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Apiarist's Advocate

News, Views & Promotions – for Beekeepers – by Beekeepers

AFB Tech and Tool Advancements

But Can we Put Them to Use?

AFB Dogs Research Debate Goes Around in Circles

A Research paper into the ability of sniffer dogs to detect the American foulbrood (AFB) causing *Paenibacillus larva* spores was published in December, a year after the work was completed. At that time of research the **AFB Pest Management Agency called for recognition of the project** – in the form of peer review and publishing – as the next step required before the use of canines would be considered in the national Pest Management Plan (PMP). Now that scientific stamp of approval has been given, is there a next step for AFB detector dogs and the PMP?

Recognition of an Odour Pattern from Paenibacillus larvae Spore Samples by Trained Detection Dogs **was published in international open-access journal *Animals* on December 30. It capped off the efforts of lead scientist Neroli Thomson of Massey University and dog trainer Pete Gifford of K9 Search Medical Detection in Manawatu, to prove dogs can detect AFB causing bacteria.**

While the duo, along with beekeeper Jason Prior of Downunder Honey in Manawatu who helped organise the project, were confident in the robustness of their work, gaining publication is a seal of approval from the scientific community. Further to that, AFB Agency national compliance manager Clifton King called on the publishing of the paper before the Agency would further consider the use of dogs.

The Agency Board is set to meet on February 17 and the research is on the agenda. However, King says that PMP AFB detector dog use is still likely some way off, as more research is required.

"Feasible research generally has a very small scope. In this instance the only research question which they set out to answer was, can dogs detect odours from AFB spores? The paper comes out with a solid 'yes, dogs can'," King says.

Two dogs have been successfully trained to detect AFB spores by K9 Search Medical Detection dog trainer Pete Gifford, but will they ever see a field research trial?

"The study is proof of concept. It proves dogs can detect AFB spore odour. It also highlights that trials to investigate the sensitivity and specificity in field conditions are required. It is not a case of leaping from proof of concept to using it across the board in the field, there is a next step to undertake."

The national compliance manager will share his views on the research at the February Board meeting.

He is not alone in the call for more questions to be answered. The paper itself identifies the need for further research, stating, "The high success rate of two dogs in this study provides convincing evidence that dogs can recognise an odour pattern from P. larvae spore samples, but the test design was not suitable for evaluating parameters such as sensitivity and specificity. These would require additional repetitions, requiring a large number of samples, in an operational (field) setting where there may be multiple positive samples or no positive samples in a single search."

Thomson describes the sensitivity and specificity as the "accuracy measures".

"I.E what number of the positive hives in there can the dog find? That's the sensitivity. Then the specificity is, how many other hives or pieces of equipment does the dog indicate on that turn out not to have AFB," the Massey university scientist says.

Getting that work done will be costly, likely more than $100,000 and potentially around $200,000 various stakeholders estimate. Also challenging would be getting a team of researchers together to carry out more work, with there no guarantee those who have got it this far will be available to continue.

The Southern North Island Beekeeping Group have sought to raise funds to help Gifford keep the two dogs he has successfully trained thus far, but that has only raised $1700 total.

Prior says the Ministry for Primary Industries have been supportive of the potential for further funding of AFB dogs research, after their Sustainable Farming Fund contributed $50,000 to the $94,000 initial four-year project. However, like the first project where some industry funding was found to go alongside in-kind work of the research team, a substantial proportion of funding for further research would need to come from industry.

"Ultimately beekeepers should fund it, through

levies or private contributions, but I don't think there is a lot of point doing the work if we don't figure out how we are going to use it. You need to come up with an operating model, and test towards that," Prior says.

Thomson is also of that opinion and says "the intended use of the dogs would need to be confirmed, then a study shaped to find out how accurate they could be in that use".

The AFB Management Agency's input will therefore be vital, but to this point their input has been non-existent Prior says.

"What it needs is the Agency to run the project. The next step of the project needs to be driven by the ultimate, end users of the capabilities. I don't think that is private industry," Prior says.

"The AFB Board should be asking Clifton for the business case for using a different operating model, such as using dogs. If he does the numbers and it shows there could be a model where the dogs identify more AFB, at a lower cost, then there is your business model. From there the Board can help figure out how to get the research done to achieve it."

However, at present it is not as simple as that according to the national compliance manager, who says an accurate cost benefit analysis (CBA) will be difficult with only the current level of information.

"To complete a CBA we need to understand the costs of training and maintaining detector dogs at an appropriate performance standard, and we need to understand detector dog performance in the field. That is the performance of detectors dogs that have been trained to appropriate standards," King explains.

AFB Agency national compliance manager Clifton King says the research into AFB dogs is an "impressive" paper, but more research is needed before the Agency can consider their use.

That means a greater understanding of sensitivity and specificity of the dogs is required so that the costs of missing AFB beehives and destroying healthy beehives can be factored into the analysis. Or, if a second diagnostic method is to be added to the protocol, such as visual inspection of all beehives that the dog indicated on to address specificity issues, this cost needs to be included in the CBA as well.

"With CBAs, it is not about proving your assumptions are 100 percent correct, it is a matter of making them reasonable and proving you can defend them. [For detector dogs] we don't have enough information, at present, to make sure our CBA stands up to scrutiny," King says.

And that scrutiny will likely be applied, especially if it came to the Agency going so far as to fund research.

"There has been a lot of support from beekeepers for that, but there is also a significant number of beekeepers who are totally against the use of dogs under the AFB PMP. That sizable proportion of beekeepers would, in all likelihood, be against their levies funding a project which runs into six figures," he says.

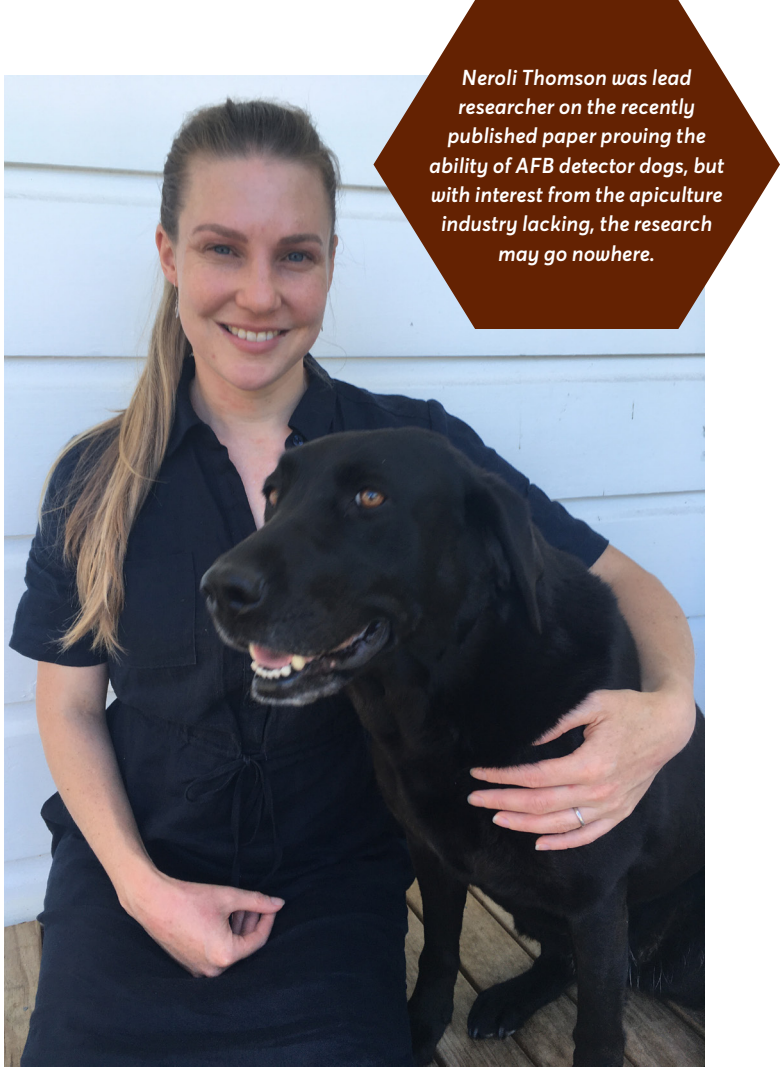
For Prior though, he just wants to see support of any kind emanate from the Agency.

"The Agency are not willing to make the effort. There's been very little participation or interest shown. What we have had is continual pushback that they have no mandate to look at this work until it's peer reviewed. They have never been to see (dog trainer) Pete Gifford. There was some discussion about Neroli speaking at the Apiculture New Zealand conference, but that didn't seem to happen. No one seems to give a hoot and I think that reflects poorly back to the research sector as, why do this sort of work if the stakeholders are not interested?" Prior says.

The apathy to their research will make the already potentially preventive task of forming a research team to carry out any future projects even more difficult Prior points out.

"The Project wasn't fully funded so we are expecting the likes of Pete Gifford and I to provide in-kind contributions of our time and really, for what? This project was never about us.

"Pete has been knocking on doors for five years and he just doesn't feel any love for his efforts. If you want people to do this



Neroli Thomson was lead researcher on the recently published paper proving the ability of AFB detector dogs, but with interest from the apiculture industry lacking, the research may go nowhere.

work, such as Neroli did without getting paid, you need to give them some encouragement."

And that points to a potentially larger problem for New Zealand beekeepers' efforts to reach the ultimate goal of eliminating AFB and the improved tools and technologies that would bring that aspiration closer.

"If the Agency's opinion is that they are not going to accept new technologies until there is peer reviewed research to lean on, then that simply won't work. Because, no one is going to go and do research for them when they can't even be bothered turning up to show stakeholder interest in the projects. They are just going to piss off what few research and development people there are in New Zealand," Prior says.

It's therefore seemingly a 'chicken and egg' situation – what comes, or at least should come, first, more research, or more engagement from the Agency to help make that research a possibility?

February's meeting where the AFB PMP Agency Board of Mark Dingle, Val Graham, Gabriel Torres, Jason Ward, Russell Marsh, Murray Lewis, Dennis Crowley and Jane Röllin will gather could be critical to the extension of the current detector dogs research. For Prior, with the research fresh, dogs already trained, and key personals' motivations waning, action must be taken soon.

"I think the goodwill of the industry has reached a cap. What we need now is some stakeholder engagement to determine what we do with this capability and the Agency is the ultimate owner of the capability, so they need to take some ownership," Prior says, adding, "it is their job to go to industry and say 'please fund this', but, before then, they need to run the numbers on how much money it could save levy payers if dogs could be adopted."

Manawatu beekeeper Jason Prior, pictured with Apiculture New Zealand chief executive Karin Kos, is frustrated by the lack of interest and action towards AFB detector dogs taken by the national Agency and believes attitudes to new research and technologies must change.

Time for AFB Agency to Cost-Analyse New Tech

Wairarapa beekeeper and Apiculture New Zealand board member Stu Ferguson is an innovator, evidenced within his Hunter Reilly beekeeping business and the Hive Doctor hiveware he founded. Recently his interest has been piqued by new research aimed at diagnosing American Foulbrood (AFB) in hives. Best utilising the findings will take innovation within the AFB Pest Management Plan (PMP) though, so he has been thinking through a method...

BY STU FERGUSON

Stu Ferguson, beekeeper-owner of Hunter Reilly and proven innovator within apiculture, has been giving thought to a potential new approach to managing AFB nationally.

I think the AFB PMP has an obligation to levy payers to show they are using the funds they receive to get the highest performing results possible and strength test new ideas – luckily, we have a couple of very useful new options coming on stream and I would like to propose a strategy in which they could possibly be implemented.

The lack of an eradication programme after 25 years of basically hot spot management is a gap in what we are doing with AFB compared to, for example, what is being done with Bovine tuberculosis. TB control has shown that regional hotspot and movement control can successfully eradicate what was once considered an endemic disease. AFB plans are yet to demonstrate a systematic strategy to eradicate the disease.

An extremely poor season nationwide this year, excess amounts of older honey that requires blending to meet market requirements and a large exodus of beekeepers and capital, all means beekeepers are short of money and the industry will remain significantly stressed through the next few years. Hive numbers are down, potentially to 600k or less when the 2023 registration numbers come in.

Anecdotal evidence suggests AFB incidence is up, with cases reported likely originating from abandoned hives. I believe the AFB Board needs to show that they are looking at all options to increase capability and reduce expenditure, given

the industry situation, and the likely dramatic drop in hives which can be levied.

We have now had peer reviewed work done on 'detection' dogs and hopefully soon we can say the same of qPCR testing. In tandem they could provide answers for a lower cost operating model with potentially better outcomes for levy payers.

Dogs have the ability to inspect large amounts of hives during the off-season, when they are relatively stationary. As for dnature's qPCR Foster Test method, I have personal experience seeing it pick up AFB infections in hives that were not showing clinical signs.

An operating model that uses both dogs and qPCR testing has the potential to provide the platform for eradication, due to its potential to eradicate spore sources from operations. This is a distinct capability lacking in current methods. As we have seen with bovine TB, to eradicate the disease requires an eradication plan, and I can envisage that with these capabilities and more targeted honey sampling we can isolate the disease before it spreads, and at a much lower cost.

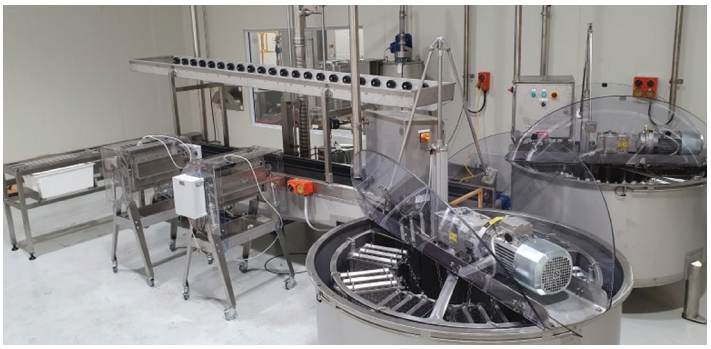
As a beekeeper and levy payer, I would like to see the most efficient use of $$ and in my opinion increasing use of dogs, followed by beekeeper inspection and qPCR testing for non-clinical hives, seems like a common-sense approach, but we need to do the cost benefit analysis (CBA). Thus, I would like to see a CBA on:

1. Much wider honey sampling, I.E mandated testing on all those submitted for tutin, or export manuka tests.
2. Use this data, alongside reported incidence, to target more operations. However, rather than using AP2s, use detection dogs which can cover many hives in a short amount of time.
3. On a positive indication, the dog handler would apply a QR sticker to the lid of affected colonies and this would be uploaded with geo-co-ordinates to Hivehub.
4. Now the Agency has a record of high risk hives they can send the beekeeper a notification to inspect, or send AP2s to inspect. If they cannot see AFB, they then can request a qPCR test kit.
5. The beekeeper would then be required to either destroy the hive(s) or provide a negative qPCR test for the affected colonies. Scans of the QR codes would signify that hives have been visited, and data (such as inspection or qPCR test results) could be stored alongside the code. Honey sampling would validate that compliance is working.

The possible argument that human eyes are better than qPCR or a dog's nose (even if only 90% correct) does not justify the continued approach of 100% human inspection because the cost of training, transporting and increased volume of inspections would potentially dwarf low-cost broad scanning methods that do not require hives to be opened. The holistic advantage is, you are empowering the beekeeper to take ownership, rectify a problem, and take control of the process. Of course, certain beekeepers will not adhere to this methodology and AP2s will be key in these instances.

If eradication is the goal of the AFB PMP and an improved, efficient method of identification is discovered, then trials should begin ASAP. The added ability of being able to remove infected supers from your operation makes dogs a massive step forward in capability.

This approach could use AP2, qPCR and beekeeper resources much more effectively, plus incentivise beekeepers to take responsibility and mean less AP2s required. I suspect a vastly greater amount of AFB would be found and destroyed. This offset cost of using the dogs for the broad scanning needs cost analysis and the argument must be made that now is the time to look for or analyse more efficient options.



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New AFB Vaccine, But Not for NZ

Approval of an American foulbrood (AFB) vaccine in the USA in January has given beekeepers there another option in protecting honey bee colonies against the disease. Dalan Animal Health have been granted a conditional licence to use the vaccine by the US Department of Agriculture, but rules around treating AFB are very different in America to that of New Zealand. So, is this vaccination advancement any benefit to Kiwi beekeepers?

Increased field trials likely await, following approval of Dalan's vaccine, which relies on trans-generational immune priming using the bacteria that causes AFB – paenibacillus larvae. That means the vaccine can be incorporated into 'queen candy', which is fed to queen bees. Once ingested, fragments of the vaccine are deposited in the queen's ovaries. Having been exposed to the vaccine, the developing larvae have immunity as they hatch.

America has long tackled AFB infection by use of antibiotics to infected colonies, whereas the new vaccine method would allow treatment prior to infection. The method of using P. larvae bacterium was shown to reduce larvae death by 30-50% in a

Dalan Animal Health have gained a conditional licence to use their Paenibacillus larvae bacterin vaccine against AFB in honey bee colonies in the USA, which will see field trials take place.

study carried out by Dalan and which was critical to gaining approval *(The oral vaccination with Paenibacillus larvae bacterin can decrease susceptibility to American Foulbrood infection in honey bees—A safety and efficacy study).*

However, in New Zealand the use of drugs to treat AFB is outlawed under clause 14 of the Biosecurity (National American Foulbrood Pest Management Plan) Order 1998, as Kiwi beekeepers strive for elimination of the disease from managed colonies. Any use of a vaccine in New Zealand would require an amendment to the Act, as well as registration under the Agricultural Compounds and Veterinary Medicines Act 1997, so is highly unlikely at present.

Nonetheless, AFB Management Agency national compliance manager Clifton King has read the research paper from Dalan and confirms that, at present, it will not be of any use in New Zealand's management strategy against AFB.

"My interpretation of the data provided is that all challenged beehives still become infected with AFB. The reduction in larval death rates observed will result in longer incubation periods before clinical signs are observed, and vaccinated beehives will be slower to die from AFB. There is considerable uncertainty as to whether the effects of increasing the incubation period and time to hive death will increase or decrease the spread of AFB between beehives," King says.

While Dalan has made a leap forward in AFB vaccine research with the American approval for use, at Canterbury University Heather Hendrickson's lab are undertaking their own research into an AFB 'vaccine' of sorts, using bacteriophage therapy. She also can't see the Dalan vaccine conforming with New Zealand's AFB Pest Management Plan.

"The level of protection offered, 30-50%, is unlikely to mean an entire hive is symptom-free," Hendrickson points out.

"So, in New Zealand it would be burnt, whereas in the US they can treat with antibiotics. So, I don't think that this vaccination strategy alone would save hives given our eradication efforts, based on this data. It does sound to me like it would extend the period over which a hive would appear to be asymptomatic."

She also notes there are several different strains of AFB known to be in New Zealand, which could limit effectiveness of the vaccine.

Furthermore, with added importance applied to producing 'AFB-free' honey for export to China in recent years, this must be considered when assessing the suitability of a product which voluntarily introduces P. larvae spores to bees.

"There are a lot of spores per bee remaining in the asymptomatic larvae treatments in the lab, with an average of 158 spores per bee according to the research. This would mean that hives and honey could test positive for AFB. That would be a major problem for our export markets," Hendrickson says.

So, while scientific advancements to combat any disease of honey bees are no doubt welcomed by beekeepers, Dalan's 'AFB vaccine' is unlikely to be in use in New Zealand anytime soon.

MHAS Withdraws Appeal, Circles the Wagons

The group representing the New Zealand honey industry's bid to gain exclusive use of the term "mānuka honey", The Mānuka Honey Appellation Society (MHAS), is rethinking its legal approach.

MHAS recently withdrew both their appeal to an unfavourable December 2021 United Kingdom Intellectual Property Office ruling, which was to be heard in January, as well as their application to the European Union for similar certification trademark protections. An application to New Zealand's courts is still to be heard in 2023.

The withdraws are in the name of devising a new approach to mānuka honey protection according to MHAS spokesman John Rawcliffe, who has indicated they will be lodging a fresh appeal in both the UK and EU with more detailed information. He says they remain "absolutely committed" to the end goal of achieving certification trademark and/or geographic indicators.

Last month Rawcliffe reaffirmed the commitment of the New Zealand honey industry, through the Unique Mānuka Factor Honey Association, to fund ongoing legal battles. Those battles look set to be drawn out for even longer now, while in the mean time Australian honey producers will continue to market manuka honey internationally.

The 24 Million Dollar Question

The question is perhaps akin to 'how long is a piece of string?', but Colony Loss scientist Pike Stahlmann-Brown and a team of commercial beekeeping managers have attempted to put a value on what each honey bee colony death in New Zealand costs the beekeeper, and the apiculture industry in total. Value is the key word, because, while their answer to the question of, 'what is the value of a colony loss?' is not universal to all beekeeping operations, Stahlmann-Brown believes there is value in their research for both beekeeper on the ground and the wider industry.

Thirty-eight dollars and four cents. That's the magic number, the final 'value' of a commercial beekeeper's individual colony loss. Or $24,181,835 across the whole industry if you prefer. Of course, that value reached in the recently published *Valuing over-winter colony losses for New Zealand's commercial beekeepers* paper (Stahlmann-Brown et al. 2022) is, in practice, not intended to provide any sort of silver-bullet solution though. The authors are more than aware that it is but an estimate and, furthermore, highly variable depending on the beekeeping business suffering the loss.

"From the perspective of beekeepers, when you're deploying a hive you have the known costs and the unknowns," Stahlmann-Brown says when explaining why he undertook the study.

"The knowns are things like how many varroa control strips are used, labour costs, or how many trips are made to manage the hives, that sort of thing. But an unknow is, whether that colony is going to survive. So, if we could put some kind of expectations around the cost of colony loss, then beekeepers, especially commercial beekeepers, will be able to build that cost function into their businesses."

Manaaki Whenua – Landcare Research scientist Pike Stahlmann-Brown hopes his latest research can help beekeepers assess the cost of colony loss within their own businesses, and also help gain the issue of colony loss more attention and research.

To calculate that cost, a range of information was gathered from around the apiculture industry based off the 2021 season, from the annual beekeeping Colony Loss Survey, to national honey export data, indicative honey prices from buyers, and also the amount of land area planted in crops which usually provide paid-pollination work for beehives. That data allowed for estimated values to be reached for a range of income streams to the beekeeper, such as the average bulk-buy price per-kg of mānuka ($23.90), multi-mānuka ($8.34) and non-mānuka ($4.17) honeys, and also costs – $60 for a spring mated-queen, $7.50 per brood chamber for Apivar or Bayvarol varroa treatments.

As well as those direct forms of income or expense, the opportunity cost of various beekeeping practices was considered, such as splitting hives. For this the collective expertise of managers from large commercial beekeeping entities Comvita (Gabriel Torres), Mānuka Health (Brian McCall) and Taylor Pass Honey Company (Rex Butt) was relied upon. Stahlmann-Brown says he was surprised how regularly the trio "coalesced" on a common figure when valuing certain beekeeping practices, but admits the numbers are a "best guess".

Estimations as to honey prices are also just that – an estimation – with the author saying the use of national honey export data to determine what ratio of beekeeper income comes from various floral types was the biggest "leap of faith" taken in their research, but one required in an industry lacking more comprehensive honey production data.

Regardless of the final figure of a cost per-beehive they reached, it is the methods used to get there that commercial beekeepers can benefit directly from as it helps inform "smart decision making", Stahlmann-Brown explains.

"Some people are going to look at this and say, 'this is actually exactly the management regime I would use', others will see these calculations and say 'I manage my hives a slightly different way and so those numbers don't appear to apply to me'. However, they can still use those equations to calculate what the ultimate cost of a hive loss would be for their operation. So, it is about really trying to provide not only some additional information for beekeepers, but also a service of sorts, a tool for them to use."

The paper presents several equations which, upon first glance, might appear convoluted to anyone who hasn't studied mathematics past high school (and plenty who have!), but Stahlmann-Brown believes any beekeeper intent on plugging in their own numbers should be able to follow along.

"All it is, frankly, is addition, subtraction and multiplication. So, while they might look complicated, they're not intended to be. My hope is that, if you have somebody who's really inspired to work this out for their own operation, they can. We put every number into the paper so they can do the math themselves and refer back to it. I'm hoping that it's not too cumbersome."

An aspect which may make one of the equations look convoluted to some is the inclusion of an "opportunity cost" factor as it pertains to simply buying a new beehive as opposed to the cost of making up a fresh split from an existing hive. That sort of detail to the study allows for the practical sort of business thinking a commercial beekeeper may need to go through when weighing up their management options.

While Stahlmann-Brown is keen to see beekeepers apply the research's findings to their own operations, the paper itself stresses the importance of the findings to promoting ongoing research and tapping in to funding.

"We suggest the findings shown in this paper provide the basis of a business case for interested parties to invest in research to address all forms of colony loss and varroa in particular as the investment required can now be compared objectively to the potential long-term monetary gains," it states.

Colony losses in New Zealand beehives have been on the increase, but new research will help beekeepers weigh up the cost of their management against the cost of colony death.

Stahlmann-Brown hopes it can help beekeepers work together too, by putting a value on any positive outcomes from cohesion.

"For 2021 we place losses at costing $24 million. I'm hoping that it will facilitate discussions in the industry, because it is big enough for us that we should be worried about it. So, maybe there's some value to thinking about coordinating varroa management, just as an example. Because if everybody's treating with the same product at the same time, maybe that leads to a better outcome.

"I'm also hoping it leads to discussions among government, frankly, because it's a great big loss."

According to the New Zealand Colony Loss Survey, to which Stahlmann-Brown is the lead scientist, hive deaths are on the increase (going from 8.37% in 2015 to 13.59% in 2021). So, regardless of whether you agree with the working and research findings of the paper and their assessment of the figurative 'piece of string' being $24 million long, the string appears to be growing. How big of a problem that is for individual beekeeping operations, probably got easier to determine with the help of a few equations – even if they might take some 'figuring' out.

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Beekeeping Takeaways from North America's Conference Season

MyApiary general manager Darren Bainbridge recently returned from the North American beekeeping conference season, where his management software company exhibited at the American Honey Producers Association (AHPA) convention and trade show, plus the Saskatchewan Beekeepers Development Commission annual convention in Canada. As you might imagine, there was plenty to take in and some key takeaways to interest Kiwi beekeepers...

BY DARREN BAINBRIDGE

First up was the AHPA conference, held in sunny Tucson, Arizona, where the discussion was all about home-brewed varroa treatments and the pros and cons of overwintering in barns versus moving hives south. The consensus seemed to be barns provided healthier spring bees with fewer overwinter losses due to the forced hibernation and brood break (note: hives are not fed or treated while in the barns, this has to be completed beforehand – one of the downsides to the practise).

In New Zealand we might be getting more familiar with the exercise of soaking shop towels in oxalic acid as a form of varroa control, but in the States it seems a home brew treatment of the towels soaked in Taktic (a broad-spectrum product which contains amitraz to control ticks and mites) is becoming common. It is being applied at least twice to hives before wintering. This stuff is potent, not Environmental Protection Agency (EPA) certified for use with bees, and I'm certain the beekeepers using it don't know the actual dosage levels they are applying to the hives. However, when nothing else works (with resistance to several EPA registered products well documented), what other option do they have?

Beehives in Canada are wrapped in thermal "sleeping bags" this time of year, giving beekeepers time to attend conference season.

Another key scientific learning in the US was how omega-3 and omega-6 imbalance in pollen supplements affects the cognitive performance of bees, i.e it dumbs bees down and makes them less resistant to disease. A ratio close to 1:1 is desired, but some supplements are as high as 8:1.

In Canada the big discussion point – fiercely debated over a few drinks – was the pros and cons of opening the USA-Canada border to bee movements. There seemed to be no winner to this argument. Those for it want to make up winter losses by bringing in bees from American beekeepers who wish to destock after their earlier spring, compared to Canada. This solves a problem for the Americans too, as apparently hives there have too many bees after almond pollination and before honey crops start in the north. The 'nos' argue the bio-security risk of introducing Africanised bees and importing more resistance strains of varroa are not worth it.

However, Canadian varroa are fairly robust already and displaying resistance to flumethrin and tau-fluvalinate products and potential developing resistance to amitraz. Therefore, many beekeepers are starting to look more closely at organics in Canada. The current organic treatment method is predominately oxalic acid vaporising and so the scientific community is exploring the potential that singular use of organic treatments could also breed resistance.

A scary take away for me was antibiotics oxytetracycline and tylosin are licenced for American foulbrood (AFB) treatment in Canada and AFB seems to be quite prevalent. Presentations were given proving resistance to oxytetracycline, leaving only tylosin as a fall treatment due to the risk of honey contamination.

With the symptoms of AFB being masked by antibiotics, leading to higher incidence, I am glad New Zealand took the route of banning the use of antibiotics. AFB could quickly get away on Canadian beekeepers once the antibiotics options are no longer useful.

Venturing out in Saskatchewan, Darren Bainbridge takes in the delights of a Canadian winter during his visit to exhibit MyApiary at various beekeeping conferences.

Wellington's Community Beekeeper

From long-time treasurer of the Wellington Beekeepers Association (WBA), to hives in some of our capital city's most renown venues and even his own beekeeping equipment business, John Burnet's enterprises have a truly local flavour and benefit not just fellow Wellington beekeepers, but the community at large.

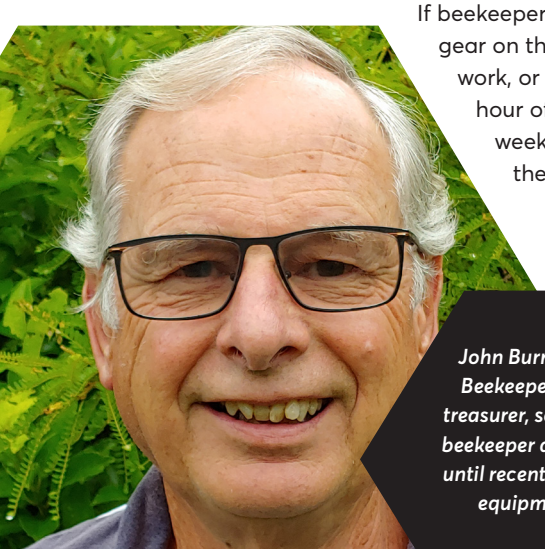
John Burnet is looking forward to getting his spare rooms back … and the garage … and his weekends.

The recent sale of his small beekeeping equipment supply business, Capital Beekeeping Supplies, to Hive World NZ will – he hopes – free up some space in his life. For the past seven years Burnet has juggled the business with, initially, employment as a banker, his long-time role as treasurer of WBA, community conservation work and his semi-commercial beekeeping enterprise, Bee Fresh Farms.

"What started as bulk ordering of varroa treatments and hiveware through my role as treasurer of the club became Capital Beekeeping Supplies. I began importing some honey extraction equipment and beesuits, and it got out of hand," Burnet says.

Soon equipment was filling up not just the garage where his wife's car once resided, but any spare rooms in the house.

"I was devoting a lot of time and effort, '16 hours a day, seven days a week', was my philosophy. If beekeepers wanted to collect gear on the way home from work, or any reasonable hour of the day, or on the weekends, then I was there," Burnet says.



John Burnet: Wellington Beekeepers Association treasurer, semi-commercial beekeeper and mentor, and, until recently, a beekeeping equipment supplier.

Now some of that time will go to the continuing management of his 24 Bee Fresh Farms hives, spread across about a half-dozen locations around the capital, from Wellington's Botanic Gardens, to the garden of Old St Paul's Anglican Cathedral, and soon an inner-city hotel will join the list.

The honey from these hives is sold through a range of local retail outlets and markets, such as the Botanical Gardens and Cathedral gift shops. Both locals and tourists alike lap it up, the beekeeper says.

"In the last two or three years we've realised people want to buy local. They want to support local beekeepers. They are not necessarily driven by flavour of the honey, but like buying honey that comes from an area that they're familiar with."

Although there have been a few instances of minor vandalism to the hives in the Botanic Gardens, the local community are largely supportive of hives in the apiaries not far from the city's downtown business and political hubs.

"For the most part, I get nothing but compliments. People liked the idea of walking in the Botanic Gardens and seeing bees all around them and seeing the hives," Burnet explains.

The staff in the gardens certainly see the value in having hives onsite.

"They wanted somebody there not so much for the honey, but more for the pollination and the education benefits. They wanted to get through to the public about the importance of bees in the environment and that fitted with me and my ideas perfectly."

That's because the commercial-banker-turned-beekeeper is an avid conservationist, volunteering time to Friends of Tawa Bush Reserves, a community conservation group based in his home suburb in Wellington's north.

The group seeks funding and lobbies for planting and propagation of native species, as well as pest trapping. It's all in an attempt to restore native biodiversity to a suburb with as many as 11 reserves, the biggest being 36 hectares.

"I'm trying desperately to get more bee friendly plants and trees planted around our suburb of Tawa in particular, which is our little basin. The aim of the game is to try and get as much planted in those reserves that's going to benefit birds and bees, and predominantly native."

The community work doesn't stop there though, with Burnet also a beekeeping mentor for Papa Taiao Earthcare, which provides training in areas of environmentalism to non-academic young people. Courses include tree planting, fencing, trapping and, of course, beekeeping. It's a new challenge for Burnet, but he says he is glad to find another outlet for his beekeeping skills.

Then there is his long involvement with the WBA, where he has held the treasurer's position for several years. Burnet says it's "a good strong club with really good leadership". With around 300 members that assessment is hard to argue with. They offer monthly meetings, a comprehensive regular newsletter, slick webpage, as well as a regularly updated Facebook page.

John Burnet's semi-commercial beekeeping business Bee Fresh Farms is well intertwined with the Wellington community, right down to local primary school students providing the artwork for these Botanical Gardens hives.

While the treasurer may no longer be ordering quite as much beekeeping equipment now as he was a few months ago when his equipment supply business was in full swing, he maintains his loyal involvement in the club and the community with his strategically placed 24 hives.

"It's ideal when people can see the hives when they're walking through the Cathedral grounds or the Botanic Gardens and places like that," Burnet says, adding "having the public alongside the bees, that's actually the way it should be".

What Ought the PM be Worrying About?

New Prime Minister Chris Hipkins has plenty on his plate heading in to an election which will define his political career.

So, we have a new Prime Minister. He'll be focused on winning the election later this year – his career and reputation depends on it. I think he's going to find that hard (unless the Opposition makes some monumental mistakes). Meanwhile, we will be treated to a lot of ostentatious 'listening' by politicians who really only care for the sound of their own voices, some cliché-ridden speeches, and (already signalled) a massacre of a lot of the government's pet sacred-cow projects. The exception is probably Three Waters, which will be decapitated (removing the co-governance bit) while it staggers on, zombie-like into a bankrupt future.

BY IAN FLETCHER

What ought Chris Hipkins actually be worrying about, if he's to really have a plan for a full term (or more) after October? Here's what I think:

Higher inflation and interest rates around for a lot longer. The Reserve Bank has failed. There are two related challenges here: an economy where inflation will likely settle at around 4 per cent, interest rates at say 5 per cent and mortgages higher than that. Underneath that are some big global demographic shifts (we live in one of the few developed countries with a rising population), and some big current and future dislocations following the pandemic, the Ukraine war, as well as likely future pandemics or wars (taken together, they're a certainty over the coming decade).

Related to that is the Reserve Bank itself will need reform (as will most other central banks). Independence is over, active economic management (and political involvement) is back. The US Inflation Reduction Act (so-called – really a subsidy act) shows the way. The sooner New Zealand starts that debate, the better.

The Government will need a lot, lot more money. Some will be because the days of low tax, low wages, low investment are over. So, any government will need to have a bigger health workforce being paid more, a better police and justice system, being paid more, and so on. Some will be for investment (this week's Auckland deluge shows what's ahead). And we know that in future we will need a bigger navy/air force. Not to mention housing and other social needs. So, higher taxes and more borrowing ahead. Will the new PM have the courage to re-open the capital gains tax issue? I hope so.

Australia will be a big headache. Not because it'll do bad things (like the 501 deportations), but because its new government will do good things: watch for Australia to give Kiwis in Australia a better deal on welfare and citizenship, making migration to Australia even more attractive. That'll mean wages here go up further, which will mean both higher taxes (for public sector wages) and a real crisis for our low-productivity companies.

Secondly, Australia will almost certainly vote to become a republic in about 5 years' time. That will ignite the same debate here. That will, in turn, put the Treaty of Waitangi firmly on the table: who among us wants to be part of a republic where citizens are not all equal? Māori social, economic and health disadvantage is real and intolerable, but we may need to find other ways of tackling it than through the Treaty framework. The republic debate will be quite a crisis for New Zealand.

Local and central government are both too weak to face the future with confidence. Local government in New Zealand is weak politically and financially, and we are over-centralised. We justify this by seeing New Zealand as a small country. But actually, it's big in geography, relatively small in population, and immensely diverse socially and economically. All the evidence is that countries with strong, well-run and financially independent local/regional governments are better than over-centralised ones (OECD evidence on this goes back decades). Some sort of federal system would be ideal, I think. Governments hate giving up power, so it's unlikely to happen. But it would be better subject for debate than the current co-governance story (which is organised subject by subject, not community by community, and so is always going to be a haven for the incompetent and unaccountable office-seeker). We could do better.

Central government is worse. I believe that governments need legitimacy (ie regular proper elections) and competence. We do OK on the former. But badly on the second. Our public service has too big a gap between experience and policy. The reality is that good government needs close, critical contact with the user/citizen to allow policies and services to be improved quickly and to be effective. The examples of failure are many – health, housing, roads, policing, MPI, NZTE all show dangerous isolation from the realities of the people, companies and communities they serve. Again, we could do better.

Finally, biosecurity deserves a special mention, as it is a special risk. Wars, pandemics, financial crises and the successes of Australian policy can all be blamed on others. But a major, damaging biosecurity incursion will be our fault and only our problem. I don't think MPI is up to it. If I was advising Chris Hipkins, that's where I'd suggest he start. We must do better.

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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