With the heating terminals inside the specially designed frames, bees must be shaken into the hive to start wax building afresh. There are eight thermal frames per box with two standard outside frames. Once comb is drawn and brood is laid out, then the most inventive piece of the technology kicks in. An algorithm – which Brunner is coy to explain the details of due to commercial

sensitivities – measures when capped brood is present on each frame and administers the heat treatment. "It carries out time series analysis, taking measurements every three hours and through that we can determine when there is capped brood. That follows a distinct pattern. That's the moment when we need to treat, because the varroa goes into the cell right before capping, so then we can kill the juvenile varroa," Brunner explains.

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So far the value propositions for beekeepers have been wide ranging the CEO says, giving him confidence the product will find a use in New Zealand.

"The interest is quite high. It's interesting, there is not that one single selling point or proposition they are after. It really differs between beekeepers. Some are into bringing their amitraz levels down in the honey. Some like the idea of treating in remote mānuka places. Some others have had high losses and are wanting to better manage varroa. Some just want to boost productivity," Brunner says.

Performance of Lifehive can be monitored remotely, with it connecting to a server using LoRa technology. That means transmitting to a "gateway" terminal which is in turn connected to the 4G network. At this stage it is just the varroa heat treatments that are monitored via this server, but Brunner says there is potential to incorporate more hive monitoring data in future adaptations.

It's technology with a lot of potential, but also plenty of hurdles to overcome before it is a practical reality for most commercial operators. **\*** 

# Thoughts, feelings or other input you'd like to share?

We'd love to hear it.

Email your 'letter to the editor' to editor@apiadvocate.co.nz



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# Stowers – Drumming up Beekeeper Partnerships

Beekeepers never know exactly when the honey is going to start flowing, or how much will come flowing in. With that in mind, Stowers are not just providing New Zealand made drums to store that honey in, but being a responsible business partner to beekeepers by offering flexibility of supply and stable and predictable pricing, along with excellent and accessible customer service.

"What we really like to promote is that every one of our drums is New Zealand made," Stowers National Sales Manager Richard Sims explains.

"It means we can control everything from the production to supply, rather than having to rely on overseas companies and freight getting it right."

Stowers is part of Pact Group, a leading plastic packaging, recycling and reuse company operating in Australia and New Zealand. It's a large company, but the Stowers arm has just one function: distribution. With two steel drum production facilities serving them – one in Avondale, Auckland, and another in Temuka, South Canterbury – they can quickly and reliably fill that function too.

"As soon as the drum is made it is shipped over to our Stowers warehouses in Christchurch and Auckland, where we will then manually inspect the drums and if they're not up to quality, we then send them back. So, you get a second quality assurance in there before they go out to customers. That doesn't slow up any orders though, because we're holding stock and we can supply from our stockpiles. It's about supply and demand and making sure you guys, as the growers, as beekeepers, have the drums when you need them," Sims says.

#### FLEXIBILITY

The Stowers partnership with beekeepers is not just about being fast and reliable in supply though, it means being able to flex and change drum orders as beekeeper demand dictates. Sims explains how that works in practice.

"We go out to our honey customers and we say 'give us a forecast, what do you think you may need?'. That forecast may



Stowers specialise in drum distribution and hold plenty of stock on hand at their Auckland and Christchurch facilities, meaning drums are never far away when beekeepers need them.

move backwards and forwards through the month and quantities might change, but that's ok, because we've got a safety stockpile of drums at our distribution centres. So, when we get to the month the honey producer has indicated, we'll say, 'hey, are you still good for that 100 drums now? For that day?'. If the answer is 'yes', then we've got them ready to go. If it's 'no' we can easily push them out another few weeks. That's absolutely fine."

That level of service just makes good business sense, for both Stowers and beekeepers.

"Beekeepers are reliant on whether the bees are flying and nectar is flowing, or not. So, the last thing you want to do is tie up capital into drums, which may sit there for an extra three weeks, four weeks or, worst case scenario, there were guys who bought drums from another supplier last season and never used them. That spend has been tied up as unusable capital for 12 months because they can't return those drums.

"So, being a supplier who is very flexible and can adapt quickly to beekeeper requirements is what makes us a good partner. We work in partnership with you guys. Because if you guys are doing well, we're going to do well," Sims says.

#### COMMUNICATION

Being a good business partner means having reliable relationships and communication channels too, especially when your sole role is distribution. With that in mind, Stowers have multiple channels to make sure beekeepers can always reach them and get fast action.

Six company reps cover New Zealand from top to bottom, while four Stowers branches, in Auckland, Hamilton,

**ADVERTORIAL** 

Wellington, and Christchurch have two call centre staff each, ready to answer the phone and put orders into action.

"The reps on the road get around to talk to our business partners and see what the needs are. That allows them to shape supply and pricing to get everyone the best service and best deal," Sims says.

#### **RIGHT SIZE AND PRICING**

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Beekeeper requirements for the amount and type of drums they prefer is changeable, and so Stowers supply three different types. The largest is the 225L "South Island" blue drum, then there are the 210L "open top" with removable lid, and the "North Island" 205L red drums.

Pricing differs depending on order quantity, with quantity breaks in pricing based off three tiers; tier one pricing is for up to 48 drums, tier two 49 to 96 and lowest pricing is for orders of 97 or more. Regardless of what tier a beekeeper falls into, pricing is stable for 12 months.

"Ahead of a new year, we sit down with the manufacturer, VIP Steel, and assess the steel price, electricity and labour to determine our per-drum prices. Then a commitment is made to the market to hold that price for the full financial year. From July 1 to June 30, it doesn't matter when you order or pay, the price is the same from us."

#### **MORE THAN JUST DRUMS**

While drum distribution is the core of Stowers service, they also have a range of smaller packaging options. Honey packers, whether they need one unit or 10,000, can come to Stowers for recyclable PET jars from 90mls to 1.5L, then also larger honey pails.

On top of that, they import a wide variety of products which are valuable in honey extraction plants and beekeepers' sheds, from wheelie bins to spill containment packages.

"Distribution of drums to beekeepers is at the heart of Stowers role, but we also partner with beekeepers and honey packers by supplying a lot of other products. So, I recommend people get onto our website to see the wide range we offer," Sims says, adding "it's now also time to make sure beekeepers have their drum requirements fulfilled for this season, and to look ahead to next season too, so they should give us a call to touch base with their local rep."



The 205L "North Island" red drum, made in New Zealand and subject to strict quality control, as all Stowers drums are.



#### **Contact Stowers**

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# Confessions of an AP2 – Danger and the Military



#### **BY MAGGIE JAMES**

For approximately 15 years Maggie James was an AP2 hive inspector in Canterbury, mainly conducting exotic surveillance. These are some of her confessions...

Last month my "confessions" centred around marital strife, but I promised there was more stories to tell. Yes, my offsider Barry Sheehan and I had our fair share of laughs at some of the situations we encountered. So, here's some more tales from the life and times of an AP2 inspector, with this month's focus dangerous situations and encounters with the military...

#### **BLACK RAGE**

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In the early days of varroa in Canterbury there were areas that it wasn't exhibiting. The commercial beekeeper advised that he had never treated and adamant that, because he had black bush bees, he did not have varroa. We pulled up to the site of 12 hives, and, man, were they aggressive. They could have peeled new paint off a hive!

The miticide strips and sticky boards were rapidly installed. The next day, because 38°C was forecast, we knew we had to get to the hives before the sun was well and truly on them, so we left home at 6am for the 70-minute drive to the apiary. Regardless, the hives were majorly aggressive, so we opened the side door of the van and as we pulled out the sticky boards we flung them over the barbed wire fence into the van, followed by the miticide strips.



Maggie James - This was used as my ID photo, until I got a new North Island, AsureQuality line manager who decided that the swan was of no relevance to beekeeping, and deleted it out of the photo with a green blob, which for many years made it look like, on my ID photo for all to see, that I had a massive clump of didymo (rock snot) on my shoulder.

We drove racing down the road, uttering superlatives, with the side door open and aggressive field bees chasing us. After a couple of kilometres, we pulled over and bagged the strips and sticky boards ... black with varroa!

In our experience heavy varroa infestations made bees aggressive, and in this instance the black bush stock exacerbated the situation. We promptly rang the AP1 we were reporting to and, because we valued our lives, refused to look at any more sites belonging to this beekeeper. In our haste we had left behind a sticky board in one of the hives. We heard on the grapevine the beekeeper was surprised to discover he had varroa, and thought what happened to us hilarious!

#### **BULL-RUSH**

Back to AFB surveillance and the scariest moment prize. The apiary was situated on a rolling farm of several thousand hectares in the foothills, no mobile phone reception. The farmer showed us the paddock which appeared not to contain stock. Then through the gate, which we closed, at the top of a 4WD hill, and down the hill to the apiary. It really was less an apiary and more a heap of emlocks and trampled woodware. In some of the piles there were still colonies. While we were sorting through this looking for AFB and taking photos, we heard a heavy stamping sound...

We looked up to see a herd of cows, fronted by a massive hoof stomping, wild eyed, head shaking, loudly snorting out its impressive nostrils, large horned bull about to charge the front of the vehicle. We managed to get in the vehicle doors on the apiary side, I hurriedly climbed over the front seat to the steering wheel, quickly reversed, and drove up what seemed like a 90° hill to the gate. Apparently, the cattle had walked up the riverbed from a neighbour's property.

#### AND ONE WE AVOIDED...

In a large urban compost heap, on top of two-high bales of pea straw was an apiary of three hives. We declined this inspection!

#### **CANTERBURY'S DUNKIRK MOMENT**

The first time we inspected hives in Akaroa post Christchurch earthquake, was a tedious slow journey. Akaroa Harbour is deep and can accommodate cruise ships diverted from Lyttelton. As such, it was now considered an increased biosecurity risk, but cruise ships can't dock at the small fishing boat wharves. Therefore, all available small, motorised boats and yachts were bringing in thousands of passengers from the cruise ships. The first time witnessing this flotilla, from a hill above Akaroa, brought thoughts of "Little Ships of Dunkirk" evacuation!

#### A LONG WAY FROM HOME

Inspecting a commercial beekeeper's site in a massive patch of raspberries, it was noted on the surveillance form that sets of pollination hives were at the four main cardinal compass points. Scrambling around the berry patch on a hot Canterbury nor'west day, we couldn't find the fourth set when, suddenly, we were mesmerised!

From amidst the canes erupted a man replete in a red Swiss Army Ski Mountain Patrol heavy waterproof uniform, complete with his Victorinox Swiss Army knife dangling from the front of his uniform, looking like he had just been discharged! He delivered an assertive speech on the uselessness of honey bees – bumble bees were the future of pollination. We didn't disagree, nor did we find the remaining hives. Out the gate, we couldn't pull the vehicle over quickly enough to split our sides laughing.

#### **BUONGIOR-NO**

Surreally, when inspecting a site with 'Italian' strain bees on the Christchurch Airport farm, a loud but sleek airborne Italian twoseater military plane suddenly appeared a few metres just above and to our right. It then flew above the path of the runway, the wheels came down, and within inches of landing, the fighter plane pointed its nose upwards and flew away. The plane was so close, you could see the crew's facial features, headgear, and clothing. The reason why the wheels did not hit the ground? According to the farm manager, it would have cost the Italian government thousands of dollars in landing rights if they did. **\*** 



You wouldn't expect to get up close with an airborne Italian military plane when working as an AP2 beehive inspector in Canterbury, but that is exactly what Maggie James and Barry Sheehan got.



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# Intelligent Apiculture



With 'Artificial Intelligence' playing an increasingly prominent role in our lives, we ask our resident science writer Dave Black about some of the key concepts of 'AI'. What is it? How does it work? And where is it being used?

## Q. First of all, is Artificial Intelligence being used at all or is it just science fiction?

Dave Black: Yes, one of the important ways the world is changing is due to our ability to manipulate large volumes of information (so called 'big data') with 'intelligent' systems (eg. computers). In the apicultural field Artificial Intelligence (AI) is being used to process data from all kind of scientific studies. For example; recognising different honey bee subspecies, analysing honey according to type and origin, pollen analysis, counting pollen baskets to estimate food stores, monitoring entrance activity with body shape and position, social behaviour like trophallaxis, brood disease, sleep, and the demography of a complete colony . Some of these are just 'proof of concept' experiments, but it's not just analysing data, for instance AI's 'neural networks' are also used to control our microscopes and analyse what we see. AI will affect the future of apicultural science, but it's most notable effect will be on the world we live in. AI is a 'force-multiplier' acting on systems already in use and trained with data and systems that already exist, accelerating and amplifying forces, good and bad, that already operate.

## Q. Perhaps you'd better start by explaining what people mean by 'AI'.

While we don't yet fully appreciate the intelligent mind, or even whether intelligence is exclusively a property of the brain, developers use two basic strategies to create so-called 'intelligent' systems. Either they make copies of the physical structure of the brain and its network of neurons and 'teach' it, or they use mathematics and logic to build a symbolic analogue of what the mind does. To most of us the name 'Artificial Intelligence' is an easy but loose way of referring to all the tools that try to mimic the way we think.

#### Q. What kind of tools?

Each of these strategies has had its successes and failures, and together they have produced a range of different tools that approximate one or several aspects of 'intelligence'. These include logical, computational, probability-based tools, search and knowledge-based tools, and brain-like artificial Neural Networks. These different tools are often used together to develop new applications, such as the fancy predictive text programmes we call



'Large Language Models' (Open Al's 'Chat GPT' is a well-known 'LLM').

#### Q. Have you used any AI?

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I have used Microsoft's latest 'chatbot' search, which now incorporates AI, to look at apicultural questions. I don't have to sign up! It did give me some useful references, and quite convincing answers. However, it included some out of date and incorrect information, and I've had both bad references and references that don't exist. One time I told it the reference was wrong and it came back with the correct one. My 'go-to' tools are Google Scholar and Research Rabbit and I'm used to verifying information the old-fashioned way.

#### Q. How are these tools useful then?

I don't think all of them are useful. Depending on your point of view this 'artificial' intelligence can be applied to solving technical, engineering problems (like automation) or to build models of intelligent systems as a way of understanding how they work (like science). Building AI has been compared to alchemy, in that we don't properly understand what 'makes' intelligence so we are just pouring together different substances to see what happens. LLMs themselves have been likened to psychic's con, a clairvoyant's statistical illusion in the mind of the user, and, in a similar vein 'stochastic parrots' (a bird that uses language, but doesn't actually understand it).

Sometimes the task is the important thing, sometimes we might be trying to understand the data, and it could be the strength of the model that's the most important thing. How we evaluate the 'usefulness' depends of what its function is. Currently AI is quite task specific (a computer that can play chess but not draughts or Go), but creating artificial 'General Intelligence' (AGI), in which one type of task 'knowledge' can be applied arbitrarily to a completely different topic, (something human minds do all the time) is an eventual goal . A few people believe it should be possible to conceive self-aware, Artificial 'Super Intelligence' (ASI) that will exceed the capacity of human thought and overcome its flaws. Many disagree.

It's also worth remembering Kaplans 'Law of the Instrument' which says "Give a boy a hammer and everything he meets has to be pounded". Al tends to be promoted by its fans as the tool that will 'fix' everything; shopping, transportation, entertainment, construction, the environment, agriculture, social relations, health, the economy, science and technology, education, war, art. It's not. It depends what you want to do, but hammers are useful if you know what to hit.

#### Q. Why are scientists interested in AI?

There are aspects of studying honey bees for which some AI tools are well suited. Neural networks are very effective at analysing digital images for instance. Observing tens of thousands of individuals over a period of time would generate a lot of data. So, currently research has to be restricted, often to a few marked individuals in an observation hive or nucleus, and that may not generalise to a hive that could house more than 50,000 bees. Artificial neural networks are now being used for a variety of studies and can beat that limitation. They offer new insight into foraging and pollination behaviour.

#### Q. Neural networks you say ... what's that?

In 1943, Warren McCulloch and Walter Pitts produced a mathematics paper titled 'A Logical Calculus of the Ideas



Artificial Intelligence has made global headlines recently with leading provider OpenAI, who owns ChatGPT, firing CEO and founder Sam Altman, before making an abrupt U-turn on the decision.

Immanent in Nervous Activity'. It suggested it was possible to think of the neurons in the brain as essentially just 'logic units', a mathematical abstraction with inputs (the dendrites) and outputs (the axons). The output value is calculated from a weighted sum of the inputs in such a way that if that sum exceeds a threshold, it functions as a '1', otherwise it's a '0'. We would now think of these 'units' (in electronics terms) as transistors, and that's the kind of sum computers, which are fundamentally large collections of transistors, are designed to calculate with. Connecting the output of each 'logic unit' to the inputs of every other 'logic unit' creates an artificial neural 'network'. The network will have one 'layer' for input values, more layers of hidden units that solve maths, and a 'layer' for output units, all interconnected.

To 'train' the network the output values are compared to the required values and if they don't match the values propagated by the hidden units are reweighted until they do, it's trial and error. An important feature of these networks is that there are so many possibilities it's extremely difficult to work out what process the hidden units undertake to produce the 'correct' sum. We compare the 'in' with the 'out' and do not (cannot) trace the computation. The 'real-world' consequence of this is that conducting some kind of audit to work out why you get a particular output value (whether the machine has a fault or bias) isn't possible. Neural networks don't 'recognise', 'know', or 'learn', they parse rules to analyse patterns of probability with binary numbers.

#### Q. I see. That all sounds a bit technical...

It's perhaps because of the subject matter, but it's unfortunate (and ironic) that the field is so full of loaded, weasel words. I'm trying not to be drawn into using words like 'learning', 'understand' or 'reading', that don't really resemble the human activity with the same name. I think the anthropomorphism or ambiguity makes it very difficult to understand (or explain) what these systems really do. We just make this problem worse by using 'friendly', human-like 'chat' interfaces with the system; it's nice but it hides its true nature of our interaction.

# Q. Well, we've tackled a fair bit there and you've laid out a blueprint for what AI is, how about we reconvene next month to get a more specific about AI to beekeeping?

I can't wait, there's plenty to lay out there. I might just talk about the cost of AI too – those are some big numbers, in dollars and cents, as well as the cost to the environment...

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



# November – Splitting Doubles on the Double



#### **BY PATRICK DAWKINS**

Inside Pyramid Apiaries is a monthly look into operations at the Marlborough beekeeping business of 400 production hives, and 400 mating units, owned and operated by Patrick and Laura Dawkins. This month, the nectar is flowing, but not all the hives are quite ready yet...

With only 44mm of rain having hit our gauge in Marlborough this November, and some nor-west days to get the temperature up, the clover is flowering and the nectar flowing. Unfortunately, I haven't got all our splits made yet so we aren't taking full advantage.

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That might seem like poor management (and it probably is!), but in our operation the honey production plays second fiddle to supply of queens and queen cells. Up until mid-to-late November the demand for mated queens kept rolling in from around New Zealand and so we were kept busy snapping queen cages closed every Saturday, Sunday and Monday to get them to the courier by Monday afternoon.

The upshot of that is there are few spare queens for our own splits until later in the month. Therefore, careful management of the production hives is needed to prevent swarming through November. They come out of their cherry pollination work weakened in October, so that helps slow down the swarming urge. However, by mid-November they are ready to take off, if we don't manipulate frames/boxes a bit and get a honey super on.

It means they are well are truly ready to split by the end of the month. Up until this point in the season the hives have been run as doubles, so we whip around and put an excluder in between the brood boxes once we have some mated queens in cages for our own use. Then, at least three days later, and ideally not much more than that, I visit and find fresh laying (eggs) in one of the boxes to determine the queen's location. Then, we move that box onto a new base on the site, and place a caged, mated queen in the queenless brood box which remains. Thus, turning one double into two singles. I usually take the existing honey super and place it with the old queen, giving her a few more bees in strength.



The 'before' photo of doubles ready to be split.

The 'after' photo, 24 single brood box hives in the place of 12 doubles.

Splitting 'on site' like this is not ideal, as it can make for uneven colonies as the field bees find their way back to their original hive site. I'll let you know how even or uneven they are looking next month!

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This is our way of doubling our hive numbers for the honey flow. Everyone has their own preference as to doubles, singles, double-queeners, or otherwise. For Pyramid Apiaries, the splitting to singles works well and acts as our method of requeening as it means 50 percent of hives have new queens each year. They will be united again in late-summer – old queen hive with young.

The late splitting usually works out ok for us too as our main mānuka block is late flowering, not hitting its straps until after Christmas. Some North Island beekeepers will already be migrating hives off their first mānuka crops and onto the next for a second bite at that apple. Although there is likely less of that going on than in previous years.

For us in Marlborough, December is the key month at most apiaries, with mānuka, kanuka and clover the main floral sources. It's all go, just so long as you have all your hives ready to go...

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With pollen like this coming into the hives in November, one needs to be on swarm watch.





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# **Foreign Affairs**



#### **BY IAN FLETCHER**

This week has seen two events of notable significance.

The first was the publication of the new Government's 100-day plan. It's not a plan, it's a to-do list, and it'll take a lot more than 100 days. But I digress.

The second event was the death of Henry Kissinger. As many know, Kissinger was the towering intellectual figure in international affairs through the late 1960s and early 1970s. For many, that's a long time ago.

I've decided not to write about the new Government's missed opportunities and already-squandered mandate. Another time. Others will fill that gap meanwhile. But Kissinger interests me, because he shone a light on foreign affairs in ways many New Zealanders find distasteful, and yet which are important if we are to see ourselves in the world as we really are, and take the steps we need to look after our interests.

Kissinger's back-story is remarkable, but can briefly told: born in Germany in 1923 to a Jewish family, he (and they) fled Nazi-ism to the US, where he served in the US army in WW2 and played a role in post-war government in Germany. An academic career followed, leading to a political career made most famous as Nixon's Secretary of State and National Security Adviser. He was instrumental in almost all the big events of that period.

But it's his ideas that really shine through. His academic work focused on a deep study of the peace made in Europe at the end of the Napoleonic wars. His work on this period (which I confess



Henry Kissinger, one of the world's highest regarded diplomats, died recently aged 100. But what would he make of New Zealand's diplomatic position? Wonders Ian Fletcher.

I read regularly) has been condemned as laying the intellectual foundations for a nasty 'realpolitik' – that is, justifying doing dirty deals or murky deeds to advance one's own interests. Maybe so.

But its more than that, and it matters to New Zealand. Kissinger understood two things: First, peace is better than war. Kissinger wrote about Napoleon, and had first-hand experience of the Second World War. He knew that war is ghastly, messy, bloody and – above all – randomly, chaotically violent.

The second is that 'Anarchy is worse than Tyranny'. The medieval Persian philosopher Abu Hamid al-Ghazali believed one year of anarchy is worse than a hundred years of tyranny. The American writer Robert Kaplan has recently written on this is a stunning book 'The Tragic Mind' that also shows why we need to study history, Shakespeare, and classical Greek drama.

New Zealanders often see the world differently: imagining that foreign affairs can be a matter of values and ethics, and that New Zealand can have a 'principled' foreign policy. I fear this is a delusion. Where do we actually stand?

Firstly, we have no physical neighbours, but we depend on sea and air transport for just about everything. So, the security of those sea and air routes, and the security of destination countries is of primary importance. That means Australia, and to a lesser extent the US and Japan – the three biggest naval powers in our region. If they can't or won't protect shipping and air routes in our part of the world, modern life in New Zealand would become precarious.

Secondly, as I've said before, our other challenge is that we're economically exposed to China, which is in low-level conflict with those countries we depend on for our naval security (and much else). Low level conflict is manageable; actual war would be disastrous – not because fighting would reach here. It wouldn't. But it would be a naval war. Efforts to command the seas north of us would really affect shipping and air services that we and Australia depend on, potentially for a long time. Some say it'd never happen, right? Since 1900 there have been five major wars in the North Pacific, as well as the convulsions in China in the period up to 1949. These things do happen.

And if China itself has an internal political disturbance, the resulting disruption would affect our biggest market, and Australia's biggest market. New Zealand's prosperity is in many ways a bet – both direct and indirect – on the Chinese Communist Party staying in power, and not talking against us. We can't afford to be critical of the way minorities in China are treated, for example. That's realpolitik. What leverage do we have? Almost none. Our military capability is charming, but irrelevant. Our views on world affairs are largely ignored. In the past we have been effective in shaping global thinking and arrangements on Antarctica, as we have claims and because our geography gives us a blocking position on much of the access to Antarctica. But that's an exception.

In the past we have tagged along with our 'traditional' allies without much thought, making military contributions that were serious up to the Korean War, and token thereafter. We've played up our role in the Pacific. But that's turned into a tussle between China and Australia. We're anxious bit-part players.

What would Kissinger say? He started by distinguishing between legitimate and revolutionary regimes. Legitimate ones were simply those whose demands could be accommodated by others. As his obituary in the FT on Thursday said, his 'realpolitik' was that success required taking the interests of all parties into consideration, but not necessarily the interests of those not holding power. As a country, we don't hold much power.

What could go wrong? Three things, all of which we need to consider carefully. The first would be conflict in the North Pacific, as discussed. We need a plan for survival if shipping and air routes are severed for a period. The second is that our allies ask us to do things that really annoy China, so there are economic sanctions against us. And the third is Antarctica. Militarisation of Antarctica would be an actual threat to New Zealand as our waters would be part of a protagonist's likely access route. We don't just need a plan; we need a navy for that. The choice is whether it's the US



New Zealand can try and stay out of global conflicts, but, if Antarctica is seen as a desired territory, then New Zealand waters would be part of a protagonist's likely access route.

navy, or the Australians. It probably too late to build our own. Without plans and without the capacity to act, we don't have a real foreign policy; it's just a set of opinions. One senior New Zealand diplomat once said to me that "We're really just a nonvoting State of Australia". It's not that bad. It might even be OK.

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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